

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure

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Updated Final ESIA Report

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Ministry of Education, Science and Culture

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Abbreviations

Abbreviation	
ABS	General Bureau of Statistics
AHKCO	Academy for Arts and Culture in Suriname
AIDS	Acquired Immunodeficiency syndrome
All	Area of Indirect Influence
AQGs	Air Quality Guidelines
AZP	Academic Hospital Suriname
B.P.	Before Present
CFC	Chlorofluorocarbon
cm	centimeter
CO ₂	Carbon dioxide
CO	Carbon monoxide
CO	Communication Officer
COVID-19	Coronavirus disease
CVD	Cardiovascular disease
dB(A)	Decibel using the A-weighting setting
DC	District Commissioner
DO	Dissolved Oxygen
E	East
EA	Environmental Assessment
EBS	Energy Company Suriname
EC	Electrical Conductivity
EFA	Environmental Framework Act
EHS	Environmental, Health and Safety
EIS	Environmental Impact Statement
ERP	Emergency Response Plan
ESIA/EIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan

Abbreviation	
G.B.	Government Gazette (before 1975)
GDP	Gross Domestic Product
GIS	Geographic Information System
GLO	Primary/elementary Education Level
GRM	Grievance Redress Mechanism
HIV	Human immunodeficiency virus
IDB/IADB	Inter-American Development Bank
IFC	International Finance Corporation
ILO	International Labor Organization
IP	Indigenous Peoples
ISPS	International Standard for Port Security
ITCZ	Intertropical Convergence Zone
IUCN	International Union for Conservation of Nature
L ₁₀	L10 is the level exceeded for 10% of the time. For 10% of the time, the sound or noise has a sound pressure level above L10. For the rest of the time, the sound or noise has a sound pressure level at or below L10.
L ₉₀	L90 is the level exceeded for 90% of the time. For 90% of the time, the sound or noise has a sound pressure level above L90. For the rest of the time, the sound or noise has a sound pressure level at or below L90
LAeq	Equivalent Sound Pressure Level using the A-weighting setting
LBO	Junior secondary vocational education level
LS	Large
LT	Long-term
LRP	Livelihood Restoration Plan
MAS	Maritime Authority Suriname
MICS	Multiple Indicator Cluster Survey
MOHANA	Face mask on - Wash hands - Keep your distance
MOPS	Development Plan of Suriname
MS	Medium
MT	Medium-term

Abbreviation	
MULO	Junior secondary general education level
NCCR	National Coordination Centre for Disaster Management
NE	Northeast
NIMOS	National Institute of Environment and Development in Suriname
NMA	National Environmental Authority
NOx / NO2	Nitrogen Oxide
NSP	Normal Surinamese Level
NTU	Nephelometric Turbidity Unit
NVB	National Transport Company
O3	Ozone
OHS	Occupational Health and Safety
PPAH	Pollution Prevention and Abatement Handbook
PLHIV	People living with HIV
PM	Particulate Matter
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
ppm	parts per million
PURP	Paramaribo Urban Rehabilitation Program
RGD	Regional Health Service
RH	Relative Humidity
ROM	Ministry of Spatial Planning and Environment
ROS	Ministry of Regional Development and Sport
S.B.	Government Gazette (after 1975)
SGES	Foundation for Built Heritage Suriname
µS/m	micorsiemens/meter
SMS	Shipping Company Suriname
SO2 / SO _x	Sulfur oxide
SOP	Standard Operating Procedures

Abbreviation	
SS	Small
ST	Short-term
SUPS	Foundation Entertainment Center
SWM	Suriname Water Company
UNFCCC	United Nations Framework Convention on Climate Change
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UOV	Universal Outstanding Value
USEPA	United States Environmental Protection Agency
WHO	World Health Organization
WHS	World Heritage Site
WMP	Waste Management Plan

Executive Summary

Project Description

In 2017, the Surinamese Government received a loan of 20 million U\$ dollars from the Inter-American Development Bank (IDB) to finance the Paramaribo Urban Rehabilitation Program (PURP), contributing to the socio-economic revitalization of the Paramaribo historic center. Paramaribo's historic Waterfront, situated along the Suriname River, is the most important public space inside the historical center area defined as a World Heritage Site (WHS) by UNESCO, and will undergo redevelopment.

The Waterfront Redevelopment Project is part of a larger redevelopment plan for the inner city of Paramaribo, focusing on rehabilitating historical buildings and improving social functions. The proposed project consists of approximately one hectare and is part of the historic city center of Paramaribo and listed as a World Heritage Site under UNESCO.

A plan for the redevelopment of this important area includes: improvement of safety and security, traffic flow and parking, signage and markings, facilities for bicycles and pedestrians, space for (un)loading, enabling a connection to the water, tourism revitalization, homeless people removal, monument preservation, attribution of trees/shade, space for events and cultural experiences, space for commercial activities, sport/leisure activities, accessibility for disabled persons, seating, waste management, and utilities.

Methodology

The Environmental and Social Impact Assessment (ESIA) study of the Waterfront Redevelopment Project was prepared in compliance with Suriname requirements under mandate of the Environmental Framework Act and as outlined in the NIMOS Environmental Assessment Guidelines (2009) and in accordance with the Scoping Report (January 2023). The ESIA has also been prepared in compliance with the IDB's operational environmental and social safeguards policy, OP-703, directives B.4 and B.5 in which projects classified category B for its environmental and social impacts and risks are required to prepare and environmental and social impact assessment.

Data on the socio-economic and biophysical baseline conditions and the regulatory regime was collected through a desk-top exercise, collating information from the internet, databases, and a library search of published information. Additional information was gathered through field surveys and sampling to determine baseline conditions. Where appropriate, baseline information was supplemented by information retrieved from specialists. A total of 6 (six) specialist studies were conducted for the baseline- and impact assessment.

In evaluating potential positive and negative impacts, the following qualitative assessment methodology was applied for assessing the biophysical and socio-cultural environment, and health

and safety conditions (Table to the right). Cumulative impacts were also determined considering other activities or proposed activities in the area/region.

<i>Severity</i>	High	Medium	Low	Negligible
<i>Probability</i>				
High	Major	Moderate	Minor	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Major	Minor	Negligible	Negligible

Stakeholder consultation was conducted throughout the ESIA process to i) gather baseline information and ii) solicit opinions and address the concerns of individuals and groups that may be adversely affected by the Waterfront Redevelopment Project. Consultation with key-stakeholders from Government, interviews and surveys with local vendors, residents and businesses and a scoping meeting were held in this context. A public seminar with stakeholders is planned to discuss the findings of the ESIA and to seek consensus on the proposed action plan.

Legal and Institutional Framework

The Constitution provides the legal basis for environmental management in Suriname. It states that the State is obliged to create the necessary enabling conditions to protect nature and preserve the ecological balance in the country. Within this context, the Environmental Framework Act was promulgated in 2020. This Act prescribes that an Environmental Impact Assessment can be requested for activities that may have a negative impact on the environment. The EIA Regulations still need to be promulgated, however, pending its approval, the NIMOS EIA Guidelines 2009 are in force and used for the current ESIA.

Furthermore, this report provides an overview of all Environmental, Health and Safety laws and regulations applicable to the proposed project activities, as well as relevant Cultural heritage legislation as the area is regarded as part of Paramaribo's world heritage site. In addition, an overview of all Conventions relevant to the project is given with a brief description of their relevance to the project activities. Also, international best practices such as Standards and Guidelines are referenced.

NIMOS is responsible for the supervision of the ESIA process as well as the monitoring of the implementation of the Environmental and Social Management and Monitoring plan.

The ESIA was also conducted using recognized standards, methods and approaches, and international best practices. Particularly, the standards of the Inter-American Development Bank (IADB) including the environmental safeguard policy (OP-703), operational policies on indigenous peoples (OP-765), involuntary resettlement (OP-710), gender equality (OP-761), access to information (OP-102), and natural disaster risk management (OP-704) and guidelines for meaningful stakeholder participation, and the UNESCO World Heritage Operational Guidelines.

Biophysical Environment

Suriname has a tropical climate with high humidity and abundant rainfall. The seasons are influenced by the Intertropical Convergence Zone (ITCZ), which brings heavy rainfall when passing over the

country twice a year. The Waterfront, located in the Young Coastal Plain, has soil consisting of Moleson phase ridges and inter-ridge depressions with soft clays and sand ridges containing shell fragments. The study area is underlain by three major aquifers, the A-sand aquifer, the Coesewijne aquifer and the Zanderij aquifer. The Suriname Drinking Water Company supplies drinking water to the Waterfront from the A-sand aquifer.

The Waterfront area is known for its almond trees, with 24 of them planted along the riverside on the sidewalks. Additionally, there are 17 mahogany trees and 16 tamarind trees in the area, mainly located near Fort Zeelandia and surrounding the Independent Square. The lower Suriname River has been adversely affected by human activities. There are no sensitive aquatic habitats identified in the Suriname River near the study area. To date, no unique fish species have been recorded in the Suriname river. However, the Goliath Grouper (*Epinephelus itajara*), listed as Critically Endangered by the International Union for the Conservation of Nature (IUCN), has been overfished and is scarce. There are 36 different fish species near Paramaribo where estuarine and freshwater converge. In addition, amphibians, reptiles, and waterbirds have also been observed along the riverside.

Historically, the drainage system of Paramaribo consists of a combination of open channels and closed systems, which ultimately discharge into the Suriname River. The Van Sommelsdijckse Creek, the oldest drainage channel, runs directly through the old city. The drainage and sewerage of the inner city is regulated by sluices and pumping systems. The system collects excess stormwater and wastewater from septic tanks, hospitals, restaurants, and public areas using sluices and pumping systems, which ultimately discharge into the Suriname River.

Baseline studies were conducted for noise, water quality, and air quality. The noise measurements indicated that traffic was the main source of noise pollution in the area, and air quality being suboptimal due to high traffic and human habitation, with exhaust gases from traffic and parked vehicles being the main source of air emissions. Surface water quality measurements indicated that the Suriname River had relatively healthy water quality, while the creek indicated rather poor water quality.

A risk analysis was conducted for the Waterfront area and vicinity further referred to as the study area. The identified natural hazards include pluvial flooding, flooding by intrusion of river water (with or without sea level rise), and riverbank erosion. The analysis indicates that without the consideration of sea level rise, at least 2.6% of the study area, including the Waterfront area, is at risk of flooding due to river water intrusion once in every 2.5 years. Moreover, the risk increases to 20.2% once every 5 years, 57.2% once every 25 years, and 70.8% once every 50 years. Further analysis of the data indicates that if the sea level rises by 1 meter by the year 2100, at least 75.3% of the study area is at risk of flooding at least once every 25 years. With a sea level rise of 2 meters by the year 2100, the risk increases to at least 87.9% once every 25 years. In addition, there is a potential risk for riverbank erosion within the study area since the depth of this area has increased at all sections near the riverbank during the last three (3) decades.

Environmental Impact Assessment

The Waterfront project is expected to have a major positive impact on the surrounding environment. Beautification of the area and the impact of greenery including trees and plants within the grass

covered landscaped area will improve the livability of the Waterfront and contribute to the visitors' mental health.

However, the project activities may also negatively affect the surrounding environment during the construction phase as follow:

- The construction activities may pose a moderate risk on the quality of air (dust) resulting from the movement of construction equipment/vehicles and exhaust emissions. Noteworthy to mention is that the air quality in the project area is described to be suboptimal, due to high road traffic, human habitation, and related activities in the inner city.
- The construction activities may pose a moderate risk on surface water, specifically the Suriname river as a result of the use of construction equipment and waste generation.
- The project is expected to have a minor impact on groundwater. The groundwater aquifers are at sufficient depth, and therefore, the risk for contamination of drinking water is very low.
- Noise generation from construction works can be characterized as “customary” for inner city construction projects, partly due to high road traffic and related activities in the area. Other construction works are expected to generate relatively low levels of noise from roadside reconstruction (walkways) and recreational areas, especially the vegetation and landscaping works. Since piling works are excluded from the study scope, vibrations can be qualitatively classified as low to very low.
- In addition, construction- and general waste generated by workers at the Waterfront pose a moderate risk and should be properly handled and disposed of. With the implementation of a waste management plan, the impact of waste can be reduced to negligible.
- The risk of river flooding, pluvial flooding, and riverbank erosion as a consequence of climate change have been assessed. The impact of climate change with regard to river flooding without and with sea level rise is considered major, but with the implementation of the proposed mitigation measures it can be reduced to moderate. The impact of climate change with regard to pluvial flooding and riverbank erosion is considered major, but with the implementation of the proposed mitigation measures they can be reduced to minor.

Overall, all moderate environmental impacts described above can be minimized to minor or negligible with mitigation and management measures.

Socio-Economic Environment

The Waterfront lies in Paramaribo North-East, an area known as the busiest part of Paramaribo. The project site is part of a public area, surrounded by historical buildings, attractive to tourists and residents. The Waterfront area has a very rich cultural history, and archeological artifacts are likely to be found underground.

Public offices, private residents, schools, and businesses are currently active at the Waterfront. An estimated 285 people are employed in the direct study area. In addition, the area is populated with numerous homeless people who temporarily reside at the Waterfront, thereby negatively affecting the ambiance and public safety. Without permanent security on site, the Waterfront remains an unsecure area for most residents and users.

Generally, District Paramaribo has good educational services. Residents, businesses, and vendors can attend primary- and secondary education level schools located within a 1 km-radius, and higher education schools are available close by or on site.

In terms of healthcare, hospitals and emergency rooms are located within a 5–10-minute trip by car. This is especially important for 63% of the existing vendors, residents, and businesses, who carry chronic diseases, including cardiovascular diseases. Other important services available on site are 24/7-hour electricity, telecommunication and potable water.

Parking at the Waterfront can be a challenge to residents, business, vendors, and visitors because the area belongs to the busiest areas in the inner-city of Paramaribo. 13% of the local users park using the estimated 77 parking spaces. Often business owners and residents use parking spaces located on their own parcels.

Overlapping activities between local users have caused incidents and conflict. Residents experience noise nuisance coming from loud music coming from the food stands at night. Also, food vendors experience nuisance from other food vendors playing loud music.

The most vulnerable groups at the study site are a group of about 30 food- and craft vendors, especially the indigenous women crafters who are renting/leasing a business from the local authority for their economic activities at the Waterfront site. The vendors are earning an income by daily selling goods to visitors. 20% of these local vendors are considered vulnerable by living below the poverty line and/or being female-headed households with numerous dependents. Only 32% of food- and craft vendors completed primary education and 8% received no education at all. 86% of crafters are of indigenous- or maroon origin.

Food vendors earn considerably more than craft vendors at the Waterfront. Compared to the one-person businesses of crafters, food vendors have larger businesses with 2-5 workers. Crafters use household monies mainly for basic human needs such as food, housing, utilities, travel, and communication, while food vendors have more monies available for paying for education, healthcare, entertainment, and internet connectivity. Important to note is 4% and 12% of all craft- and food vendors don't have 24/7-hour electricity and water supply at home, respectively.

Social Impact Assessment

The Waterfront Redevelopment Project is expected to attract more tourists and visitors, resulting in a moderate positive impact on livelihood for the craft- and food vendors. Another positive impact comes from the proposed visual changes to beautify the area. Besides these positive impacts, the sources of potential risk and associated negative social impacts from Waterfront Redevelopment Project are:

- Construction activities will displace and will require a temporary relocation of craft- and food vendors, which poses a risk to their livelihood and income.
- The project may violate the safety of Waterfront residents- and users due to a temporary influx of workers, decrease of parking safety during construction, and the continued risk for homeless people residing in the area.

- The project may affect the health of the Waterfront residents- and users by temporary standing water and associated risk of disease during construction.
- The project is expected to temporarily disrupt traffic, especially emergency and special (bank) transport, and to limit parking availability.
- Excessive noise caused by heavy machinery may disturb residents and users in the construction phase.
- River and pluvial flooding events are likely to occur and can cause social disruption for the local residents living along the Waterfront road, especially the junction of the Mr. J.C. de Mirandastraat and the Waterfront.
- Although, there is a group of indigenous women craft vendors who will be temporarily displaced of the Waterfront site, the project does not violate their rights to land/territory or resources, nor affect their cultural identity. In consideration to the Bank's OP-765, the preparation of this ESIA has included a sociocultural assessment of this group to ensure that their characteristics, views, needs, and concerns were considered and addressed by the project. The group of crafters will be relocated and financially compensated according to the LRP. They will temporarily move to a site near the current vending location to continue their craft business for the period of project construction".

All moderate impacts described above can be reduced to minor or negligible with mitigation- and management measures. However, the quality of life of residents and users may experience a moderate impact when one- or more of the following impacts are felt simultaneously: i) nuisance from noise/vibration, ii) violation of personal- and vehicle safety, iii) lack of access to residence, iv) lack of parking spaces. The overall cumulative impact is expected to be negligible with appropriate mitigation- and management measures.

Environmental and Social Management and Monitoring Plan

The Environmental and Social Management and Monitoring Plan (ESMMP) in Chapter 7 outlines the key environmental management and safeguards that will be initiated by the project proponent to manage the project's key environmental and social impacts.

The ESMMP provides tools for mitigating or offsetting the potential adverse environmental and social impacts resulting from various activities of the project and management measures that are to be applied during the project's implementation to avoid, reduce, and mitigate adverse environmental impacts. It also lays out the monitoring requirements for ensuring limited effect on the biophysical and social environment.

Conclusion

The proposed project activities have been evaluated for potential impacts to the biophysical and socio-economic environment. With the application of proper mitigation measures, almost all potential impacts associated with the Waterfront can become minor or negligible significance.

The residual effect from climate change - river flooding - will stay moderate with mitigation measures in the construction phase. The predicted river flood impact will affect residents and businesses situated along the Waterfront road. To sufficiently address this impact, PURP needs to work closely with the surrounding residents to prepare them for such flood events.

The overall conclusion of the ESIA study is that, with adequate mitigation and management measures, and the implementation of the ESMMP, the redevelopment of the Waterfront can be conducted in an environmentally safe and socially responsible manner.

1 Introduction

1.1 Background of the Project

In 2017, the Surinamese Government received a loan of 20 million US\$ dollars from the Inter-American Development Bank to finance the Paramaribo Urban Rehabilitation Program (PURP) to contribute to the socio-economic revitalization of the Paramaribo historic center. The program, implemented by the Ministry of Education, Science and Culture, aims to i) attract new residents and commercial activities, ii) restore the value of its cultural heritage, iii) reduce traffic congestion, and iv) strengthen the institutional framework for managing its sustainable development.

Paramaribo's historic Waterfront, situated along the Suriname River, is the most important public space within the historical center defined as a World Heritage Site (WHS) by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The Waterfront provides a unique opportunity to reimagine the center as a vital area of residence and public encounter and as a main core of everyday leisure activities and yearly events. There is an urgent need to rethink the city's relationship with water and develop new strategies for adapting and mitigating climate change.

The historic city center further faces a wide range of problems related to traffic and mobility which contributes to its current chaotic state. Traffic congestion, unregulated parking, inadequate sidewalks, and lack of infrastructure for alternative modes of transportation such as bicycle paths, are issues encountered by everyday users. Homeless people and drug addicts near the Waterfront is a pressing problem. Homeless people have always been a social economic problem and due to the global pandemic (COVID19), this problem has increased. The homeless group generates expenses for the community and can be a deterrent to downtown visitors.

PURP has developed a new design for the redevelopment of the Waterfront and improvement of mobility infrastructure (Figure 1-1). The design was consulted with key stakeholders and considered several aspects including: safety and security, traffic flow and parking, signage and markings, bus routes, facilities for bicycles and pedestrians, space for (un)loading, connection to the water, tourism's revitalization, homeless people, preservation of monuments, trees/shade, spaces for events and culture, spaces for commercial activities, sport/leisure activities, spaces for craft seller, accessibility for disabled persons, seating, 24/7 access, waste management, and utilities.

The construction of the new Waterfront will include: i) building of management office with public toilets, ii) building of space for crafter stalls, iii) building of a look-out tower, iv) building of a balcony/stage, v) building of a children's playground, vi) building of a multifunctional area, vii) building of an amphitheater, viii) construction of sidewalks and bicycle paths, ix) construction of parking spaces, x) landscaping: benches, biking stalls and green spaces, xi) provisions of signage and markings.

To prevent or mitigate any environmental and social issues that may occur during the implementation of the Waterfront project, an Environmental and Social Impact Assessment (ESIA) was conducted according to the national guidelines commissioned by the National Institute for Environment and Development in Suriname (NIMOS), the IDB Operational Guidelines for the Environment and Safeguards Compliance Policy, and the Operational Guidelines of the UNESCO World Heritage Organization.

1.2 Purpose of the ESIA

Based on NIMOS guidelines, the current ESIA is categorized as a **limited ESIA (Category B Path 2)**. In addition, this ESIA is also a requirement from the IDB as per the Operational Policy OP-703, directive B.5. The ESIA process aims to identify, predict, and evaluate the environmental and social effects of the proposed project. The general purpose of conducting an ESIA study is to:

- Provide information for decision-making on the environmental and social consequences of proposed project by identifying potentially significant environmental and social effects and risk of the proposed project.
- Promote environmentally sound sustainable development through the identification of appropriate enhancement and mitigation measures.

At the heart of environmental and social impact assessment is a risk management process, which comprises of four main stages:

1. Characterization of the existing environment and identification of the environmental and socio-economic hazards (or aspects) associated with the activity.
2. Assessment of the magnitude and significance of these hazards (the likelihood of the hazard and the severity of the impact).
3. Description of proposed control techniques to eliminate or mitigate the likelihood of the hazard or severity of the impact; and
4. Development of plans/procedures to manage consequences of exceptional events.

For the proposed Waterfront Redevelopment Project, environmental and social control measures are an integral part of the project planning. The environmental and social impact assessment was undertaken to confirm the effectiveness of proposed project controls and to identify specific circumstances that may warrant additional control measures which are presented in an environmental and social management and monitoring plan (ESMMP).

Recommendations made by an ESIA study may require redesign of some components of the proposed project, require further studies and/or notify modifications which may alter the economic viability of the project or cause delay in its implementation.

The ESIA has also been prepared in compliance with the IDB's operational environmental and social safeguards policy, OP-703, directives B.4 and B.5 in which projects classified category B for its environmental and social impacts and risks are required to prepare and environmental and social impact assessment.

1.3 Study Approach

The ESIA study of the Waterfront Redevelopment Project was prepared in compliance with Suriname requirements under mandate of the Environmental Framework Act and as outlined in the NIMOS Environmental Assessment Guidelines (2009) and in accordance with the Scoping Report¹. The study was prepared with reference to industry best practice to provide environmental/socio-economic protection for the proposed development activities. An overview of the study approach is provided in the following sections.

1.3.1 Data Collection

The ESIA provides a detailed qualitative and quantitative description of the Waterfront project. All aspects of the project that could affect environmental, cultural, or social resources were addressed, including natural resources used by the project and waste generated discharges to air, water, and land and noise emissions.

Data on the background socio-economic and environmental conditions in the area, and the regulatory regime were collected as follows:

- As a desk-top exercise, collating information from the internet, databases, and a library search of published information
- Field survey and sampling
- Interviews with potentially affected people
- Liaison with relevant Surinamese government bodies, academic community, and other stakeholders such as craft and food seller representatives.

The study gathered data for the baseline through a series of **specialist studies**, which were comprehensive and provided relevant information for the ESIA process.

a. Specialist Studies

The baseline assessment process for the ESIA will focus on gathering environmental and social baseline information and obtaining an in-depth understanding of the affected natural and social environments. The baseline studies to be included are:

- Noise
- Air quality
- Water Quality
- Natural Disaster Risk

¹ Perspectives of Freedom Foundation. 2023. Final Scoping Report for the ESIA Waterfront and Improvement of Mobility Infrastructure

- Socio-Economic conditions

Other specific studies include the preparation of:

- Emergency Response Plan
- Waste Management Plan
- Health and Safety Plan

Table 1-1 shows the team of specialists conducting these baseline studies.

Table 1-1: List of Specialists for the Environmental and Social Impact Assessment, Baseline and Specific Studies

Baseline study	Specialists
Noise, Air, and Water Quality Study	ILACO N.V.
	Dirk Noordam
	Shareen Koenjbiharie
	Marie Fortune
Natural Disaster Risk Study	Moekiran Armand Amatali
	Sieuwnath Naipal
Emergency Response Plan Waste Management Plan Health and Safety Plan	Florence Sitaram-Tjin A Soe
	Raisa Abendanon
Socio-Economic Study	Gwendolyn Smith
	Dunja Burkhardt
	Melvin Uiterloo
Socio-Economic Study Revision	Reana Burke

1.3.2 Impact Assessment Methodology

a. Standards and Guidelines

The ESIA was prepared in compliance with Suriname requirements under the mandate of the Environmental Framework Act and as outlined in the NIMOS Environmental Assessment Guidelines².

The ESIA was also conducted using recognized standards, methods and approaches, and international best practices. Particularly, the IDB standards including the environmental safeguard policy (OP-703), operational policies on indigenous peoples (OP-765), involuntary resettlement (OP-

² NIMOS. 2009. Environmental Assessment Guidelines Volume 1- 2nd Edition.

710), gender equality (OP-761), access to information (OP-102), and natural disaster risk management (OP-704) and guidelines for meaningful stakeholder participation, and the UNESCO World Heritage Operational Guidelines.

b. Categorization of Impacts

For key potential impacts, the ESIA relied on the following methodology to determine the significance of each impact, based upon qualitative or quantitative assessment of the following:

- Magnitude
- Geographical scale
- Duration
- Probability of occurrence.

The resulting impact was indicated by their significance class, which classes are defined as:

- Major (significant) effect: effect expected to be permanent or continuous and non-reversible on a national scale and/or have international significance.
- Moderate (significant) effect: long-term or continuous effect, but it is reversible and/or it has regional significance.
- Minor (not significant) effect: effect confined to the local area and/or of short duration, and it is reversible.
- Negligible (not significant) effect: effect not detectable.
- Unknown effect: insufficient data available to assess the significance of the effect.

In addition, impacts were classified as:

- Positive: indicating whether the impact will have a positive (beneficial) effect; or
- Negative: indicating whether the impact will have a negative (adverse) effect on the environment, including affected people.

The degree of detail enabled the determination of required mitigation and possible enhancement measures, respectively to prevent or reduce significant negative impacts and promote any positive impacts already in the planning phase. The implementation of mitigation measures will reduce negative environmental impacts to an acceptable level.

After implementation of mitigation/enhancement measures the significance of the impacts again was determined. The impact assessment methodology is described below.

The **significance** of an impact is defined as a combination of the **severity** of the impact occurring and the **probability** the impact will occur. The significance of each identified impact was rated per methodology set out below:

First the **intensity/magnitude/size, scale** and **duration** of the impact was determined according to Table 1-2, Table 1-3, and Table 1-4.

Table 1-2: Defining the intensity / magnitude / size of the negative impacts.

Rating	Description of Rating for		
	Natural environment	Socio-cultural environment	Health/safety
High	Irreversible damage to highly valued species, habitats, or ecosystems	Irreparable damage to highly valued items of cultural significance, or social functions or processes are severely altered	Event resulting in loss of life, serious injuries, or chronic illness; hospitalization required
Medium	Reversible damage to species, habitats, or ecosystems	Repairable damage to items of cultural significance, or impairment of social functions and processes	Event resulting in moderate injuries or illness; may require hospitalization
Low	Limited damage to biological or physical environment	Low-level damage to cultural items, or social functions and processes are negligibly altered (nuisance)	Event resulting in annoyance, minor injuries, or illness, not requiring hospitalization
Negligible	No relevant damage to biological or physical environment	No damage is done to cultural items and social functions and processes are not altered	Event is not experienced by receptors or only occasional minor annoyance

Table 1-3: Defining the intensity / magnitude / size of the positive impacts.

Rating	Description of Rating for		
	Natural environment	Socio-cultural environment	Health/safety
High	Direct benefits to species, habitats, and resources with significant opportunities for sustainability	Benefits to local community and beyond	Health and safety will be significantly improved
Medium	Moderate benefits to species, habitats, and resources with some opportunities for sustainability	Benefits to many households or individuals	Health and safety will be improved
Low	Minor benefits to species, habitats, and resources with possible opportunities for sustainability	Benefits to few households or individuals	Health and safety will be slightly improved

Table 1-4: Defining duration and scale of the impact.

Rating	Definition of Rating
Duration – the time frame for which the impact will be experienced	
Short-term (ST)	Up to 1 year
Medium-term (MT)	1 to 10 years
Long-term (LT)	More than 10 years
Scale – the area in which the impact will be experienced	
Small (SS)	Localized spot
Medium (MS)	Part of study area
Large (LS)	Whole study area or beyond

Then, the **Severity Rating** of the impact was determined by combining the **magnitude** of the impact with **duration** and **scale** of the impact (Table 1-5) as set out below.

Table 1-5: Determination of the Severity Rating of the impact

Magnitude	High	Medium	Low	Negligible
Duration and/or Scale				
LT-LS, LT-MS or MT-LS	High	High	Medium	Negligible
LT-SS, MT-MS, MT-SS, ST-MS or ST-LS	High	Medium	Low	Negligible
ST-SS	High	Low	Negligible	Negligible

The next step was to define the **probability** of an impact to occur, as defined below (Table 1-6).

Table 1-6: Defining the probability of the impact.

Probability– the likelihood of the impact occurring	
High	Sure to happen, or happens often
Medium	Could happen, and has happened in Suriname before
Low	Possible, but only in extreme circumstances

Finally, the overall **significance** of the impact was determined as explained below (Table 1-7).

Table 1-7: Determination of the overall Significance of the impact

Severity	High	Medium	Low	Negligible
Probability				
High	Major	Moderate	Minor	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Major	Minor	Negligible	Negligible

c. Cumulative Impacts

Anthropogenic activities can result in numerous and complex effects on the natural and social environment. While many of these are direct and immediate, the environmental effects of individual activities can combine and interact with other activities in time and space to cause incremental or aggregate effects. For the purposes of this report, cumulative impacts are defined as 'direct and indirect impacts that act together with current or future potential impacts of other activities or proposed activities in the area/region that affect the same resources and/or receptors.

d. Mitigation and Control Measures

Practical mitigation measures and management actions were developed to avoid unnecessary damage to environmental and socio-economic resources and receptors, safeguard important resources, natural areas, habitats, and ecosystems and protect humans and their associated social environment. Such measures were based on the nature of potential impacts to avoid, reduce, remedy, or compensate where the status of such impacts is negative, or to enhance and improve the impacts where it has a negative impact. Impacts were considered as follows:

- Major negative impacts were considered to be unacceptable and require mitigation (e.g., avoided, minimized, reduced or compensated for).
- For moderate negative impacts, the focus of specific mitigation measures was to reduce these to as low as reasonably practicable.
- Minor impacts can be controlled through the adoption of best practice management measures. Mitigation measures were identified and developed.

e. Monitoring

The ESIA study also defines monitoring requirements to determine whether mitigation is successful. Although monitoring is often overlooked since it occurs once the project has been approved and is underway, it is important for providing evidence that PURP is achieving compliance and allowing for any necessary remedial measures to be put in place.

f. Stakeholder Engagement and Consultation

Stakeholder consultation is a key component throughout the ESIA process. The key objectives of stakeholder consultation and public participation for this project will include the following:

- Enhance the quality of the baseline by collecting information from experts and local organizations and stakeholders.
- Inform stakeholders of the proposed construction activities.
- Solicit the opinions and address the concerns of those individuals or groups that may be adversely affected by proposed operations whether through routine or accidental operations.

The ESIA conducted the following public participation activities to effectively include the view of the stakeholders.

- A Scoping session with key-stakeholders at the beginning of the ESIA process to solicit their views and concerns and to allow for their participation in the design of the social and environmental assessment process.
- A Seminar to present and discuss findings of the ESIA with stakeholders and to seek consensus on the proposed action plan was held at May 16, 2023.
- In addition, a public consultation plan was developed for the effective inclusion of stakeholders in the construction and operations phases of the Waterfront Redevelopment Project (Chapter 8). Since works did not start 12 months after these consultations, additional stakeholder engagement will be needed before constructions starts. Prior to the commencement of the project, stakeholders at the project site will be informed through personal visits from members of the PIU, phone calls, and flyers/brochures. Announcements will also be placed in the social media and website of PURP as well as in the governmental media channel (Communicatie Dienst Suriname – CDS). In the report there is more information on stakeholder engagement.

1.4 Assumptions and Limitations

As is standard practice, the ESIA is based on a number of assumptions and is subject to certain limitations. Relevant assumptions and limitations are listed below.

- The ESIA process was conducted synchronously with the finalization of the project design.
- The ESIA process was conducted with tight timelines. It is assumed that sufficient environmental and social data was obtained by specialists to enable them to draft an adequate baseline description of the existing environment.\
- The ESIA process assumes enough in-depth information gathered with specialist studies that no further detailed analysis is necessary to identify impacts.
- POF made every effort to conform to international best practice guidelines and standards, within the constraint of the project.

The above-mentioned assumptions and limitations do not compromise the integrity of the report.

1.5 Structure of the ESIA Report

The ESIA report will be structured as follows:

Executive Summary. A summary of the main findings of the ESIA.

Chapter 1 Introduction - provides an introduction to and motivation for proposing the project, explains the purpose of this report and gives an overview of the approach to and methodology of the ESIA.

Chapter 2 Policy, Legal and Institutional Framework - provides an overview of the applicable international and national legal and regulatory framework, as well as the management instruments and institutions responsible for the project.

Chapter 3 Project Description - provides a description of the proposed infrastructure and the site where this infrastructure should be constructed.

Chapter 4 Evaluation of Alternatives - provides a description of the alternatives to the proposed project, including the analysis of the site as well as the proposed project components.

Chapter 5 Description of the Existing Environment - describes the receiving biophysical and socio-economic environment in which the project will occur.

Chapter 6 Environmental and Social Impact Assessment - identifies and assesses potential impacts associated with the proposed project and recommends mitigation and optimization measures.

Chapter 7 Environmental and Social Management and Monitoring Plan - describes the mitigation/management measures and monitoring measures which can be taken to minimize adverse impacts of the operation.

Chapter 8 Public Consultation Plan - provides an overview of the procedures necessary for an effective and inclusive public consultation process to engage stakeholders in the project.

The specialist studies and relevant procedures are included as Appendices to this ESIA Report.

2 Policy, Legal and Institutional Framework

This section provides information on the legal and regulatory framework of Suriname applicable to the ESIA for the redevelopment of the Waterfront. This encompasses national legislation, international agreements, and conventions that Suriname has ratified, as well as global standards and procedures that are applicable to the planned undertakings.

2.1 Policy and Legal Framework

Development Plan

The Government of Suriname has developed a series of national plans that can be used as guidance in any project to be developed in the country. The Development plan of Suriname 2021 – 2026 (MOPS) forms the overarching planning and policy document for the development of the country in the widest sense. The general objective of the development plan is to build and maintain a national economy free from foreign domination with participation of citizens, and from which citizens benefit.

Constitution of the Republic of Suriname

The ‘Grondwet van de Republiek Suriname S.B. 1987 no.116 z.l.g bij S.B. 1992 no.38’ (Constitution of the Republic of Suriname S.B. 1987 no. 116 as amended by S.B. 1992 no. 38) functions as the umbrella law for all existing and future legislation in Suriname. It provides a legal basis for the country’s environmental policies. Article 6g states that — the social objective of the State is directed towards the creation and stimulation of conditions necessary for the protection of nature and the maintenance of ecological balance. In the context of conservation and protection of natural and cultural heritage, the Constitution states under article 47 the following: “The State preserves and protects the cultural heritage of Suriname, stimulates its preservation and promotes the practice of science and technology within the framework of the national development goals”. Lastly, the Constitution states that each worker has the right to safe and healthy working conditions (Article 28) and each person in Suriname has the right to health (Article 36).

Environmental Framework Act

In March 2020, the ‘Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act (EFA) S.B. 2020 no. 97)’ was approved by the Parliament and published in the Gazette in May 2020. The EFA aims to protect and elevate sustainable management of the environment in Suriname. The Act establishes the National Environment Authority (NMA) as a statutory body responsible for the implementation and enforcement of this law.

In July 2020, the institutional structure for environmental management changed with the change of Government. The structural change included the establishment of a Ministry for Spatial Planning and Environment (ROM). The Ministry of ROM aims to coordinate all environmental activities in the country.

Legal positioning of the Ministry of ROM became a priority of the Government, and a formal working group was established for amending the Environmental Framework Act. The amendment proposes the Ministry to become primarily responsible for coordinating Environmental Policy while the NIMOS is being transformed into the National Environmental Authority.

2.2 Legal Requirements for Environmental Impact Assessment

With the promulgation of the 'Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act S.B. 2020 no. 97)', environmental social impact assessments became mandatory. The legal and regulatory implementation of environmental impact assessments is governed by NIMOS (currently in the transition phase to operate as the NMA). NIMOS' office of Environmental and Social Assessments is responsible for the implementation of ESIA processes in Suriname. The proposed ESIA is categorized as a limited ESIA (Category B Path 2) and will follow the national guidelines of NIMOS.

For the purpose of this project, the following Environmental Impact Assessment (EIA) Guidelines are being used:

- Volume I: Generic Guidelines (2009) – This volume contains general guidelines for determining whether an Environmental Impact Assessment (EIA) is required, the nature and extent of the analysis, and the procedure that should be followed in the conduct of an EIA. The guidelines cover aspects such as project screening, classification of projects, scoping guidelines, public consultation, structure of the EIA report and the EIA report review process, including criteria for review and a compliance checklist. Project screening is required to determine if an EIA is required and the appropriate level (category) of the EIA. Projects are classified into one of three categories: 1) Category A - EIA is mandatory, 2) Category B - limited form of EIA is required and 3) Category C - no EIA is required.
- Guidance Note (2017) – As a supplement to generic Environmental Assessment Guidelines (Volume I), NIMOS released a Guidance Note titled 'NIMOS Environmental Assessment Process (2017)'. This note outlined the EA process that needs to be implemented (prior to the promulgation of the Environmental Act and EIA Regulations). It describes five EIA process phases: 1) screening, 2) scoping, 3) assessment, 4) review and decision-making phases, 5) associated reporting requirements, as well as NIMOS decision-making timeframes.

At the conclusion of the EIA process, NIMOS provides official advice whether to approve or deny the project to the agency authorized to issue a permit for the proposed development or activity.

The most important provisions in the Environmental Framework Act, related to the proposed project activities are:

1. The **Duty of Care**, whereby every citizen has a general duty to care for the environment, including refraining from acts or omissions that have adverse effects on or consequences for the environment.

2. **Environmental and Social Impact Assessment.** Although the ESIA process has been administered by NIMOS since 2005, the promulgation of the Environmental Framework Act has made an ESIA mandatory. The EIA Regulations still need to be promulgated. Pending the approval of the EIA regulations, the NIMOS EIA Guidelines are still in force.
3. **Pollution and standards.** Environmental standards for pollution should be developed as regulations fall under the Environmental Framework Act. Such regulations cover all activities from the application of the environmental permit to the rehabilitation of affected areas. The pollution regulations regulate the determination of contaminants, the Maximum Allowable Concentration values for release of contaminants and procedures for the rehabilitation of contaminated areas. Pollution regulations have already been drafted. After the pollution regulations have been promulgated, the waterfront management board will have to ensure that future activities are in compliance with these regulations.
4. **Waste management, hazardous substances, and emergency plans.** The NMA should determine the standards and procedures for handling of waste (collection, transportation, storage, and transfer). Currently, regulations on waste management and hazardous substances have already been drafted. The MA can impose procedures for the import, export, safe storage, handling, transport, use and disposal of hazardous substances. Such procedures can become part of the permit approval process. Furthermore, the NMA is authorized to demand an emergency response plan for storage, use and transportation of contaminants, waste, or hazardous substances. After the regulations have been promulgated, the waterfront management board will have to ensure that future activities are in compliance with these regulations.
5. **Environmental Audits.** The Environmental Framework Act provides for guidelines and procedures to be enforced for conducting an audit. However, these guidelines were not prepared at the time this study was conducted.

2.2.1 Legislation Relevant to the Project

Legislation in Suriname that applies to the Redevelopment of the Waterfront project activities as well during the operation of the Waterfront is presented in Table 2-1.

Table 2-1: Relevant national legislation

BUILDING ENVIRONMENT		
Act	Content	Relevance
Bouwwet G.B. 1956 no. 30 z.l.g. bij S.B. 2002 no. 93 (Building Code G.B. 1965 no. 30 as amended by S.B. 2002 no.93) and the 'Bouwbesluit no.1 G.B. 1956 no.108, z.l.g. bij S.B. 2002 no.93 (Building State Order G.B. 1956 no. 108 as amended by S.B. 2002 no.93)'	This legislation provides for the control of the Construction of Buildings through a permitting system. The regulations outline the technical requirements for building structures and specific rules concerning the setting up of latrines and septic tanks and the discharge of wastewater.	A building permit is required for building activities under the proposed project.
Stedebouwkundige wet G.B. 1972 no. 96, S.B. 1982 no. 94 z.l.g. bij S.B. 2002 no. 72 (Urban Planning Act G.B. 1972 no. 96, S.B. 1982 no. 94, last amended by S.B. 2002 no. 72)	This Act contains procedures for the development of structure and zoning plans.	The Act requires that construction must take into account the regulations of a zoning plan. However, there is no zoning plan for the current area

BUILDING ENVIRONMENT		
Act	Content	Relevance
<p>Wetboek van Strafrecht G.B. 1911 no.1 z.l.g bij S.B.2020 no. 42 (Penal Code G.B. 1911 no.1 as amended by S.B. 2020 no.42)</p> <p>Politie strafwet G.B. 1915 no. 77 z.l.g bij S.B. 1990 no. 24 (Police Criminal Act G.B. 1915 no. 77 as amended by S.B. 1990 no. 24)</p>	<p>The 'Wetboek van Strafrecht G.B. 1911 no.1 z.l.g bij S.B.2020 no. 42 (Penal Code G.B. 1911 no.1 as amended by S.B. 2020 no.42)' and 'Politie strafwet G.B. 1915 no. 77 z.l.g bij S.B. 1990 no. 24 (Police Criminal Act G.B. 1915 no. 77 as amended by S.B. 1990 no. 24)', which are both criminal acts, penalize water pollution and littering. In addition, the articles in the Penal Code do not only penalize water pollution, but also air and soil (see art. 225a and 225b of the Code).</p> <p>The Police Criminal Act contains a few general provisions with respect to public places, including noise, control of pests, hunting and fishing etc.</p>	<p>All activities under the project should avoid littering and water pollution</p>
<p>SSB 010: 2019 Standaard voor vuilophaal en -verwerking. Deel 1: Collectie van Huishoudelijk, Medisch, Industrieel, Gescheiden en Grof afval (SSB 010:2019 Standard for waste collection and processing. Part 1: Collection of Household, Medical, Industrial, Separated and Bulky waste)</p>	<p>In the absence of legislation on waste management, the Ministry of Public Works has requested the Suriname Standards Bureau (SSB) to develop a Standard on Waste. In response the SSB initiated the process to set up the standard on garbage collection and processing.</p> <p>Part one of the Standard was published on January 23, 2019. It covers household, medical, industrial, and bulky waste and provides a procedure for packaging, offering and pickup, including the frequency of waste pickup.</p>	<p>It is recommended that this standard is followed for waste management activities related to the proposed project.</p>

BUILDING ENVIRONMENT		
Act	Content	Relevance
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)	<p>The '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)' aims to prevent the cause of danger, damage or hindrance caused by undertakings (enterprises) to the outside-fence surrounding environment.</p> <p>According to the Nuisance Act, all new undertakings need a written 'Nuisance Act Permit' ('Hinderwetvergunning') issued by the District Commissioner (DC) who should seek advice from the Bureau for Public Health, the Department of Labor Inspection, the Head of the Fire Department etc.</p> <p>In case of outside-fence hindrance caused by air pollution and noise, soil and water pollution and generation of solid or liquid waste, this act can be enforced.</p>	Project activities for which a nuisance permit has been issued should be in compliance with the permit requirements.
Waterleidingswet G.B. 1938 no.33 (Water Supply Act G.B. 1938 no.33)	<p>Obligates owners of buildings and houses to make use of the public water supply system. It prohibits the possession of water tanks and wells in the areas where the law is applicable. It is prohibited to own or possess wells, pits or others that are used to extract water, bins, barrels or other similar objects which will be used for the collection and / or storage of water. Above-mentioned is not applicable for water companies that have a license from the Government.</p>	The connection to the water supply network of the Suriname Water Company (SWM) should be in compliance with this Act.

CULTURAL HERITAGE		
Act	Content	Relevance
Monumentenwet 2002, S.B. 2002 no.72 (Monuments Act 2002, S.B. 2002 no.72)'. 	This Act, regards the preservation of historical monuments and architecture in Suriname.	If artifacts to be found during excavation, the procedure as set out in the Monuments Act is to be complied with.
Besluit instelling van Bouwcommissie en aanwijzing historische binnenstad G.B. 1956 no.30, z.l.g. bij S.B. 2001 no.74 (State Order on the establishment of the Building commission and designation of the historic inner city S.B. 2001 no.74)'. 	In this State Order provisions are made upon the establishment of the Construction committee and its tasks. Further on the boundaries of the historic city center are indicated as well as the designation of two buffer zones adjacent to the historic city center.	The project site is part of the Historic City Center. The Building Committee will advise the Director of the ministry of Public Works.
Besluit Instelling bijzondere eisen aan bouwplannen voor de historische binnenstad en aangrenzende bufferzones S.B. 2003 no. 34 (Setting special requirements for building plans for the historic inner city and adjacent buffer zones S.B. 2003 no.34). 	This Order provides for special requirements for building plans for the historic inner city and adjacent zone. Since renovations of the historic inner city are highly susceptible to changes which can result in the loss of the cultural historical character rules / requirements for the construction plans are established. These requirements are also to maintain the cultural historic quality	The special requirements should apply to the project as it is part of the Historic City Center
Bouwwet G.B. 1956 no.30, z.l.g. bij S.B. 2002 no.72 (Building Act G.B. 1956 no.30 as amended by S.B. 2002 no.72) 	This legislation implements a permitting system to control the construction of buildings. If a building plan relates to a monument, it may be refused if it doesn't comply with the permit granted by the Minister responsible for cultural affairs. The Director has the authority to make special demands on building plans in urban and village areas with their own aesthetic character and can assess these requirements with the help of an expert committee. The owner of a dilapidated building must comply with a notice issued by the Director to repair, renovate or demolish the building, or take measures for safety and health within a specified period.	The requirements should apply to the project as it is part of the Historic City Center

CULTURAL HERITAGE		
Act	Content	Relevance
Stedebouwkundige wet G.B. 1972 no. 96, S.B. 1982 no. 94 z.l.g. bij S.B. 2002 no. 72 (Urban Planning Act G.B. 1972 no. 96, S.B. 1982 no. 94, last amended by S.B. 2002 no. 72)	Article 3(3): "The planning rules may provide that it shall be prohibited to designate a certain work area, i.e. no construction or operations may be performed without written permission of the director."	At the moment, no zoning plan have been developed for the area.

OCCUPATIONAL HEALTH AND SAFETY		
Act	Content	Relevance
Arbeidswet G.B. 1963 no. 163 z.l.g. bij S.B. 2011 no. 71 (Labour Code G.B. 1963 no. 163 as amended by S.B. 2011 no.71)	The Arbeidswet G.B. 1963 no. 163 z.l.g. bij S.B. 2011 no. 71 (Labour Code G.B. 1963 no. 163 as amended by S.B. 2011 no.71) regulates different aspects of labor such as working hours, shift work, night work, breaks, rest days, hazardous work, payment, labor inspection, etc.	The labor regulations need to be complied with for the workers involved in both the construction and operational phase of the proposed project.
Veiligheidswet 1947 G.B. 1947 no. 142, z.l.g. bij SB. 1980 no.116 (Occupational Safety and Health Act 1947 G.B. 1947 no. 142, as amended by SB. 1980 no.116)	The Occupational Safety and Health Act 1947 G.B. 1947 no. 142 as amended by S.B. 1980 no. 116 which is a framework act on safety and hygiene in enterprises. Detailed rules are laid down in subsidiary legislation. At present, there are 9 Safety regulations pursuant to the Occupational Safety and Health Act. The Act and the regulations aim to decrease the chances of employment injuries and occupational diseases. They provide specific rules regarding safety on the work floor. Enforcement of the aforementioned laws and regulations is the responsibility of the Ministry of Labor. Suriname is a member of the International Labor Organization (ILO) and has ratified several conventions related to workmen's compensation, safety standards for construction, and labor inspections.	There are several safety aspects associated with the project activities. The Safety Act must be complied with when carrying out the proposed project activities.

OCCUPATIONAL HEALTH AND SAFETY		
Act	Content	Relevance
Veiligheidsvoorschrift nr. 1, G.B. 1972 no. 95 (Safety regulation nr. 1, G.B. 1972 no. 95)	This regulation aims to prevent or diminish the risk of injuries in all enterprises. This regulation is important to factories, mechanical work, construction companies and companies working with machinery and cable systems. It provides technical procedures and measures when power drive machinery is in operation.	To prevent or minimize injuries the proposed project activities should be carried out in compliance with the safety regulation.
Veiligheidsvoorschrift nr. 2, G.B. 1948 no. 104 (Safety regulation nr. 2, G.B. 1948 no. 104)	This regulation aims to promote hygiene (order and prevention of dust) in all enterprises. The regulation provides requirements for hygiene related to cleaning, drainage and washstands and requirements for washing facilities for employees.	Activities in both the construction and operational phase of the proposed project must be carried out taking into consideration the regulations regarding hygiene.
Veiligheidsvoorschrift nr. 3, G.B. 1948 no. 183 (Safety regulation nr. 3, G.B. 1948 no. 183)	This regulation prescribes some measures regarding first aid. These include availability of an emergency compartment kit at site, certified persons entrusted with first aid and where the work involves the risk of drowning, efficient and visible means for rescue (swimming jackets, lifeboats, etc.) should be readily available.	All safety measures must be complied with this regulation.
Veiligheidsvoorschrift nr. 4, G.B. 1948 no. 128; 1969, no 30 (Safety regulation nr. 4, G.B. 1948, no. 128; 1969, no. 30)	This regulation endeavors to prevent the production and spreading of hazardous or irritating gas or dust and to regulate its removal. The obligation is to avoid the use of white lead, sulphate of lead and all products containing these pigments in the internal paintings of buildings and ships.	In case the proposed project activities regard the production and spreading of hazardous and irritating dust, the regulation must be complied with.

OCCUPATIONAL HEALTH AND SAFETY		
Act	Content	Relevance
Veiligheidsvoorschrift nr. 7, S.B. 1981 no 72 (Safety regulation nr. 7, S.B. 1981 no. 72).	This State Order on working conditions, is to promote safe and comfortable working conditions related to inter alia hazardous and disturbing noises and vibrations, temperature, ergonomic aspects, excessive strenuous labour etc.	In order to promote safe and comfortable working conditions, the project activities need to be implemented in compliance with this regulation.
Ongevallenwet G.B. 1947 z.l.g. bij S.B. 2007 no.26 (Industrial Accidents Act G.B. 1947 as amended by S.B. 2007 no.26)	To indemnify the worker and his/her family against financial consequences of industrial accidents and occupational diseases. These accidents related to or in the course of employment include fatal injuries, but also the more gradual development of a sickness because of the performed labour.	The provisions of this Act and requirements thereto are applicable to the proposed project in case accidents or occupational diseases related to the project activities occur.
Rijwet 1971 G.B. 1917 no. 65 z.l.g. bij S.B. 2007 no. 92 (Driving Act 1971 G.B. 1917 no.65 as amended by S.B. 2007 no. 92)	The 'Rijwet 1971 G.B. 1917 no. 65 z.l.g. bij S.B. 2007 no. 92 (Driving Act 1971 G.B. 1917 no.65 as amended by S.B. 2007 no. 92)', as well as the 'Rijbesluit 1957 G.B. 1957 no. 103, z.l.g. bij S.B. 2020 no. 9 (State Order on Driving G.B. 1957 no.103 as amended by S.B. 2020 no. 9)' provides rules for participation in vehicular traffic. This legislation provides, amongst others, for rules regarding loading and unloading of cargo on public roads, transportation of large cargo and it prohibits nuisance caused by motor vehicles.	Project activities related to traffic are required to comply with the Driving Act and its regulations.

2.2.2 International Conventions, Agreements and Guidelines

Suriname is signatory to a number of international agreements and conventions related to environmental management and occupational health and safety. These conventions usually require the Government to implement legal and administrative matters. The following paragraphs provide a listing of the Conventions which are considered relevant to the proposed project.

United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement

Suriname ratified the United Nations Framework Convention on Climate Change in 1997. The purpose of the UNFCCC is to stabilize greenhouse gas emissions in the atmosphere to a degree that dangerous anthropogenic activities do not pose a threat to the climate system. The UNFCCC sets international guidelines on release of greenhouse gas emissions to prevent climate change.

In 2016, Suriname acceded to the Paris Agreement. The Paris Agreement is an international agreement connected to UNFCCC that commits its Parties to mitigate greenhouse gas emissions while fostering sustainable development. The Paris Agreement aims to regulate and control greenhouse gas emissions within Suriname's territory.

The proposed project includes processes that are expected to emit greenhouse gases from vehicle transport, and power generation through heavy fuel combustion. In addition, one of the project's components is planting greenery, such as trees and other vegetation which can contribute to combating climate change.

Stockholm Convention on Persistent Organic Pollutants, 2001

Suriname ratified the Stockholm Convention in 2011. The objective of the Stockholm Convention on Persistent Organic Pollutants (POPs) is to protect human health and the environment from the harmful effects of POPs. The Stockholm Convention aims to eliminate or restrict the production, use, and release of POPs into the environment. It requires participating countries to take measures to control and reduce the production and use of these chemicals, and to develop plans for the environmentally sound management of POPs waste. This convention is relevant if it turns out that there is POPs waste.

Vienna Convention for the Protection of the Ozone Layer, 1985

In 2011, Suriname acceded to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Waste is identified as i) Hazardous waste, dependent on their origin and/or composition and their characteristics, and ii) Other waste, covering household waste and incinerator ash. The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes.

The applicability of the Basel Convention becomes relevant to the proposed project when considered in the context of potential transfer of hazardous waste generated from activities in

Suriname waters to other countries, shipped through the Basic shore base. In such situations, the administrative procedures of the convention should be followed if waste is transported to and from the shore base. NIMOS developed a procedure for exporting hazardous waste. This convention is only relevant if it turns out that there are hazards as defined under the convention.

UNESCO World Heritage Convention, 1972

Suriname ratified the World Heritage Convention in 1997. The Convention seeks to promote international cooperation and understanding in order to safeguard important cultural- and natural sites for future generations. By identifying and protecting these sites, the Convention aims to encourage countries to preserve their heritage and to promote awareness and appreciation of the world's cultural and natural diversity for current and future generations.

The redevelopment of the Waterfront is part of a larger redevelopment plan for the inner city of Paramaribo, focusing on rehabilitating historical buildings and improving social functions. The proposed project is part of the historic city center of Paramaribo and listed as a World Heritage Site under UNESCO. For both the construction and the operational phase of this project, it is important to take into account the requirements of this convention.

UNESCO World Heritage Operational Guidelines 2021

The Operational Guidelines of the UNESCO Convention (hereafter referred to as the Operational Guidelines) aim to strengthen and facilitate the implementation of the Convention to minimize risks related to disputes over the interpretation of the Convention and facilitate litigation to contribute towards international understanding. The Guidelines provide a framework for the identification, protection, conservation, and management of cultural and natural heritage sites that have been inscribed on the World Heritage List. The Guidelines outline the requirements for the nomination, selection, and management of World Heritage sites. The requirements under c, d and e are important as the project area is part of the UNESCO world heritage site.

Some of the key requirements are:

- a. **Identification and Nomination.** For consideration to be placed on the World Heritage List, a site must meet one or more of the ten criteria set out in the guidelines, as well as meet the conditions of authenticity and integrity. The nomination process involves preparing a detailed nomination dossier, including a management plan for the site.
- a. **Protection and Conservation.** The guidelines require that World Heritage sites be protected and conserved for future generations. This includes developing and implementing management plans, monitoring the condition of the site, and taking action to address threats to its integrity.
- b. **Management.** The guidelines emphasize the importance of effective management for the conservation and sustainable use of World Heritage sites. This involves involving stakeholders and local communities in the management of the site, developing, and

implementing management plans, and ensuring that appropriate resources are available for the site's management.

- c. **Reporting and monitoring.** The guidelines require periodic reporting on the state of conservation of World Heritage sites, including updates on the implementation of management plans and measures taken to address threats to the site's integrity. The guidelines also require regular monitoring of the site's condition and the effectiveness of management measures.
- d. **International cooperation.** The guidelines encourage international cooperation to support the protection and conservation of World Heritage sites, including the sharing of knowledge and expertise, technical assistance, and capacity building.

United Nations Declaration on The Rights Of Indigenous Peoples (UNDRIP)

The UNDRIP was adopted by the United Nations General Assembly in 2007. In total, 148 of the 193 UN countries are signatories to UNDRIP, including Suriname. The Declaration sets out the rights of indigenous peoples around the world, including their right to self-determination, their right to maintain and develop their own cultures, and their right to control their own lands and resources.

The Declaration recognizes the unique cultural and social identities of indigenous peoples and acknowledges the historical and ongoing injustices they have faced, including colonization, forced relocation, and discrimination. It affirms the importance of respecting and protecting their cultures, languages, and traditions, as well as their right to participate fully in all aspects of society. The UNDRIP is not legally binding, but it is considered to be a powerful statement of international human rights standards. It has been used as a tool for advocacy and has been adopted as a framework for national laws and policies in many countries.

At the project site there are crafters from Amerindian origin (including maroons) and are likely to be impacted by the project during the construction phase (relocation). This group is identified as a vulnerable group.

UNDRIP articles that are relevant to the current project are:

Article 8:

2. States shall provide effective mechanisms for prevention of, and redress for:

(b) Any action which has the aim or effect of dispossessing them of their lands, territories, or resources.

(c) Any form of forced population transfer which has the aim or effect of violating or undermining any of their rights.

Article 10:

Indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior, and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return.

Article 11:

1. Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature.

2. States shall provide redress through effective mechanisms, which may include restitution, developed in conjunction with indigenous peoples, with respect to their cultural, intellectual, religious, and spiritual property taken without their free, prior and informed consent or in violation of their laws, traditions and customs.

Article 18:

Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own indigenous decision-making institutions.

Article 19:

States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them.

Article 20:

2. Indigenous peoples deprived of their means of subsistence and development are entitled to just and fair redress.

Article 21:

1. Indigenous peoples have the right, without discrimination, to the improvement of their economic and social conditions, including, inter alia, in the areas of education, employment, vocational training and retraining, housing, sanitation, health and social

security. 2. States shall take effective measures and, where appropriate, special measures to ensure continuing improvement of their economic and social conditions. Particular attention shall be paid to the rights and special needs of indigenous elders, women, youth, children, and persons with disabilities.

Article 23:

Indigenous peoples have the right to determine and develop priorities and strategies for exercising their right to development. In particular, indigenous peoples have the right to be actively involved in developing and determining health, housing and other economic and social programmes affecting them and, as far as possible, to administer such programmes through their own institutions.

2.2.3 International Environmental and Social Standards and Best Practices

Where national legislation, standards or guidelines are lacking or where international standards are more stringent, international standards are applied where applicable.

The ESIA was also conducted using recognized standards, methods and approaches, and international best practices. Particularly, the standards of the Inter-American Development Bank (IADB) including the environmental safeguard policy (OP-703), operational policies on indigenous peoples (OP-765), involuntary resettlement (OP-710), gender equality (OP-761), access to information (OP-102), and natural disaster risk management (OP-704) and guidelines for meaningful stakeholder participation, and the UNESCO World Heritage Operational Guidelines.

OP-703 Environmental Safeguard Policy

Objective: This policy aims to help ensure the environmental and social soundness and sustainability of investment projects and to support integration of environmental and social aspects of projects into the decision-making process

Requirements:

- a. **Screening.** Use a screening process for each proposed project, as early as possible.
- b. **Direct/Indirect Impacts.** Assess direct, and as relevant, indirect, cumulative, and associated impacts.
- c. **Sectoral/Regional.** Use sectoral or regional environmental assessment when appropriate.
- d. **Impacts.** Assess potential impacts of the proposed project on physical, biological, socioeconomic, and physical cultural resources, including transboundary and global concerns, and potential impacts on human health and safety.

- e. **Legal Framework.** Assess the adequacy of the applicable legal and institutional framework, including applicable international environmental agreements, and confirm that they provide that the cooperating government does not finance project activities that would contravene such international obligations.
- f. **Alternatives.** Provide alternatives to the current plans.
- g. **PPAH.** Where applicable to the type of project being supported, normally apply the Pollution Prevention and Abatement Handbook (PPAH). Justify deviations when alternatives to measures set forth in the PPAH are selected.
- h. **Prevention/Mitigation.** Prevent and, where not possible to prevent, at least minimize, or compensate for adverse project impacts and enhance positive impacts through environmental management and planning that includes the proposed mitigation measures, monitoring, institutional capacity development and training measures, an implementation schedule, and cost estimates.
- i. **Stakeholder Engagement.** Engage with stakeholders and affected communities throughout the project cycle, to ensure that their perspectives and concerns are taken into account in project design and implementation.
- j. **Integration of Environmental Assessment (EA):** provide measures to link the environmental assessment process and findings with studies of economic, financial, institutional, social and technical analyses of a proposed project.
- k. **Disclosure:** Disclose draft EA in a timely manner, before appraisal formally begins, in an accessible place and in a form and language understandable to key stakeholders.

OP-765 Operational Policy on Indigenous Peoples

The objective of this policy is to design and implement projects in a way that fosters full respect for Indigenous Peoples' dignity, human rights, and cultural uniqueness and so that they: i) receive culturally compatible social and economic benefits; and ii) do not suffer adverse effects during the development process.

Requirements:

- a. **Screening.** Screen early to determine whether Indigenous Peoples are present in, or have collective attachment to, the project area. Indigenous Peoples are identified as possessing the following characteristics in varying degrees: self-identification and recognition of this identity by others; collective attachment to geographically distinct habitats or ancestral territories and to the natural resources in these habitats and territories; presence of distinct customary cultural, economic, social, or political institutions; and indigenous language.
- b. **Consultation.** Undertake free, prior, and informed consultation with affected Indigenous Peoples to ascertain their broad community support for projects affecting them and to solicit their participation: i) in designing, implementing, and monitoring measures to avoid adverse impacts, or, when avoidance is not feasible, to minimize, mitigate, or compensate for such effects; and ii) in tailoring benefits in a culturally appropriate manner.
- c. **Social Impact Assessment.** Undertake social assessment or use similar methods to assess potential project impacts on Indigenous Peoples, both positive and adverse impacts. Give full consideration to options preferred by the affected Indigenous Peoples in the provision of benefits and design of mitigation measures. Identify social and economic benefits for Indigenous Peoples that are culturally appropriate, and gender and inter-generationally inclusive and develop measures to avoid, minimize and/or mitigate adverse impacts on Indigenous Peoples.
- d. **Action Plan.** Put in place an action plan for the legal recognition of customary rights to lands and territories, when the projects involve: i) activities that are contingent on establishing legally recognized rights to lands and territories that Indigenous Peoples traditionally owned, or customarily used or occupied; or ii) the acquisition of such land.
- e. **Commercial Development.** Do not undertake commercial development of cultural resources or knowledge of Indigenous Peoples without obtaining their prior agreement to such development.
- f. **IP Plan.** Prepare an Indigenous Peoples (IP) Plan that is based on the social assessment and draws on indigenous knowledge, in consultation with the affected Indigenous Peoples' communities and using qualified professionals. Normally, this plan would include a framework for continued consultation with the affected communities during project implementation; specify measures to ensure that Indigenous Peoples receive culturally appropriate benefits, and identify measures to avoid, minimize, mitigate, or compensate for any adverse effects; and include grievance procedures, monitoring and evaluation arrangements, and the budget for implementing the planned measures.

- g. **Disclosure.** Disclose the draft Indigenous Peoples Plan, including documentation of the consultation process, in a timely manner before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders.
- h. **Monitor** Implementation of the Indigenous Peoples Plan.

OP-710 Operational Policy on Involuntary Resettlement

The objective of this policy is to avoid or minimize involuntary resettlement and, where this is not feasible, to assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

Requirements:

- a. **Assess Alternatives.** Assess all viable alternative project designs to avoid, where feasible, or minimize involuntary resettlements.
- b. **Social Impact Assessment.** Through census and socioeconomic surveys of the affected population, identify, assess, and address the potential economic and social impacts of the project that are caused by involuntary taking of land (e.g., relocation or loss of shelter, loss of assets or access to assets, loss of income sources or means of livelihood, whether or not the affected person must move to another location) or involuntary restriction of access to legally designated parks and protected areas.
- c. **Address Impacts.** Identify and address impacts also if they result from other activities that are i) directly and significantly related to the proposed project, ii) necessary to achieve its objectives, and iii) carried out or planned to be carried out contemporaneously with the project.
- d. **Stakeholder Consultation.** Consult project-affected persons, host communities and local nongovernmental organizations, as appropriate. Provide them opportunities to participate in the planning, implementation, and monitoring of the resettlement program, especially in the process of developing and implementing the procedures for determining eligibility for compensation benefits and development assistance (as documented in a resettlement plan), and for establishing appropriate and accessible grievance mechanisms. Pay particular attention to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, Indigenous Peoples, ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation.
- e. **Inform Displaced Persons of their Rights.** Inform displaced persons of their rights, consult them on options, and provide them with technically and economically feasible resettlement alternatives and needed assistance, including: i) prompt compensation at full replacement cost for loss of assets attributable to the project; ii) if there is relocation, assistance during relocation, and residential housing, or housing sites, or agricultural sites of equivalent productive potential, as required; iii) transitional support and development

assistance, such as land preparation, credit facilities, training or job opportunities as required, in addition to compensation measures; iv) cash compensation for land when the impact of land acquisition on livelihoods is minor; and v) provision of civic infrastructure and community services as required.

- f. **Preference.** Give preference to land based resettlement strategies for displaced persons whose livelihoods are land-based.
- g. **Resettlement Assistance.** For those without formal legal rights to lands or claims to such land that could be recognized under the laws of the country, provide resettlement assistance in lieu of compensation for land to help improve or at least restore their livelihoods.
- h. **Disclosure.** Disclose draft resettlement plans, including documentation of the consultation process, in a timely manner, before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders.
- i. **Implement Plans.** Implement all relevant resettlement plans before project completion and provide resettlement entitlements before displacement or restriction of access. For projects involving restrictions of access, impose the restrictions in accordance with the timetable in the plan of actions.

OP-102 Access to Information Policy

The main objective of the policy is to provide transparency and accountability in the activities of the IDB. The policy recognizes the right of access to information as a fundamental human right and establishes procedures for requesting and obtaining information from the IDB.

The key provisions of OP-102 Access to Information Policy from the IDB include:

- a. The right to access information held by the IDB, subject to certain exceptions.
- b. The types of information covered by the policy, including project documents, reports, studies, evaluations, and other relevant information.
- c. Procedures for requesting information from the IDB, including the requirement to provide sufficient detail to identify the requested information.
- d. Timeframes for responding to requests for information, including extensions in exceptional circumstances.
- e. Exceptions to the right of access to information, which may only be applied in exceptional cases.
- f. Procedures for appealing a decision to deny access to information.
- g. Requirements for proactive disclosure of information by the IDB, including the publication of project documents, annual reports, and other relevant information.
- h. Procedures for accessing personal information held by the IDB.

OP-761 Gender Equality in Development

This policy aims to promote gender equality and the empowerment of women in development programs and projects supported by the IDB.

The Policy identifies two lines of action: i) proactive action, which actively promotes gender equality and the empowerment of women through all the Bank's development interventions; and ii) preventive action, which introduces safeguards to prevent or mitigate adverse impacts on women or men due to gender resulting from the Bank's actions through its financial operations.

OP-704 Operational Policy on Natural Disaster Risk Management

This policy, which emphasizes risk reduction, is intended to improve the institutional- and policy framework of the IDB to support disaster risk management to help protect the socioeconomic development of borrowing member countries and improve the effectiveness of the Bank's assistance.

It involves the following set of activities: risk analysis to identify the types and magnitude of potential impacts faced by member countries and that affect development investments; prevention and mitigation measures to address the structural and nonstructural sources of vulnerability; financial protection and risk transfer to spread financial risks over time and among different actors; emergency preparedness and response to enhance a country's readiness to cope quickly and effectively with an emergency; and post-disaster rehabilitation and reconstruction to support effective recovery, and to safeguard against future disasters.

World Bank/ IFC Guidelines

The World Bank Sourcebook for Environmental Assessment should be used as a guidance document for this study. The Sourcebook is a reference document that provides practical guidance for identifying and addressing negative environmental impacts of development projects. The Sourcebook aims to collect all World Bank policies, procedures, guidelines, precedents, and best practices that reside in different World Bank publications into a single source. The document is continually updated and covers a wide range of subjects.

For the proposed project, the World Bank International Finance Corporation (IFC) guidelines and specific IFC-EHS guideline for Construction and Decommissioning (2007) are used (Table 2-2). The following IFC Performance Standards are applicable to the proposed project:

Table 2-2: Performance standards of the IFC applicable to the project

IFC Performance Standard	
PS 1: Assessment and Management of Environmental and Social risks and Impacts	Requires the identification and assessment of all social and environmental impacts and risks in the area where the project is implemented. The goal is to prevent and minimize the negative social and environmental impacts and ensure that affected communities are participating effectively. The Standard promotes the use of management systems to improve social and environmental performance.
PS 2: Labor and Working Conditions	The goal is to document, maintain and improve the relationship between employee and employer through fair treatment of employees and compliance with national labor laws. The standard aims to prevent unacceptable forms of labor, e.g., child and forced labor and promotes safe and healthy working conditions. The Standard addresses issues such as human resources policy, non-discrimination and equal opportunity, retrenchment, occupational health and safety, contract labor, etc.
PS 3: Resource Efficiency and Pollution Prevention	PS 3. Focuses on the implementation of the principles of the World Bank's Pollution Prevention and Abatement Handbook at policy level. The goal is to prevent or minimize pollutants resulting from the project activities. Key issues addressed include resource conservation and Energy Efficiency, hazardous materials, waste management, emergency preparedness and Response, ambient and cumulative considerations, greenhouse gas emissions, pesticide use and management.
PS 4: Community Health, Safety, and Security	PS 4. Aims, wherever possible, to minimize and manage the health and safety risks of local communities related to the project activities. Issues addressed entail infrastructure and equipment safety, hazardous material safety and environmental health. The standard is also to ensure that the safeguarding of project related personnel and property is carried out in a legitimate manner that avoids or minimizes risks to the community's safety and security.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	PS 6. Focuses on the protection and conservation of biodiversity and sustainable management of natural resources through the integration of needs for conservation and development priorities. The objectives of the standard are proposed elements of the Convention on Biological Diversity.

IFC Performance Standard	
PS 7: Indigenous People	PS7. Seeks to ensure that business activities minimize negative impacts, foster respect for human rights, dignity and culture of indigenous populations, and promote development benefits in culturally appropriate ways. Informed consultation and participation with Indigenous peoples throughout the project process is a core requirement and may include Free, Prior and Informed Consent under certain circumstances.
PS 8: Cultural Heritage	PS8 aims to guide companies in protecting cultural heritage from adverse impacts of project activities and supporting its preservation. It also promotes the equitable sharing of benefits from the use of cultural heritage.

IFC Guidance Note 8 Cultural Heritage 2012

IFC Guidance Note 8 on Cultural Heritage provides guidance to companies and investors on how to manage cultural heritage risks associated with their projects. The guidance note includes a section on "Chance Finds," which refers to the discovery of cultural heritage artifacts or sites during project implementation that were not identified during the initial assessment.

The Chance Finds procedure recommended by the IFC involves the following steps:

- Stop work in the immediate area where the artifact or site was found.
- Secure the area to prevent damage or disturbance to the artifact or site.
- Notify the appropriate authorities and stakeholders, such as local communities and cultural heritage experts.
- Document the discovery, including its location and any relevant details about the artifact or site.
- Evaluate the significance of the discovery and determine if any additional actions are needed to protect and preserve it.
- Develop and implement a plan to address the discovery, which may include changes to the project design, additional cultural heritage surveys, or other mitigation measures.
- Resume work in the area only after the appropriate authorities and stakeholders have provided approval.
- By following the Chance Finds procedure, companies and investors can ensure that they are complying with applicable cultural heritage laws and regulations, respecting the rights and interests of local communities, and preserving cultural heritage resources for future generations.

This procedure should be incorporated in the Management Program and implemented through the project's Environmental and Social Management System.

IFC Environmental, Health, and Safety (EHS) Guidelines for Construction and Decommissioning (2007)

The EHS Guidelines for Construction and Decommissioning, published by the International Finance Corporation in 2007, provide guidance to project developers, contractors, and consultants on how to manage environmental, health, and safety issues associated with construction and decommissioning activities. Some of the key components of the guidelines include:

- **Waste Management.** Guidelines for managing construction and demolition waste, including recommendations for reducing waste generation, reusing, and recycling materials, and disposing of hazardous waste.
- **Air and Water Quality Management.** Guidelines for managing air and water quality during construction and decommissioning activities, including recommendations for monitoring and controlling emissions and discharges.
- **Worker Health and Safety.** Guidelines for protecting the health and safety of workers, including recommendations for training, personal protective equipment, and hazard communication.

Air Quality Guidelines

Management of air emissions resulting from typical construction activities are assessed with the World Health Organization (WHO) Air Quality Guidelines (AQGs) of 2005 and the new WHO guidelines published in 2021. The WHO AQGs of 2005 cover a range of air pollutants, including particulate matter (PM), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and carbon monoxide (CO). The WHO updated the Air Quality Guidelines in 2021 to provide more comprehensive guidance on reducing the health impacts of air pollution. The new guidelines reflect the latest scientific evidence on the health effects of exposure to air pollution and provide more stringent targets for key pollutants.

Noise Guidelines

In the absence of specific national guidelines for noise levels, the international standards (WHO/IFC) for community-based noise limits also used by NIMOS, are applied (Table 2-3). The noise impacts should not exceed the levels presented in Table 2-3 or result in a maximum increase in background levels of 3 dB(A) at the nearest receptor location off-site.

Table 2-3: Applicable Outdoor Noise Standards for Community-based noise (WHO/IFC).

Receptor	Maximum Allowable Ambient Noise Levels 1-hour LAeq (dBA)	
	Daytime 7.00 AM-10.00 PM	Nighttime 10.00 PM- 7.00 AM
Residential; institutional; educational	55	45
Industrial; commercial	70	70

Surface Water Quality Guidelines

In the absence of local criteria, the US EPA National Recommended Water Quality Criteria for aquatic life (2006)) are used for assessment of surface water quality. In addition, reference can be made to the international regulations of the World Health Organization (WHO) for drinking water. The water quality standards are presented in Table 2-4.

Table 2-4: Water quality standards

	DO (ppm)	pH	Salinity (PSU)	TDS (ppm)	Conductivity (uS/m)	Temperature (°C)	Turbidity (FNU)
WHO	> 5	6.5 - 8.5	1	< 450	<100	20 - 30	<1 - 5

2.3 Institutional Framework

In the context of environmental management in Suriname, multiple government institutions are involved. However, this section will focus solely on the primary institutions and their significance to the project. The functions of these stakeholders are summarized in Table 2-5.

Table 2-5: Institutional framework applicable to the project

Relevant Stakeholder	Relevant Act(s)/Legislation	Role/ Relevance to project
Ministry of Spatial Planning and Environment	Besluit Taakomschrijving Departementen 1991 S.B. 1991 no. 85 z.l.g. bij S.B. 2020 no.191 (State Order Task Description for Departments S.B. 1991 no.58 as lastly amended by S.B. 2020 no. 191)	<ul style="list-style-type: none"> - The Ministry of Spatial Planning and Environment is responsible for proper spatial planning and must do this in consultation with relevant ministries and institutes and also coordinate national policy for spatial planning. - In addition, the ministry is also charged with ensuring compliance with statutory regulations with regard to spatial planning and the environment, if necessary, in an interdepartmental context. - In accordance with its mission statement, the Ministry of Spatial planning and Environment is also responsible for coordinating and monitoring the implementation of national environmental policy, in collaboration with relevant ministries and agencies. - The Ministry is further responsible for developing and maintaining cooperation mechanisms and partnerships in order to meet national and international environmental obligations in an efficient and effective manner.
National Institute for Environment and Development in Suriname (NIMOS) in transition to become NMA	Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act S.B. 2020 no. 97)	<ul style="list-style-type: none"> - With the promulgation of the Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act S.B. 2020 no. 97) the National Institute for Environment and Development (NIMOS) will be transformed into the National Environmental Authority (NMA). - The NMA will be responsible for enforcement of the Environmental Framework Act, which includes responsibilities towards pollution control, regulation waste and hazardous waste, and hazardous substances. - NMA will be responsible for administering the Environmental Impact Assessment process.

Relevant Stakeholder	Relevant Act(s)/Legislation	Role/ Relevance to project
Ministry of Education, Culture and Science	<p>Besluit Taakomschrijving Departementen 1991 S.B. 1991 no. 85 z.l.g. bij S.B. 2020 no.191 (State Order Task Description for Departments S.B. 1991 no.58 as lastly amended by S.B. 2020 no. 191)</p> <p>Monumentenwet 2002 S.B. 2002 no 72 (Monuments Act 2002 S.B. 2002 no 72)</p>	<ul style="list-style-type: none"> - The Minister responsible for Culture is charged with the implementation of the Monuments Act. Based on the Monuments Act 2002, this Ministry may issue permits for demolishing, restorations, movement of monuments, create and curate lists of protected monuments, prohibit demolition, compel restoration of historic buildings, and prosecute offenders. Before the Minister takes the decision regarding a permit for demolishing, restorations or movement of monuments advice is requested from the Commission Monuments care and / or the Archaeological Service. - The Ministry of Education, Culture and Science is assisted in heritage administration and protection by the Commission for Monuments care, which advises on the implementation of the Monuments Act as well as reports to the Minister regarding the state of the Monuments. The Commission further executes activities in the area of monuments care assigned by the minister or by law. In case of archeological monuments, advice is being requested from the Archeological Service.
Management Board Waterkant	Ministerial Order appointment of new and exemption of old members of the Management Board Waterkant (October 2010)	<ul style="list-style-type: none"> - This council was set up to prepare policy and supervise activities on the Waterfront. - This Board is comprised of representatives of the Ministry of Transport, Communication and Tourism, the Suriname Tourism Foundation (STS), the Waterfront exhibitors interest group and the District Commissioner from Paramaribo North- East

Ministry of Labor, Employment and Youth Affairs	<p>Arbeidswet G.B. 1963 no. 163, z.l.g. bij S.B. 2001 no. 71 (Labor Code, G.B. 1963 no. 163, as amended by S.B. 2001 no. 71).</p> <p>Decreet Arbeidsinspectie, E-35) (S.B. 1983 no. 42) (Decree Labor inspection, E-35, S.B. 1983 no. 42).</p> <p>Veiligheidswet 1947 G.B. 1947 no. 142, z.l.g. bij SB. 1980 no.116 (Occupational Safety and Health Act 1947 G.B. 1947 no. 142, as amended by SB. 1980 no.116)</p> <p>Veiligheidsvoorschrift nr. 1, G.B. 1972 no. 95 (Safety regulation nr. 1, G.B. 1972 no. 95).</p> <p>Veiligheidsvoorschrift nr. 2, G.B. 1948 no. 104 (Safety regulation nr. 2, G.B. 1948 no. 104).</p> <p>Veiligheidsvoorschrift nr. 3, G.B. 1948 no. 183 (Safety regulation nr. 3, G.B. 1948 no. 183).</p> <p>Veiligheidsvoorschrift nr. 4, G.B. 1948 no. 128; 1969, no 30 (Safety regulation nr. 4, G.B. 1948, no. 128; 1969, no. 30).</p> <p>Veiligheidsvoorschrift nr. 5, G.B. 1950 no 121 (Safety regulation nr. 5, G.B. 1950 no. 121).</p> <p>Veiligheidsvoorschrift nr. 6, S.B. 1981 no. 71 (Safety</p>	<ul style="list-style-type: none"> - Development and safeguarding of the labor market. - Regulatory responsibility for specifying safety conditions for projects of this nature and for receiving and investigating safety-related incidents as necessary. - Regulation of permits required for labor or work by foreigners. - The proposed Project will be accomplished in accordance with all applicable Surinamese health and safety regulations.
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	<p>regulation nr. 6, S.B. 1981 no. 71).</p> <p>Veiligheidsvoorschrift nr. 7, S.B. 1981 no 72 (Safety regulation nr. 7, S.B. 1981 no. 72).</p> <p>Veiligheidsvoorschrift nr. 8, S.B. 1981 no 73 (Safety regulation nr. 8, S.B. 1981 no. 73) (Decision Ionizing radiation).</p> <p>Veiligheidsvoorschrift nr. 9, S.B. 1981 no. 74 (Safety regulation nr. 9, S.B. 1981 no. 74) (Decision harmful gases and vapours).</p> <p>Ongevallenregeling G.B. 1947 no. 45 z.l.g. bij S.B. 2001 no. 66 (Industrial Accidents Act G.B. 1947 no. 45 as amended by S.B 2001 no. 66).</p> <p>Wet werkvergunning vreemdelingen S.B.1981 no 162 (Labour permit for law for foreigners, S.B. 1981 no 162).</p>	
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Relevant Stakeholder	Relevant Act(s)/Legislation	Role/ Relevance to project
Ministry of Public Health	Besluit Taakomschrijving Departementen 1991 S.B. 1991 no. 85 z.l.g. bij S.B. 2020 no.191 (State Order Task Description for Departments S.B. 1991 no.58 as lastly amended by S.B. 2020 no. 191)	<ul style="list-style-type: none"> - Responsible for environmental health management, such as control of infectious disease, food and drinking water quality, and sanitation
Ministry of Public Works	Besluit Taakomschrijving Departementen 1991 S.B. 1991 no. 85 z.l.g. bij S.B. 2020 no.191 (State Order Task Description for Departments S.B. 1991 no.58 as lastly amended by S.B. 2020 no. 191).	<ul style="list-style-type: none"> - The Ministry of Public Works is responsible the preparation, execution and maintenance of all civil engineering works and the preparation, implementation and maintenance of construction works for the benefit of the state, insofar as it is not peculiar to another ministry reserved. - Supervision on compliance with building regulations and when it regards the historic downtown, which is a heritage site, advise can be provided by the Building Commission. - The technical facilities for traffic on land and for the public transport, as well as the supervision thereof;
Ministry of Regional Development	Besluit Taakomschrijving Departementen 1991 S.B. 1991 no. 85 z.l.g. bij S.B. 2020 no.191 (State Order Task Description for Departments S.B. 1991 no.58 as lastly amended by S.B. 2020 no. 191)	<ul style="list-style-type: none"> - The DC is responsible for the issuance of a Nuisance Permit and permits for drinking and eating premises. - The DC is also responsible for Emergency response in his/her district
Suriname Built Heritage Trust (SGES)		The Suriname Built Heritage Trust (SGES) primary task is to optimize the management of Historic Buildings in Paramaribo. SGES has an advisory role with respect to the Ministry of Education, and SGES is the manager of the UNESCO listed Historic Inner City of Paramaribo.

Relevant Stakeholder	Relevant Act(s)/Legislation	Role/ Relevance to project
National Coordination Centre for Disaster Management (NCCR)	Besluit Taakomschrijving Departementen 1991 S.B. 1991 no. 85 z.l.g. bij S.B. 2020 no.191 (State Order Task Description for Departments S.B. 1991 no.58 as lastly amended by S.B. 2020 no. 191)	<ul style="list-style-type: none"> - A division of the Ministry of Defense that develops national policies on disaster management through coordination and prevention of potential threats and disasters. - Supporting agency to NIMOS in the approval process for a project of this nature. <p>Can become a key stakeholder in situations involving accidental spills or other project-related emergencies.</p>

3 Project Description

3.1 Description of the Project

3.1.1 Site Description

The city of Paramaribo was founded in 1613 when two Dutch settlers created a trading post near the indigenous settlement named Parmurbo or Permermba located at the Paramari creek (currently known as Van Sommelsdijckse Creek) on the left bank of the Suriname river. After several years under French rule, the Dutch conquered the colony in 1667 and established the political center in Paramaribo for the next 300 years. Paramaribo was chosen because of its physical-geographical condition for its defense and transport infrastructure³.

The history of the Waterfront goes back to the establishment of Paramaribo in 1613. In 1683, the existing 27 houses along the Waterfront and Gravenstraat were being expanded and the area developed as center for core activities. The quay area was used for loading and unloading of ships, mainly because the Suriname river had enough room for ships to maneuver (approximately 1 km wide). Also, the slave trade settled here; slaves were imported from Africa and reached the shores, after they were weighted and sold to plantation owners until 1863.

In 1821, a large number of the houses at the Waterfront were destroyed in a fire. Redevelopment of the Waterfront included newly established wooden houses with galleries, which is nowadays a feature of the inner city of Paramaribo. There are 291 listed monuments in Paramaribo and in the past three decades only a few have disappeared in favor of new developments. This feature was designated the city as a UNESCO World Heritage Site in 2002 (**Error! Reference source not found.**).

The project site is part of a public area that is surrounded by historical buildings inhabited by public offices, private residents, and businesses. The land itself has been used for public functions and private residences since the early 1600s. The area can be reached by a one-way road and through two relatively narrow side roads. The one-way road serves as the main connection road between the center of Paramaribo and the Waterfront.

The Waterfront is located in the busiest part of Paramaribo. The density of people using and residing in the area is high, as well as their variation in purpose and interests (Figure 3-2**Error! Reference source not found.**). Users and residents can have access to the Waterfront with views reaching the district of Commewijne and further up and downstream of the Suriname river.

³ Ministry of Education, Science and Culture. 2019. The Historic Inner city of Paramaribo: Management Plan 2020-2024

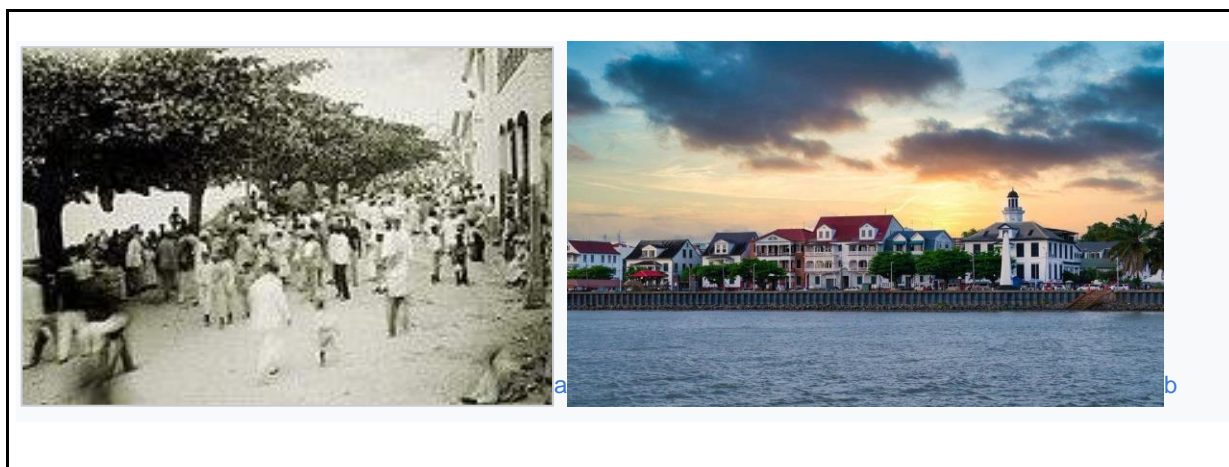


Figure 3-1: Waterfront a. around 1890s b. Anno 2020

Numerous people in the study area work either at Government offices, education institutes, local businesses, or are small entrepreneurs and sell crafts and foods. Tourists pass by to get a glimpse of the history of Paramaribo, visiting the Fort Zeelandia museum and enjoying the various historical buildings. Also, the area is occupied by homeless people, who find their homes on benches under the trees. These people provide a nuisance to both the residents and Waterfront users.

The Waterfront is also a tourist attraction. Visitors from abroad and from places in Suriname come to stroll along the riverside and experience the winds from the river. The historic buildings complement the river as they are fiercely standing on the other side of the road. The wider area presents not only historical buildings but also museums.



3.1.2 Project Plan

The Waterfront redevelopment is part of a larger redevelopment plan for the inner city of Paramaribo, focusing on rehabilitating historical buildings and improving social functions. The proposed project consists of approximately 1 hectare and is part of the historic city center of Paramaribo and listed as a World Heritage Site under UNESCO.

The project site for the ESIA of the redevelopment of the Waterfront includes the area of the Waterfront that stretches between Fort Zeelandia and the Waaggebouw, including part of the streets⁴ that run into the Waterfront area and the so-called triangle between the Mr. F.H.R. Lim A Postraat and the Waterfront (Figure 3-3).

⁴ Mr. J.C. de Mirandastraat (east) and Kromme Elleboogstraat (west)



Figure 3-3: The proposed project area

The newly developed Waterfront will provide recreational facilities and vending opportunities for local food and craft vendors. In addition, the area will have footpaths for walking/strolling, a pier, a multifunctional area, a stage/balcony over the water, a watch tower, a playground, and an amphitheater which are accessible to the public.

The construction activities were completed in the third quarter of 2023 while operations are scheduled for twelve (12) months later. Since works did not start 12 months after these consultations, additional stakeholder engagement will be needed before constructions starts. As soon as the commencement date is known, highlights of the project activities in the first period will be shared with the stakeholders. The PIU will visit some key stakeholders at the project site (such as the Central Bank of Suriname, VSH, The National Assembly, Cabinet of the President), while others will be informed about the first part of the activities through phone calls. In addition, flyers/brochures also will be distributed, and announcements through social media (PURP & Culture FB-pages), PURP website, and CDS. Below is an overview of the planned construction activities.

a. Design Concept

The design of the Redevelopment Waterkant Project is described through the following elements⁵:

⁵ ILACO NV. 2021. Preliminary Proposal for the Design of the Waterfront and Design of Specific Projects of the Mobility Plan.

1. Mobility/Road

Sidewalks are widened along the Waterkant Road, Mr. J.C. de Mirandastraat and the Kromme Elleboogstraat to 4 m - 6 m. On the south side of the Waterkant road, an elevated bike lane will be constructed.

The Waterkant road will be provided with traffic calming solutions by installing plateaus which also function as crossings for pedestrians and bikers. The road next to the Old Flag Square will be turned into a pedestrian walking area.

Both the streets connecting with the Waterkant area - Mr. J.C. de Mirandastraat and the Kromme Elleboogstraat - will be redesigned and new pedestrian areas will be constructed along the road.

Parking along the Waterkant road will be reduced from 32 to 12 parking spaces to facilitate the view to the Suriname river. A loading/unloading space will be created in two of these parking spaces. In the new design, the Mr. J.C. de Mirandastraat will get an additional 5 parking spaces and the National Assemblée an additional 7 parking spaces.

2. Building Structures

The following building structures (Figure 3-4) will be constructed:

- **Management Building.** The building includes a 24.5 m² open area and an 84m² enclosed area for an office and public toilets. The building follows the design of the historical buildings in the inner city with double doors and windows above the doors. Walls are made from stucco and floors are tiled. Roof sheets are corrugated steel. The office will have windows with shutters who can't open. The toilets will have top-quality sanitary provisions with automatic flushing water taps.
- **Craft Stands.** These include 2 new buildings, each with a 20 m² open area and a 25m² enclosed area. Each building has space to accommodate 4 crafters with service counters and steel cabinets for storage. The building will have a wooden roof construction, connected with wooden posts held by concrete feet. Roof sheets are steel with heat insulation. The floor is concrete in the covered area and tile in the open area, which is connected to the footpaths.
- **Food Stands.** Currently, there are 12 food stands grouped together in 3 separate buildings of each 64 m². Poor quality and damaged building parts and electrical, water and sewage will be repaired and renovated. The renovations will include tiling walls and floors and painting the service counters.
- **Look-out platform with Police Station.** The building will have two levels, of which the first floor is an open concrete floor and can be reached by a 0.90 m high steel staircase. This look-out platform will have steel fencing. The ground level of the building will house a police station of 14 m². The building will consist of a steel construction and the walls have partly steel cladding and partly windows.

- **Gazebos.** Two gazebos of each 16 m² will be constructed with a wooden construction and steel roofs with heat insulation. The Gazebos are open structures.



Figure 3-4: a. Design on mobility infrastructure for redevelopment of the Waterkant. b. Food stall on the south side of the new Waterfront. Source: Ilaco, 2022

3. Urban and Landscaping

The Waterfront⁶ will be covered with grass-covered landscaped areas with meandering 3 m - 3.5 m footpaths. All footpaths are connected to Fort Zeelandia, which indirectly connects to the entertainment center of the inner city (Waka Pasi, restaurants, clubs).

Within this landscape, numerous seating areas are present with a view of the river. Pedestrian seating areas will be constructed on both sides of the Waterkant road. The pedestrian areas are colored based on the function: sidewalks have a different color than footpaths. The pedestrian access areas will provide ramps for disability access.

Most of the Almond trees will be maintained. However, due to the position of one of the trees (i.e. at a curve in the road), it will have to be removed to increase the road safety.

Along the footpaths, sidewalks and a bike lane, streetlights are constructed to provide safety in the area.

Cultural activities can be held in the newly constructed amphitheater at the Old Flag Square, as well as on the newly constructed balcony on the water or the plaza (right across from the Mr. J.C. de Mirandastraat).

For recreational activities or sports, the playground and the multifunctional area are constructed. These areas will be leveled and have no fixed furniture.

The existing food stalls will be renovated to make it more attractive for visitors. The existing craft market will be relocated to the outer west side of the study area.

The existing monuments are maintained and included in the design (**Error! Reference source not found.**).

⁶ Waterkant is defined as the area between the Waterkant Road (North) and Sheet Pile Wall along the Suriname River (South), between Fort Zeelandia (East) and De Waag (West)

4. Drainage

The design includes the replacement of the existing sewer line only at locations where rehabilitation works were already projected, thereby avoiding unnecessary disturbance and additional excavation and construction work.

- **Kromme Elleboogstraat.** A new sewer line with 50 cm diameter will be installed under the eastern sidewalk. Existing 30 cm and 40 cm diameter lines will be disconnected from the old sewer line and connected to the new sewer line.
- **Mr. J.C. de Mirandastraat.** A new sewer line with 50 cm diameter will be installed under the eastern sidewalk.
- **Waterfront Road.** New sewer lines with 50 cm diameter will be constructed on both sides of the western section and the eastern section until the Mr. F.H.R. Lim A Postraat. A new sewer line of 50 cm diameter will be constructed to connect new pits from the Waterfront road to other parts of the sewer line.
- **Old Flag Square.** A new sewer line with 50 cm diameter will be constructed from Old Flag Square to the Mr. J.C. de Mirandastraat.
- **Fort Zeelandia.** A new sewer line with 50 cm diameter will be constructed under or beside Fort Zeelandia towards the Waterkant Road. All sewerage will be concrete or PVC.

All sewerage will be concrete or PVC.

b. Construction Activities (12 Months)

The main construction activities for the redevelopment of the Waterkant include:

I. Demolition (recreational area and Old Flag Square/road)

II. Earthworks (recreational area and Old Flag Square/road)

III. Drainage. The main drainage infrastructure will be installed section by section until the whole area is covered. Other works planned are:

- i) Repair and replacement of non-return flaps for outfall locations.
- ii) Construction of roadside minor pit and pipe system drains.
- iii) Installation of new kerbing.
- iv) Installation of property connections, collector pipes, manholes, couples, and check valves.

IV. Utility Conduit Installation. Along the road next to the Waterfront, the water main will be removed and reinstalled and electricity installation will occur.

V. Construction of Sidewalks. Sidewalks will be constructed along the north- and south side of the road next to the Waterfront, as well as the Mr. J.C. de Mirandastraat.

VI. Road Pavements. Pavement of roads will occur in the north- and south side of the road next to the Waterfront, as well as the Mr. J.C. de Mirandastraat. The activities include:

- i) Pavement of pedestrian crossings
- ii) Milling of existing asphalt
- iii) Applying asphalt seal

Pavements for pedestrian crossings and parking will expand into Fort Zeelandia and the Old Flag square and will include line marking.

VII. Construction of Waterfront Recreational Area. A variety of works will be executed, including:

- i) Construction of riverside balcony and upgrade of marine pier
- ii) Building of craft market using partially the same materials from previous building, 3 buildings of each 45 m², totaling 135 m²
- iii) Building of food stands, 12 buildings of each 64 m², totaling 768 m²
- iv) Paving of areas
- v) Construction of planting beds
- vi) Building of public playground, watch tower, recreational area and 2 Gazebo's of each 16 m²
- vii) Construction of landscape furniture
- viii) Planting of greenery
- ix) Provision of signage and markings
- x) Construction of management building and public restrooms, total 105.8 m².
- xi) Construction of footpath network including boardwalks and ramp

c. Operational Activities (After 12 Months)

The Waterkant will be mainly used for cultural and recreational activities. The following facilities are projected at the renewed Waterfront:

- I. Recreational area
- II. Crafts market
- III. Food stalls
- IV. Watch tower
- V. Balcony/stage
- VI. Children's playground
- VII. Walking paths and path for cyclists
- VIII. Benches to sit and relax
- IX. Management building and public restrooms

3.2 Study Area

3.2.1 Description of the Study Site

The direct study area is located in the historic center of Paramaribo (Figure 3-6). The area includes the area of the Waterfront stretching between Fort Zeelandia and the Waaggebouw, including part of the streets⁷ that run into the Waterfront area and the so-called triangle between the Mr. F.H.R. Lim A Postraat and the Waterfront. The area is characterized by the three functions it serves: residential, business, and public.

The east side of the direct study area consists of the Fort Zeelandia area, characterized by mostly historic-public functions such as the National Assembly, cultural organizations, and the restaurant Mi Gadri. The west side consists of various public restaurants and shops such as the SMS pier, De Waag, Broki and Riverside. The north side borders the inner city of Paramaribo with businesses and residential buildings. In the south, the study area lies adjacent to the Suriname river.



Figure 3-6: Direct study area for the Waterfront Redevelopment Project

For the assessment of the biophysical environment, aspects such as infrastructure and utilities, traffic and transportation, air- and water quality, noise and water resources will be considered. For certain study components such as climate change and disaster and risk

⁷ Mr, J.C. de Mirandastraat and Kromme Elleboogstraat

assessment, the study extended beyond the boundaries of the project area. The ESIA study area includes an area of a 1 km radius, the indirect study area (Figure 3-7).

For the assessment of the socio-economic environment which includes archeological findings, education, health and safety, quality of life, and positive/negative impacts on the surrounding residents, businesses and offices from construction and operations, the ESIA study area expanded beyond the direct study area and included neighboring areas and activities occurring in the area. For certain study components, such as tourism, the study extended beyond the boundaries of the indirect study.

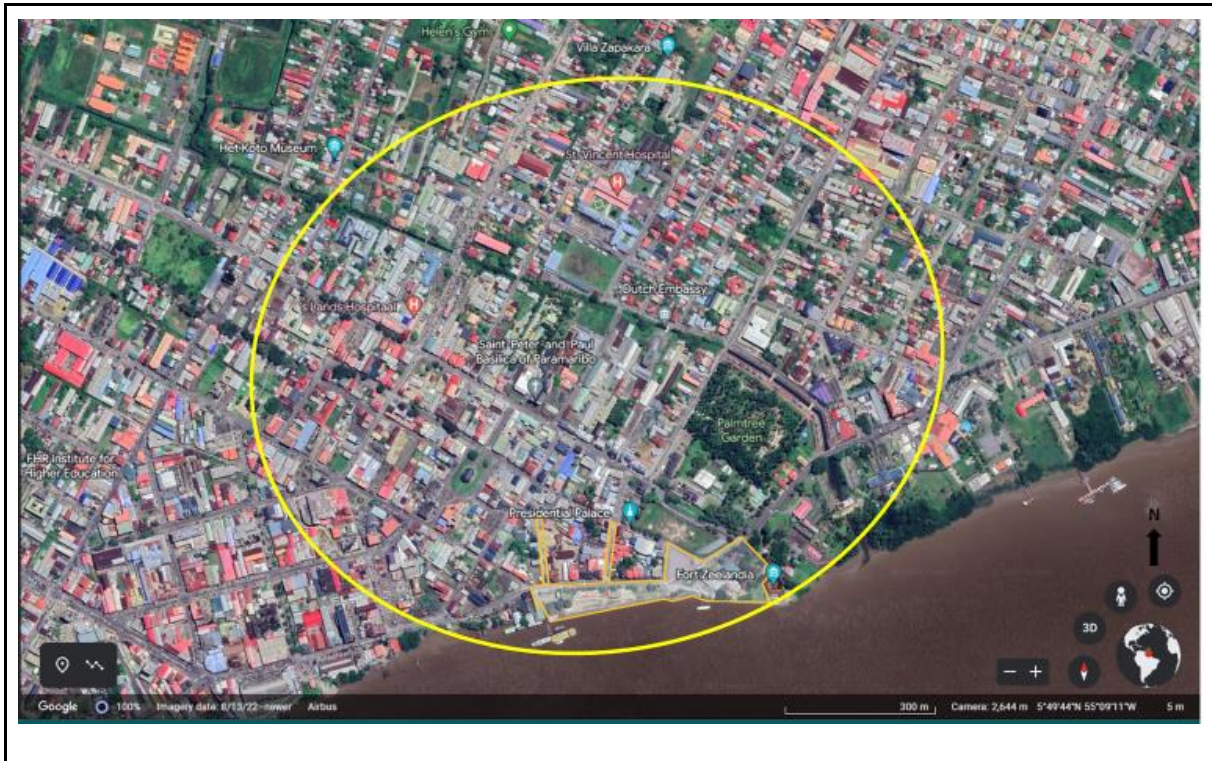


Figure 3-7: Indirect study area for the Waterfront Redevelopment Project

4 Evaluation of Alternatives

4.1 Proposed Project

The Waterfront Redevelopment project is part of a larger redevelopment plan for the inner city of Paramaribo, focusing on rehabilitating historical buildings and improving social functions to breathe new life into the historic city center. The inner-city of Paramaribo is unique due to its unchanged spatial structure, the wooden historic buildings and architecture, and preserving historic functions such as trade, port facilities, government offices and residential areas.

Currently, the historic city center faces numerous problems with infrastructure which contributes to its current chaotic situation. One of the main problems is the occurrence of traffic congestion and unregulated parking in the area and this should be resolved. Provisions for slower traffic, such as bicyclists and pedestrians, are insufficient and this should be improved to ensure safety and wellbeing.

Homeless people and drug addicts reside near the Waterfront, either temporarily or permanently. Although this has always been a socio-economic problem, after the Covid-19 pandemic, the situation became worse. The homeless people in the area are considered a nuisance for local residents and daily visitors; it impedes the attraction of visitors to this historic part and limits boosting its commercial development.

Paramaribo historic Waterfront, a World Heritage Site defined by UNESCO, is an important public space inside the city. It provides a unique opportunity to reimagine the city center as a vital area of residence and public space for hosting leisure activities and events. Redevelopment of this area includes rethinking the city's relationship with water, as well as adapting new strategies to adapt to and mitigate climate change, which is an increasing threat to Paramaribo as one of most vulnerable cities to sea level rise globally.

The newly developed Waterfront will provide recreational facilities and selling opportunities for local food and craft vendors. In addition, the area will have footpaths for walking/strolling, a pier, a multifunctional area, a stage/balcony over the water, a watch tower, a playground, and an amphitheater which are accessible to the public.

4.2 No Project Alternative

The no-project alternative is often defined by the baseline information and is crucial in the impact assessment because other alternatives are weighted with reference to it. In case the proposed Waterfront Redevelopment project will not be approved according to the current plans, the historic Waterfront will continue to grow in an unregulated manner, providing risks to safety and wellbeing of peoples.

The no-project option will lead to the following negative long-term impacts.

- **Natural Disasters.** Climate change-induced flooding is expected to become an increasing threat to the Waterfront. Inland and coastal flooding in urban areas of Paramaribo is produced from high volume of precipitation, poor drainage, and rising

sea and river water levels. The proposed project will improve drainage and construct climate change resilient buildings.

- **General Safety.** The Waterfront provides shelter to a flock of homeless people who are expected to continue to temporarily reside at the Waterfront without the proposed project that will provide for a permanent Police station on site. This situation creates a precarious situation and hampers tourists and other visitors strolling along the Waterfront.
- **Traffic Safety.** Without the proposed project, there will be no specific provision for traffic safety such as road signage and markings and walking and biking paths. Pedestrians and slower traffic along the Waterfront will continue to use the main road (between parked- and bypassing cars) providing unsafe traffic situations.
- **Commercial Development.** Without the new site layout, the Waterfront will remain unattractive for tourists and visitors to attend. The current situation will not improve, making it difficult to stimulate commercial development with craft- and food vending.
- **Recreational Places.** Without the proposed project, the Waterfront continues to have limited places for recreation: a few benches to sit on, a handful of restaurants and craft shops, and an open area to walk along the quay (without footpaths). The new infrastructure (amphitheater, placebos, footpaths) and greenery will expand the recreational space.

The no-project alternative includes leaving the Waterfront “as is” with a high risk of temporary flooding, outdated infrastructure for vendors, lack of recreational places, traffic congestion and lack of parking spaces, and ongoing presence of homeless people. These scenarios are less acceptable on either social- and environmental grounds than the proposed Waterfront Redevelopment project.

4.3 Consideration of Alternatives

The historic inner city of Paramaribo is unique. Alternatives to a historic city belonging to the UNESCO world heritage sites are unavailable within Suriname, and no other place can substitute for this unique historic site. This section will provide an overview of the reasons for its significance, with a focus on the Waterfront as a central part of the inner city of Paramaribo.

The historic inner city of Paramaribo became a World Heritage Site in 2002. The significance of this part to the world is based on the following cultural criteria from the UNESCO:

- **Criterion II:** Paramaribo exemplifies the gradual fusion of European architecture techniques with indigenous South American materials, creating a unique architectural idiom.

- Criterion IV: Paramaribo represents the contact between Dutch European culture and the indigenous cultures of South America during the intensive colonization of this region in the 16th and 17th centuries⁸.

The uniqueness of the inner city of Paramaribo comes from the following four characteristics:

1. The inner city's pattern and street plan which has remained unchanged for the past 300 years.
2. The inner city's monumental buildings which are closely assembled or connected to each other.
3. The inner city's wooden architecture (Figure 4-1). About half of the 244 protected monuments are located in the inner city.
4. The inner city's functions still exist: trade, harbor, residential area, and the seat of the Government⁹.

Paramaribo's uniqueness goes back to 300 years of history which can't be replaced by any other area in Suriname.



Figure 4-1: Wooden architecture and monumental buildings. Source: Ministry of OWC, 2019

⁸ <https://whc.unesco.org/en/list/940>

⁹ Ministerie van Onderwijs, Wetenschap en Cultuur/Stichting Gebouwd Erfgoed Suriname. 2019. The Historic Inner City of Paramaribo. World Heritage City Management Plan 2020-2024

5 Description of the Existing Environment

This chapter presents a description of the environmental baseline including:

- A summary of basic environmental conditions using documentary and field research.
- An identification of the main environmental sensitivities that may be affected by the project.

5.1 Environmental Baseline Information

5.1.1 Climate

Suriname has a typical tropical climate with abundant rainfall, uniform temperature, and high humidity. Most of the northern part of Suriname, including the study area, has a tropical rainforest climate (Af-climate in Köppen's classification). The seasons in Suriname are strongly influenced by the Intertropical Convergence Zone (ITCZ). Two times a year, the ITCZ passes over Suriname bringing heavy rainfall. This results in four seasons based upon rainfall distribution (Scherpenzeel, 1977).

The four distinct seasons are:

- Long Rainy Season: End April - Mid August
- Long Dry Season: Mid-August - Early December
- Short Rainy Season: Early December - Early February
- Short Dry Season: Early February - End April

The above-mentioned classification of the seasons is applicable to Paramaribo, the capital of Suriname, using long-term rainfall data of the station Cultuurtuin, which covers the entire northern part of the country.

a. Temperature

In Suriname, the average temperature at 6:00 AM is between 21 °C and 24 °C. Temperatures around noon are the highest and on average are between 31 °C and 34 °C. The difference between day and night temperatures on the coast can differ by an average of 6 – 7 °C.

The long-term mean monthly averages of the temperatures at station Cultuurtuin of 1975 - 2004 and 2005 - 2013 are presented in Figure 5-1. In general, the warmest months are August through November (Long Dry Season) with averages of 28.1 °C and 28.5 °C respectively for the two time periods. The coldest months are January and February (Short Rainy Season), when the mean monthly temperature is 26.5 °C - 26.6 °C. When comparing the mean monthly temperatures of 1975 - 2004 with temperatures of 2005 - 2013, it becomes clear there has been a rise in temperature between the two periods.

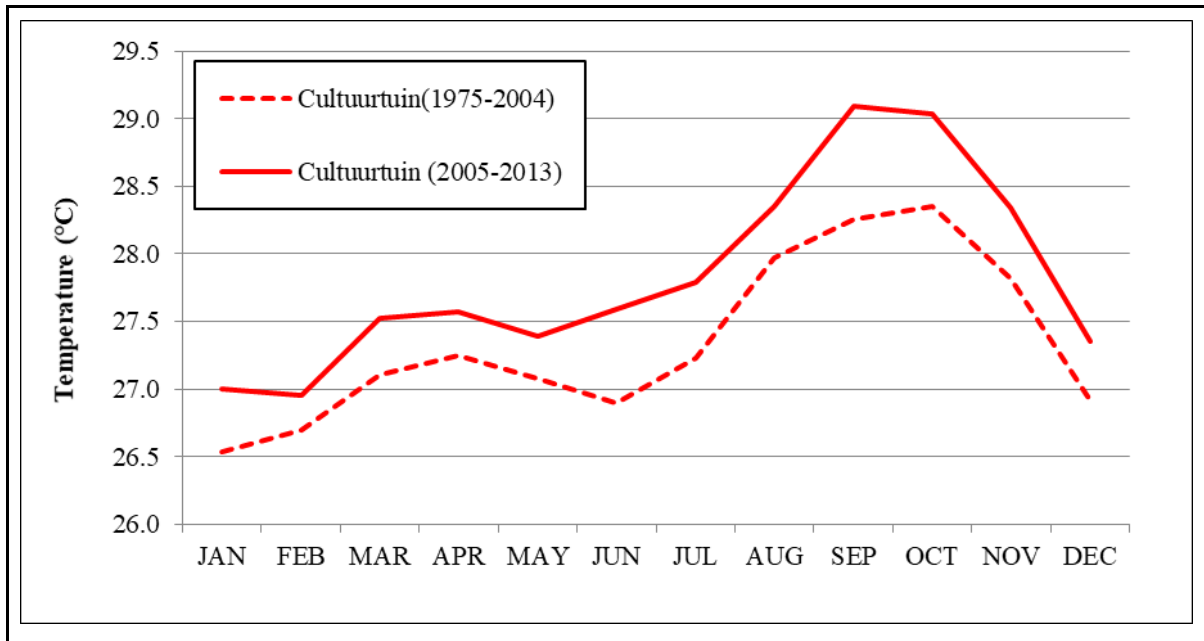


Figure 5-1: Mean monthly temperatures at station Cultuurtuin

The mean monthly averages of the temperatures at stations Cultuurtuin and Zorg en Hoop (2018 – 2022) are presented in Figure 5-2.

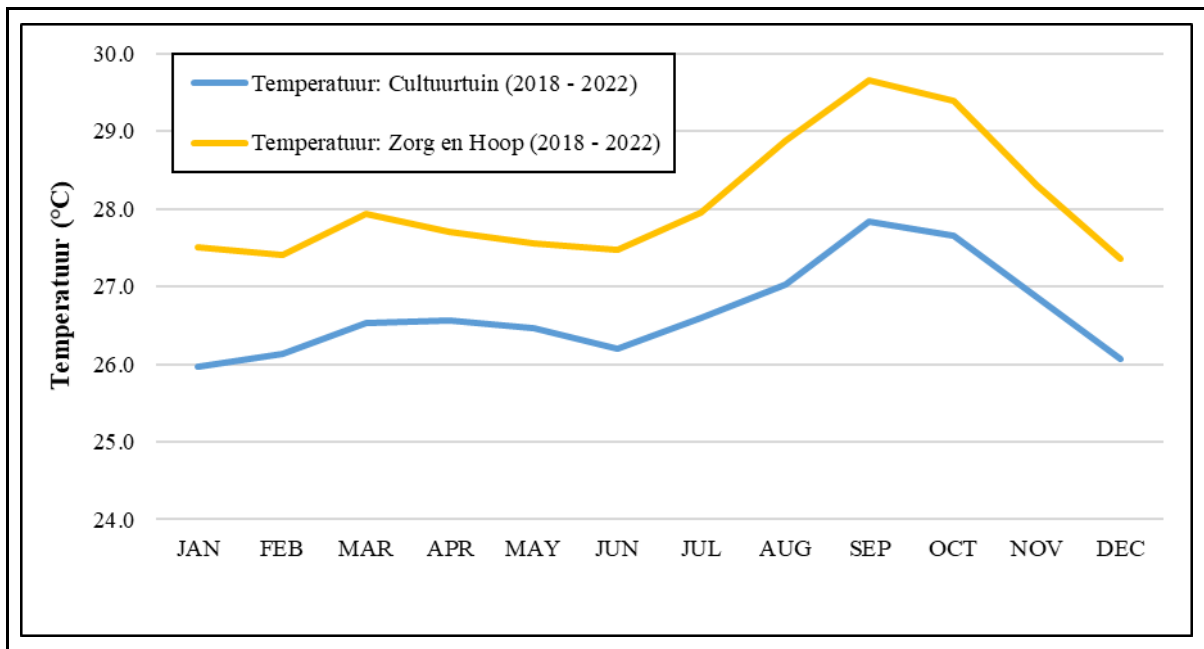


Figure 5-2: Mean monthly temperatures at stations Cultuurtuin and Zorg en Hoop (2018-2022)

Overall, the average temperatures at the Cultuurtuin between 2018 - 2022 show a similar pattern compared to the long-term data. The mean monthly temperatures of 2018 - 2022

varies between 27.4 °C and 29.7 °C and is in the same range as of 2005 – 2013 (27.0 °C – 29.1 °C).

b. Relative Humidity

Suriname has a high relative humidity (RH) with the highest average daily humidity in the rainy seasons and lower values in the dry seasons. RH is typically high at night (close to 100% from midnight until 6.00 AM), and decreases after 6.00 AM, reaching its lowest value around 2.00 PM. Minimum RH is slightly above 50% in the driest months of the long dry season and around 70% in the rainy seasons. In 2021, the average RH was between 75% and 80% (Table 5-1)**Error! Reference source not found.**

Table 5-1: Relative Humidity at the Measuring Station Zorg en Hoop 2017 - 2021. Source: ABS, 2022

Measuring Station	Percentage (%)				
	2017	2018	2019	2020	2021
Zorg en Hoop	75	74	74	74	75

c. Wind

In general, the wind in Suriname is weak; annual averages of about 1.3 - 1.6 on the scale of Beaufort (or 1 - 5 m/s). The daily wind speed variation is higher and can reach up to 3 - 4 Beaufort (3 - 8 m/s). The mean wind speed is 1.3 Beaufort. Maximum mean wind speeds occur during the dry seasons reaching 1.6 Beaufort in February - April with a second peak in September and October. Minimum mean wind speeds of 1.0 Beaufort occur in January. Calm winds -winds with hourly average speeds less than 0.5 m/s- are very frequent. During the night and early morning, winds are usually calm. Wind speeds of 20 - 30 m/s have been occasionally recorded during thunderstorms, but only for a very short period and near the end of the rainy seasons (locally known as 'sibibusi'). Measurement data from the Zorg en Hoop station for the period 2017 - 2021 is presented in Table 5-2.

Table 5-2: Velocity in Beaufort at the Measuring Station Zorg en Hoop 2017 - 2021. Source: ABS, 2022

Measuring Station	Beaufort				
	2017	2018	2019	2020	2021
Zorg en Hoop	1.8	1.7	1.9	1.2	1.8

Wind Direction. In Suriname, the wind directions are correlated to the position of the ITCZ, whereby the directions northeast (NE) to east (E) usually record the highest frequencies. Figure 5-3 presents the seasonal wind direction for Zorg and Hoop. In the Short Rainy and Dry Seasons, northeasterly winds dominate, while in the Long Rainy Season more easterly and southeasterly winds are also recorded. During the Long Dry Season, winds range between northeast and southeast.

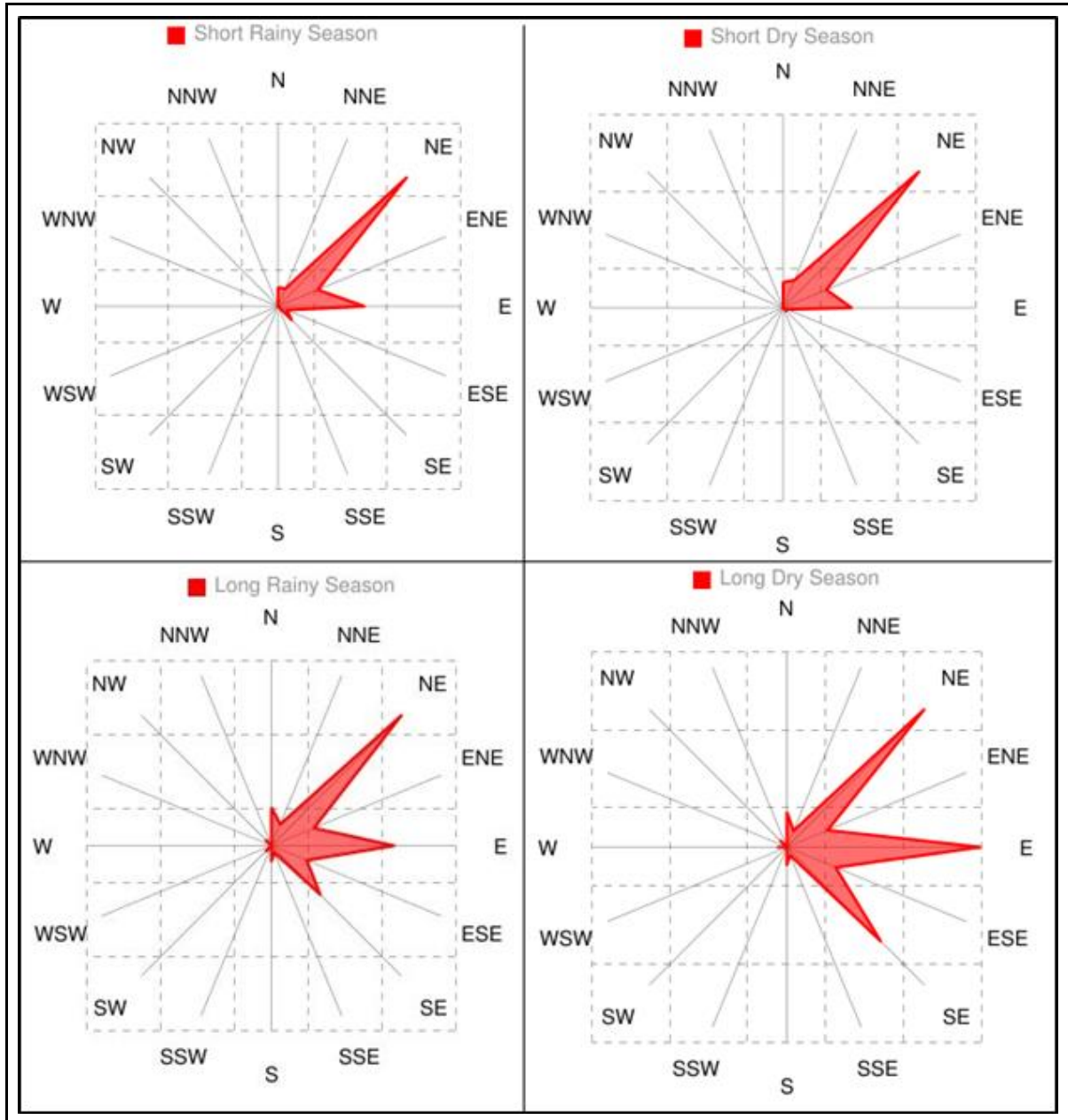


Figure 5-3: Wind roses presenting seasonal wind directions for Zorg & Hoop (1991-2017)

Atmospheric Stability. During the daytime, the atmosphere above Suriname is rather unstable due to thermal turbulence and moderate to high wind. During night-time, the atmosphere becomes more stable due to calm wind conditions and cooling of the surface. According to Burger & von Reiche (2009), surface-based inversions may reach depths of 200 m - 400 m in the study area. During the night, a stable boundary layer with limited vertical mixing is present especially during nights with low or no wind (Ilaco, 2023a).

d. Rainfall

In Suriname, rainfall exhibits considerable variation during the year, while the temperature is relatively stable. The annual variation could be rather great, so that for some years, the minor rainy season or the minor dry season may not occur, but both the long rainy and major dry seasons are always occurring. The rainfall distribution is unevenly distributed during the year, and therefore, the wet season records more rain than the dry season.

Rainfall is an important parameter as air quality is generally better when there is frequent high rainfall. In Suriname, even during the dry season, the rainfall can be relatively high. During the rainy season, the rain removes particles which improve visibility. Dust emissions are further reduced due to the damp soil conditions. However, dust emissions increase once the soil dries in the dry season.

Rainfall data has been obtained from the two nearest meteorological stations of the study area. In Figure 5-4, recent mean monthly rainfall data (2017- 2022) from stations Cultuurtuin and Zorg en Hoop are presented.

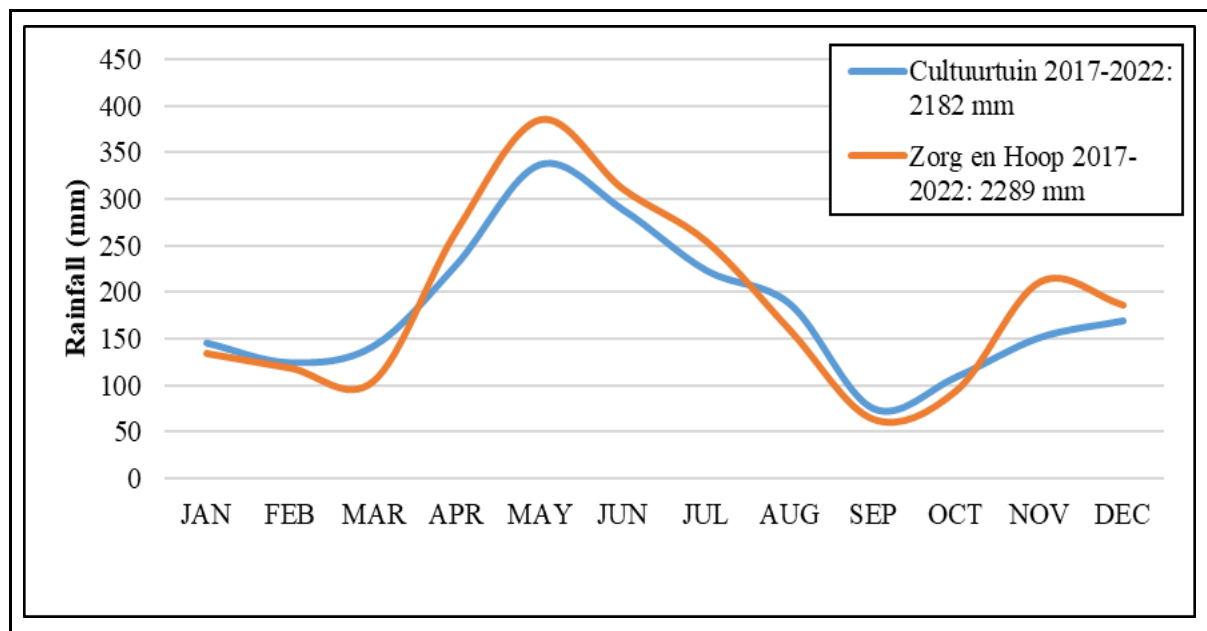


Figure 5-4: Mean monthly and total annual precipitation for Station Cultuurtuin and Station Zorg en Hoop.

Four stations were selected having data over a long period (1909 - 2008) to determine the long-term mean monthly rainfall. As demonstrated in Figure 5-5, the stations record annual totals between 2,076 mm and 2,222 mm with a slight increase from north to south. The highest total average monthly rainfall is recorded during the months May, June and July during the Long Rainy Season, and minimum values are recorded during the months September to November in the Long Dry Season. All stations have the same seasonal distribution (Ilaco, 2023a).

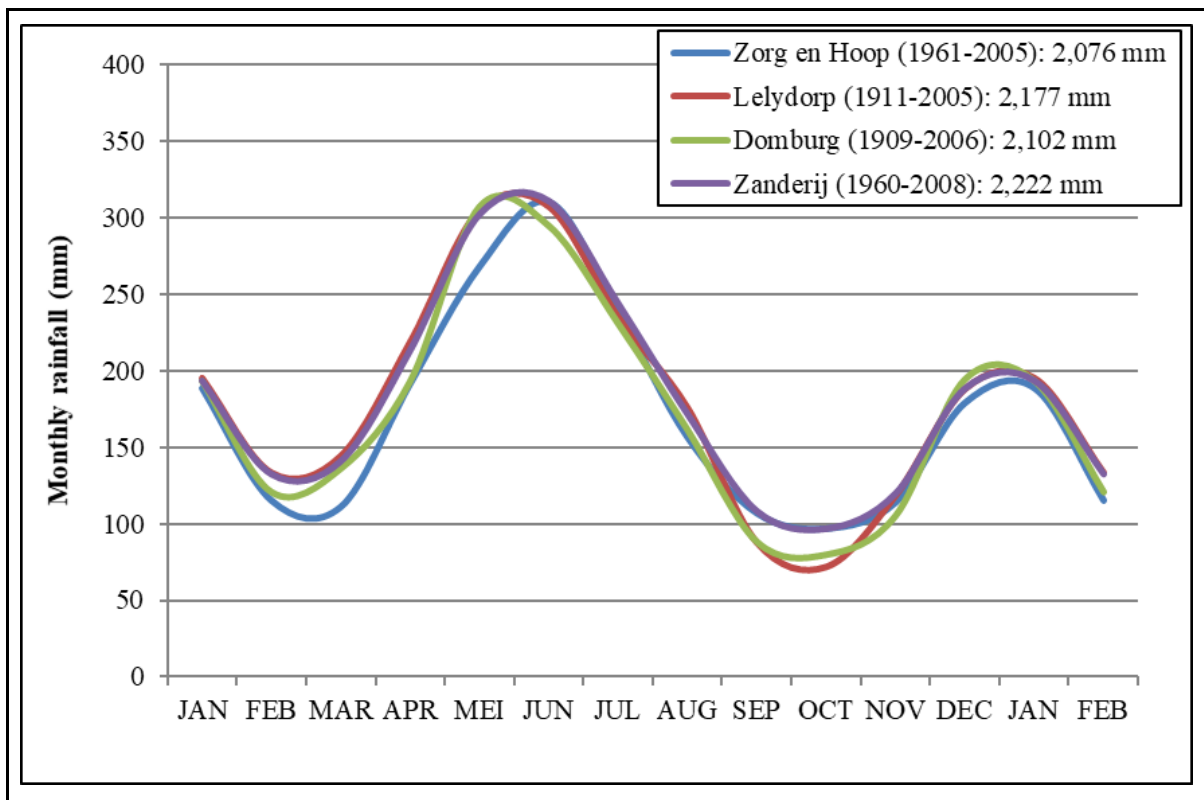


Figure 5-5: Long-term mean monthly and total annual precipitation for regional stations.

e. Air Quality

Air quality has been determined by existing air quality data (measured within the project area), local climatological conditions and observation of potential sources of air emissions within and near the project.

In the study area, the air quality is assumed to be suboptimal due to human habitation and related activities. Sources of man-made air emissions that affect the air quality include exhaust gasses from traffic along the roads and vehicles parked on the parking lots in the vicinity. These emissions occur mainly during daytime hours on weekdays. Other observed emission sources include the nearby moored ships at the Suriname River, commercial activities (restaurants) and other activities such as construction works.

In particular, dust could be experienced during dry periods. The project area and immediate surroundings are mostly paved, and atmospheric dust originates from unpaved parts like the Palmentuin and narrow strips along the Waterfront, and possibly from unpaved areas at further distance carried through the north-eastern air (wind) flows. Measurement results presented in Table 5-3 show that air quality parameters (PM_{2.5}, PM₁₀, NO₂ and SO₂) measured in 2018 were all below the applicable WHO guidelines. However, peaks were observed (see Figure 5-6) as a result of road traffic, moving vehicles and other commercial activities upwind of the project area. The peaks were measured along the Waterfront main road at the building of Centrale Bank van Suriname.

The majority of the impact zone is related to the dominating north-eastern winds during the day. An impact of current air pollution only occurs when receptors are downwind and sufficiently close. Figure 5-7 presents an overview of the project site and the previous air quality measurement locations.

Table 5-3: Overview of previous air quality results against the WHO guidelines. Source: Ilaco, 2023a

Measured values (µg/m³)	DNA terrain (µg/m³) (22 nd October - 6 th of November 2018)	CBvS terrain (µg/m³) (9 th November - 23 rd of November 2018)	Average of DNA terrain and CBvS terrain (µg/m³)	WHO guideline(µg/m³)*	
				2005	2021
Average 24-hour mean PM2.5 of measuring period	2.7	3.2	3.0	25	15
Average 24-hour mean PM10 of measuring period	3.4	4.1	3.8	50	45
Highest 24 hour mean TSP	5.16	6.71	5.94		
Peak range of 1 hour mean cNO ₂ of measuring period	6.7 - 13.8	6.2 - 15.1			
Average 1 hour mean cNO ₂ of measuring period	4.33	5.31	4.82	200	200
Highest 1 hour mean cNO ₂	13.8	15.1	14.5	200	200
Average 24 hour mean SO ₂ of measuring period	0.08	0.17	0.13	20	40
Highest 24 hour mean SO ₂	0.17	0.32	0.25	20	40
Remark: * Data is compared with the WHO Air Quality Guidelines of 2005 (the then applicable guideline during the previous study) and with the new guidelines published in 2021 by the WHO					

Air Quality Measurement at CBvS terrain (Location 2)

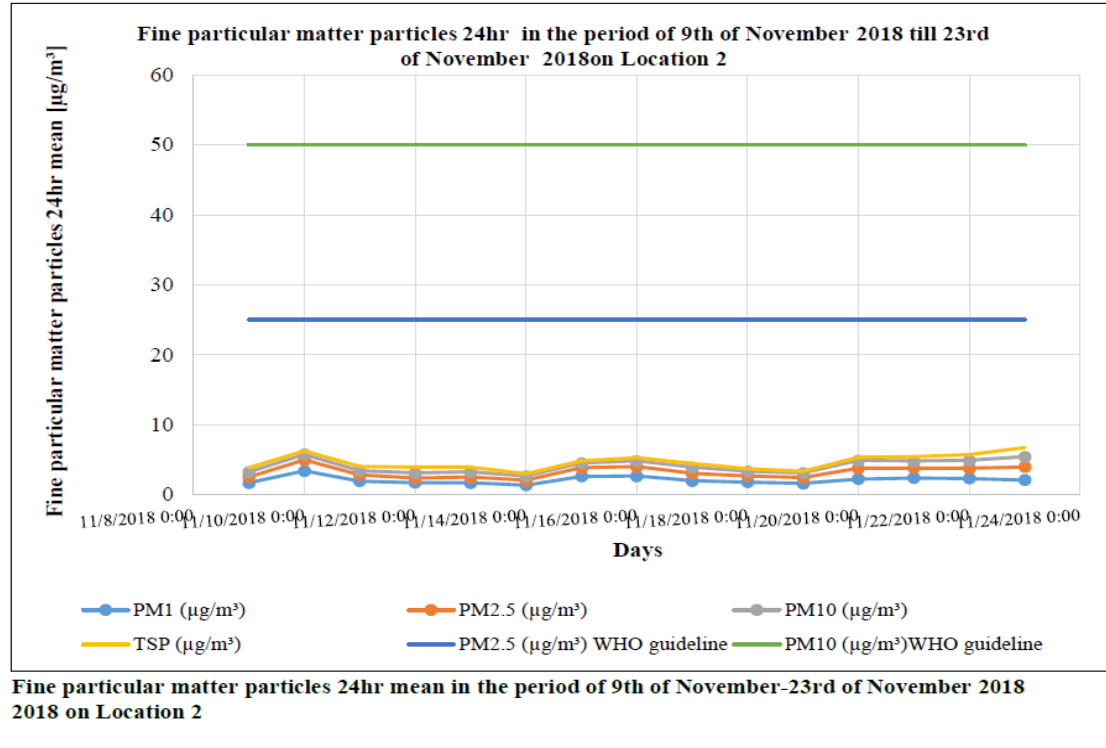


Figure 5-6: Results of fine particular matter particles measurements conducted in 2018. Source: ILACO, 2023a



Figure 5-7: Overview of project site and previous air quality measurement locations. Source: ILACO, 2023a

5.1.2 Geology, Geomorphology and Topography

Suriname is divided into two main physiographic provinces named the Precambrian Shield and the Coastal Plain or Basin. The project area is located in the Coastal Plain, which is divided into the Young Coastal Plain, consisting of relatively young (Holocene) sandy and clayey marine deposits, and the Old Coastal Plain (older Pleistocene deposits). The three (youngest) sediments existing in the Coastal Plain belong to the following formations:

- Mara and Coronie Formations from the Holocene.
- Coropina Formation from the mid- to late Pleistocene; and
- Zanderij Formation deposited during the late Tertiary (Pliocene).

The project area is located in an area with ridges and inter-ridge depressions of the Moleson phase (2500 - 1300 B.P.). The Moleson deposit constitutes of relatively soft clays and locally sand ridges (Wong T. 1992). The ridges often consist of shells, and shell fragments with or without sand and have their top at 3 to 4 meters above mean sea level. The interr ridge depressions have variable textures ranging from clay to sand (with or without shells or shell fragments), but usually with sand in the subsoil.

Fort Zeelandia was built on the ridge on which the Henck Arronstraat was constructed and that ends at the Suriname River. During the early days of Paramaribo, the east-west streets were constructed on ridges, while drainage canals were situated in the lower (also east-west running) interr ridge depressions. Soil maps are unavailable for Paramaribo, yet most likely all these ridges are dominated by shells or shell fragments. Most of the soil in inner Paramaribo is disturbed, usually as a result of cutting (higher parts) and filling up (lower parts) soil. Various materials have been used as fill, including rubble.¹⁰

A north-south geological cross-section of Suriname is shown in Figure 5-8**Error! Reference source not found.** (note the Mara Formation is not indicated in this figure).

¹⁰ Ilaco. 2019a. Environmental and Social Impact Assessment for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo.

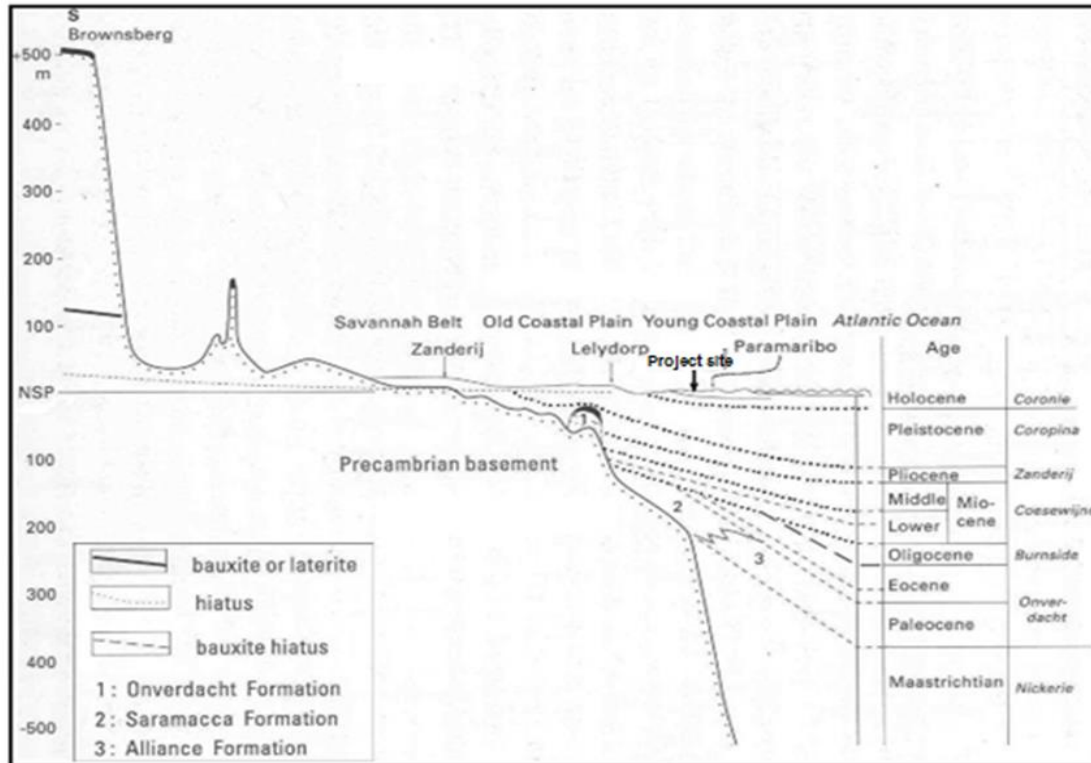


Figure 5-8: Geological cross section through northern Suriname¹¹

5.1.3 Hydrology

a. Drainage

The drainage system of historical Paramaribo consists of a combination of open channels and closed systems, which finally discharges into the Suriname River. The main drainage and sewerage system includes Knuffelsgracht, Viotte Creek, Picornie Creek, Steenbakkersgracht and the Van Sommelsdijckse Creek. The Van Sommelsdijckse Creek is the oldest drainage channel in Paramaribo and runs directly through the old city. The drainage and sewerage of the inner city is regulated by sluices and pumping systems. The system collects both excess stormwater and wastewater from residential and public septic tanks, hospitals, and restaurants etc. which water is ultimately discharged into the Suriname River¹². About 64% of the area is drained by the pumping station at the outfall of the Van Sommelsdijck Creek, and about 32% by the pumping station at Knuffels gracht and the sluice near the Central Market).

¹¹ Retrieved and modified from: Noordam & Teunissen (2009). Sediments and Geomorphology Baseline Study for Suriname River Dredging Project, in: SRK (2010). Environmental Impact Assessment for the Staatsolie Refinery Expansion Project Final Environmental Impact Assessment Report Volume 1 (Appendix C))

¹² Source: Ilaco 2019a. Environmental and Social Impact Assessment of the Historical Buildings

According to the study of ERM (2016), the Waterkant project area is located in a medium to high flood hazard zone. As such, the risk related to the inner city being inundated due to heavy rainfall, high water events with blocked drainage system are medium to high. This will be further elaborated in Chapter 5.1.7.

On the south side of the Henck Arronstraat, the drainage water flows directly to the Suriname River, while the drainage system of the Mr. J.C. de Mirandastraat crosses the Waterkant to end up in the Suriname River. The area at Fort Zeelandia has its own drainage system that also leads to the Suriname River. The outlets at SMS Pier, Mr. J.C. de Mirandastraat and Fort Zeelandia are incorporated into steel sheet piles. The diameter of the drainage pipes in the inner city varies between 30 cm and 40 cm. The drainage systems can be characterized as mixed systems because in addition to rainwater, they also receive discharges of domestic wastewater (partially treated by septic tanks). The drainage water of the north side of the Henck Arronstraat flows directly into the Van Sommelsdijckse Creek that dewater to the Suriname River. In the Van Sommelsdijckse Creek, the outflow is regulated via sluices and a pumping station near the Suriname River.

Due to urban development, the amount of water being discharged has increased over time, yet the capacity of the system has not been expanded. Open systems lack adequate maintenance and are often visibly polluted causing stench and inconvenience during high water events.

b. Surface Water

For the water quality baseline study, both existing and available data not exceeding 5 years old have been used along with in-situ measurements. Without the availability of national guidelines, the assessment of surface water quality is based on the US EPA National Recommended Water Quality Criteria for aquatic life (2006). Additionally, the WHO regulations for drinking water can also serve as a point of reference.

Existing data was obtained from previous water quality measurements (Figure 5-9) conducted in:

- the Suriname river in the years 2018 (during the long dry season) and 2020 (during the long rainy season) and,
- the Van Sommelsdijckse Creek in 2018 (long rainy season).

Baseline conditions have been determined in the area of the Suriname River (within the project area) and the van Sommelsdijckse Creek, between the Mgr. Wulfinghstraat and the pumping station at the outlet of the Van Sommelsdijckse Creek to the Suriname River. These two (2) waters bodies are the ultimate surface water bodies through which water from the project area is (directly) discharged.

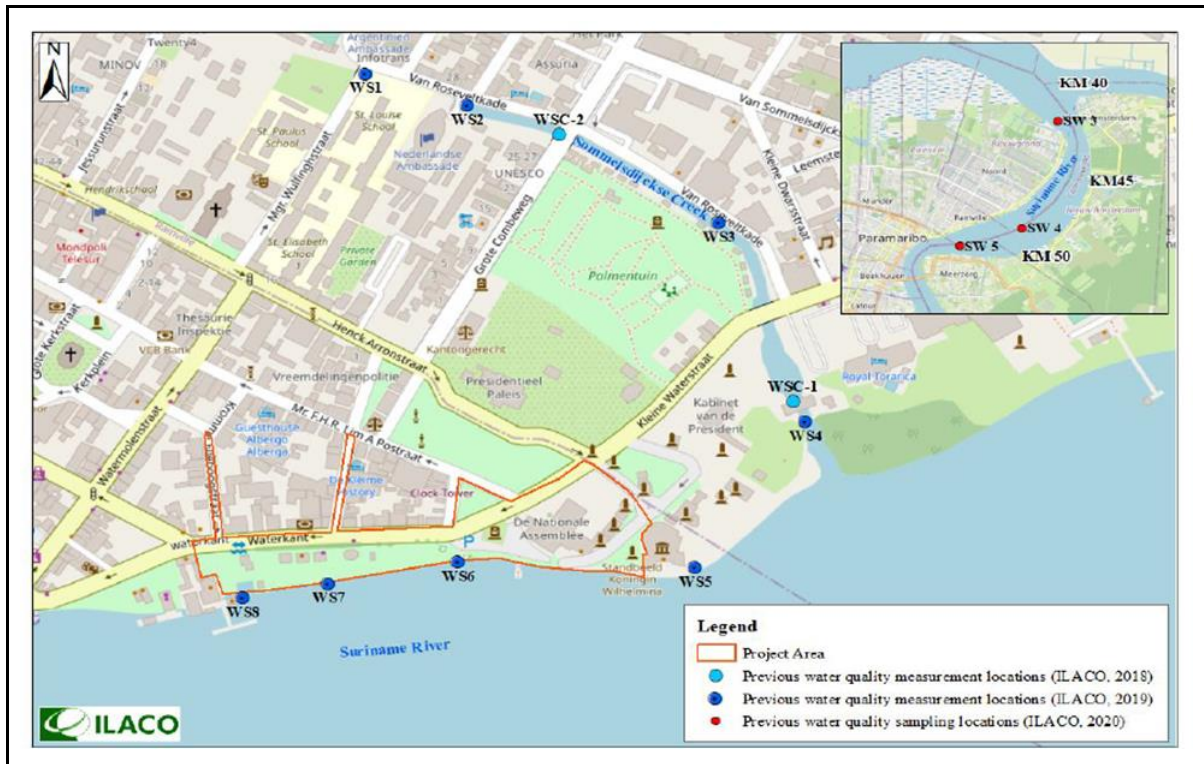


Figure 5-9: Overview of the water quality measurement locations from previous studies. Source: Ilaco, 2023b

A summary of the minimum and maximum values of water quality parameters in the Suriname River (in 2018 and 2020) and in the Van Sommelsdijckse Creek (in 2018) are presented in Table 5-4.

Table 5-4: Overview of results Suriname River (km 40 - km 50) and Van Sommelsdijckse Creek

Location	Measurement period	pH	EC (µS/cm)	Temp (°C)	DO (mg/L)	Turbidity (NTU)	Salinity (ppt)	Source
Suriname River (Left bank)	Long dry season (October 2018)	6.90 – 7.32	5527 – 11864	31.2 – 32.6	6.50 – 7.40	82.9 – 222	2.98 – 6.75	ILACO, 2019
Suriname River (Navigation channel)	Short dry season (April 2020)	6.39– 7.93	15846 – 23925	29.2 – 30.9	6.99 – 8.03	41.6 – 609	9.24 – 14.47	ILACO, 2020
	Long rainy season (May, July and August 2020)	6.11– 7.55	191 – 28345	27.4 – 32.3	3.41– 7.43	0.0 – 1661	0.02 – 17.43	
van Sommelsdijckse Creek	Long rainy season (June 2018)	6.39 – 7.19	869 – 881	28.3 – 29.7	1.44 – 3.18	33.8 – 36.9	0.36 – 0.37	ILACO, 2018
	Long dry season (October 2018)	6.83 – 8.28	1223 – 4891	29.3 – 30.0	0.67 – 8.29	9.0 – 285	0.58 – 2.60	ILACO, 2019

Based on the in-situ measurements in the Suriname River (km 40 - km 50), the results indicated:

- pH varied between 6.11 and 7.93, which is circum-neutral to slightly basic. The pH decreases when going upstream. The pH varies depending upon the degree of mixing of fresh and seawater. There is no clear seasonal effect observed in the pH values.
- The EC values varied between 191 and 28345 $\mu\text{S}/\text{cm}$. The EC values are higher towards the river mouth. At low tide, the EC is lower and decreases when going further upstream. Generally, the EC is higher in the dry season.
- DO values varied between 3.41 and 8.03 mg/L. The DO values are higher in the dry season than in the rainy season. This is possibly attributed to the increased wave action due to increased wind speeds during the dry season.
- Turbidity values are usually low. Elevated values were mostly associated with dredging activities at the time measurements were taken in 2020 (e.g., in May 2020 values up to 1661 NTU were recorded).

As for the in-situ measurements in the Van Sommelsdijckse Creek, the results indicated:

- pH varied between 6.39 and 8.28, which is around neutral to slightly basic.
- The EC values varied between 869 and 4891 $\mu\text{S}/\text{cm}$, with higher values observed in the dry season.
- DO values varied between 1.44 and 3.18 mg/L in the long rainy season and between 0.67 and 8.29 mg/L in the long dry season.
- Turbidity values were generally low, with measurements between 9 and 285 NTU. The highest value of 285 NTU was measured at the outlet of the Van Sommelsdijckse Creek into the Suriname River.

The current in-situ measurements of the Suriname River and the Van Sommelsdijckse Creek were carried out on February 1-2, 2023 (during the short rainy season). Considering the locations measured in 2018 and 2020, four (4) locations in the Suriname River and at six (6) locations in the Van Sommelsdijckse Creek were selected. An overview of the current measurement locations is described in Table 5-5 and presented in Figure 5-10.

Table 5-5: Description of water quality measurement locations

Location ID	Location Description
WQ1	Suriname River - SMS Pier
WQ2	Suriname River – From a balcony located at the Waterfront
WQ3	Suriname River - Marine trap
WQ4	Suriname River – Outlet Fort Zeelandia
WQ5	Van Sommelsdijckse Creek – Outlet pumping station of the Van Sommelsdijckse Creek to Suriname River
WQ6	Van Sommelsdijckse Creek – Inlet of the pumping station of Van Sommelsdijckse

Location ID	Location Description
	Creek
WQ7	Van Sommelsdijckse Creek – Cross section at Van Roseveltkade and the Kleine Waterstraat
WQ8	Van Sommelsdijckse Creek – Cross section between Grote Combeweg and Van Roseveltkade
WQ9	Van Sommelsdijckse Creek – Near the bridge of Embassy of the Netherlands
WQ10	Van Sommelsdijckse Creek – Cross section between Mgr. Wulfinghstraat and Van Roseveltkade



Figure 5-10: Overview current water quality measurement location. Source: Illaco, 2023b

A summary of the results of the current in-situ measurements of the Suriname River and the Van Sommelsdijckse Creek is presented in Table 5-6.

Table 5-6: Summary of in-situ measurements in the Suriname River and the van Sommelsdijkse Creek in February 2023

Location	pH	EC ($\mu\text{S}/\text{cm}$)	Temp ($^{\circ}\text{C}$)	DO (mg/L)	Turbidity (NTU)	Salinity (ppt)
WQ1- Suriname River	7.24	124	27.55	7.69	41.50	0.04
WQ2- Suriname River	7.46	134	27.60	7.89	47.80	0.04
WQ3- Suriname River	7.58	195	27.70	8.69	66.50	0.06
WQ4- Suriname River	7.29	163	27.90	7.99	54.20	0.05
WQ5- van Sommelsdijkse Creek	6.79	3378	26.90	8.41	42.30	1.75
WQ6- van Sommelsdijkse Creek	6.66	768	26.30	0.21	2.50	0.32
WQ7- van Sommelsdijkse Creek	7.06	775	26.50	0.64	0.00	0.33
WQ8- van Sommelsdijkse Creek	6.82	676	26.30	2.19	4.60	0.28
WQ9- van Sommelsdijkse Creek	6.95	700	26.10	0.85	5.90	0.29
WQ10- van Sommelsdijkse Creek	7.18	726	26.20	1.13	8.60	0.30

The current in-situ measurements in the Suriname River provided the following results:

- The pH in the river is around 7, which is near neutral.
- The EC values, which were measured during rising from low to high tide, varied between 124 and 195 $\mu\text{S}/\text{cm}$.
- The DO value varied between 7.69 and 8.69 mg/L .
- The clarity of the water of the river was slightly turbid. The turbidity levels are therefore considered low.

In-situ measurements in the Van Sommelsdijkse Creek provided the following results:

- The pH varies between 6.66 and 7.18, which is near neutral.
- The EC values at WQ6 - WQ10 varied between 676 and 775 $\mu\text{S}/\text{cm}$. These values can be attributed to the discharge of wastewater in the creek at the time of measurements.
- A higher EC value (3378 $\mu\text{S}/\text{cm}$) was measured at the outlet pumping station of the Van Sommelsdijkse Creek into Suriname River (WQ5). At the time of the measurement, high tide was observed in the Suriname River. This high EC value may be attributed to penetration of river water into the creek.
- There was no water flow observed within the creek. The DO values are considered low at WQ6 -WQ10. The higher DO at WQ5 may result from influence from the Suriname River, as this is also observed for the EC and salinity.
- The water from the creek was almost clear to slightly turbid. The turbidity levels are therefore considered low.

The overall findings of the water quality baseline study indicates the current in-situ measurements are more or less the same as previous collected data. In general, data was available for all four seasons. From this data, the following can be concluded.

For the Suriname river:

- The pH of the Suriname River is circum-neutral to slightly basic and varies depending upon the degree of mixing of fresh and seawater.
- The EC values during the short rainy season (February 2023) are within the same range as measured during the long rainy season in 2020. Near the project area, higher EC values are measured during high tide and also during the dryer seasons.
- The measured turbidity values are relatively low, similar to previous measurements.
- The DO values of the Suriname River indicate relatively healthy water (levels above 6.5 mg/L).

For the Van Sommelsdijckse Creek:

- The pH of the creek is circum-neutral to slightly basic.
- The EC values during the short rainy season (February 2023) are within the same range as measured during the long rainy season in 2018. Higher EC values were measured during the dryer season in 2018. Current observed EC values can be attributed to discharge of waste water in the creek at the time of measurement.
- The measured turbidity values are relatively low, similar to previous measurements.
- At the outlet of the pumping station of the van Sommelsdijckse Creek into Suriname River, higher EC, DO and turbidity values can be measured due to influence from the Suriname River (high tide).
- The DO values of the creek indicate rather poor water quality (levels below 6.5 mg/L).

c. Groundwater

Deep groundwater water

The deep groundwater system consists of confined aquifers and are isolated from the shallow groundwater by impermeable clay layers. The aquifers of Suriname are mainly in the coastal basin, which are built up of unconsolidated sediments consisting of a sequence of clay, sands, sandy clay, clayey sands, gravel, with more or less kaolin content, and thin bed organic compound.

The study area is underlain by three major aquifers (see Figure 5-11):

- The A-sand aquifer (in the Burnside Formation) contains freshwater in many locations, including Paramaribo where the project site is located. It is found here at approximate depths between 120 m and 160 m. Drinking water is abstracted from the A-sand aquifer and distributed by the SWM to the Waterfront. The aquifer thickness varies from 10 m - 60 m. The A-Sand aquifer is not directly recharged by rainwater, and upward leakage of groundwater is likely to come from the older, underlying formation.
- The Coesewijne aquifer contains freshwater in many locations of the coastal plain, including Paramaribo and the project site. The top of the aquifer is found at a depth of 70 m at Paramaribo and slightly less deep in the pipeline area. The Coesewijne sands are in hydraulic contact with the overlying Zanderij Formation, with groundwater flow

- in the southern Young Coastal Plain (Helena Christina road – Lelydorp) and diffusion in the northern Young Coastal Plain.
- The Zanderij aquifer contains mostly brackish water in the Young Coastal Plain, including the project site. The Formation crops out in the Savanna Belt and dips to the north. At Paramaribo it is found at depths of about 30 m - 50 m. The Zanderij Formation is in hydraulic contact with the sandy deposits of the Coropina Formation (Lelydorp Deposits) south of Lelydorp. To the north and in the study area, the aquifer does not have hydraulic contact with surface deposits due to the heavy clay in overlying layers.

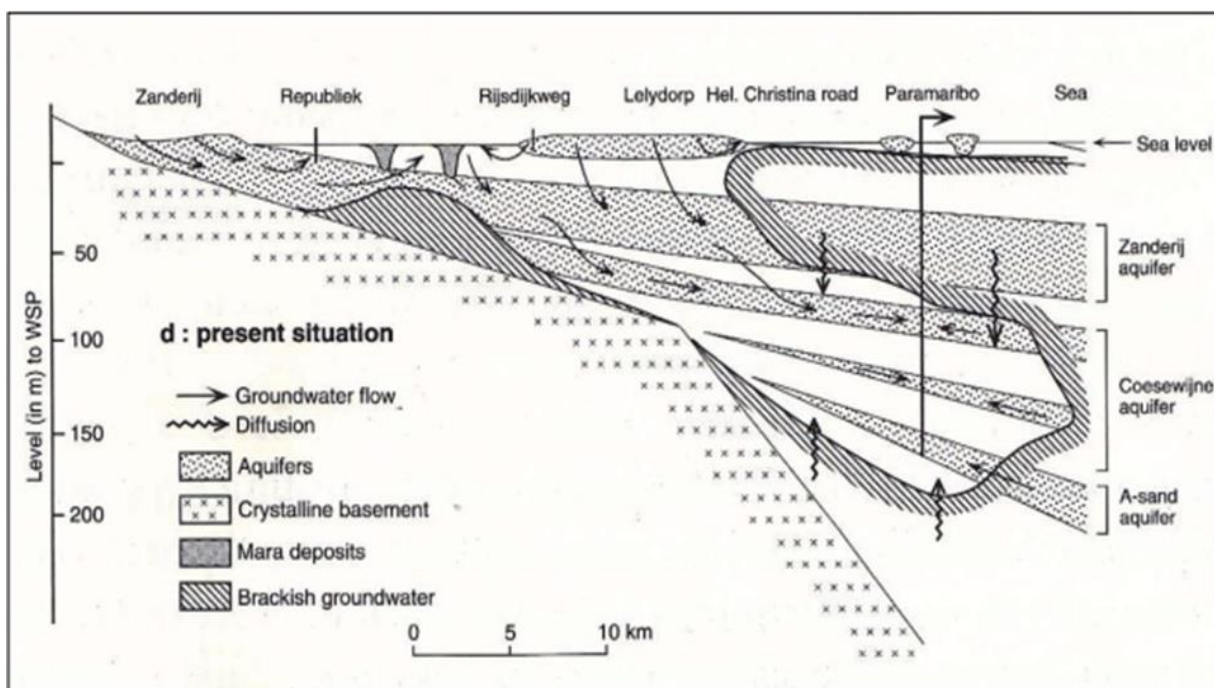


Figure 5-11: Hydrogeological section Zanderij-Paramaribo¹³

5.1.4 Noise

For the noise baseline study, previous baseline data (noise measurement results from 2018 and 2020) was used in combination with a site visit and recent noise measurements. During the site visit on January 26th, 2023, the sensitive receptors, and the main noise sources within the area of indirect influence (AII) were identified. The sensitive receptors include a polyclinic, a church and two museums. In addition, there are residents within the project and the wider study area. Figure 5-12 gives an overview of the project area and its immediate surroundings.

¹³ Groen, J. 1998. Hydrogeological investigations in Suriname. - p. 129-174. In: Th. E. Wong, D.R. De Vletter, L. Krook, J.I.S. Zonneveld, and A.J. Van Loon, (eds). The history of earth sciences in Suriname - Kon. Ned. Akad. Wet. And Ned. Inst. Toegep. Geowet. TNO.

As for the identified main noise sources, these include:

- Traffic along the roads within the study area.
- Construction works for example at a building of the Ministry of Social Affairs and Housing at the junction of the Kromme Elleboogstraat and Waterkant, and
- Construction works near the junction of the Mr. F.H.R. Lim A Postraat and the Tamarindelaan.

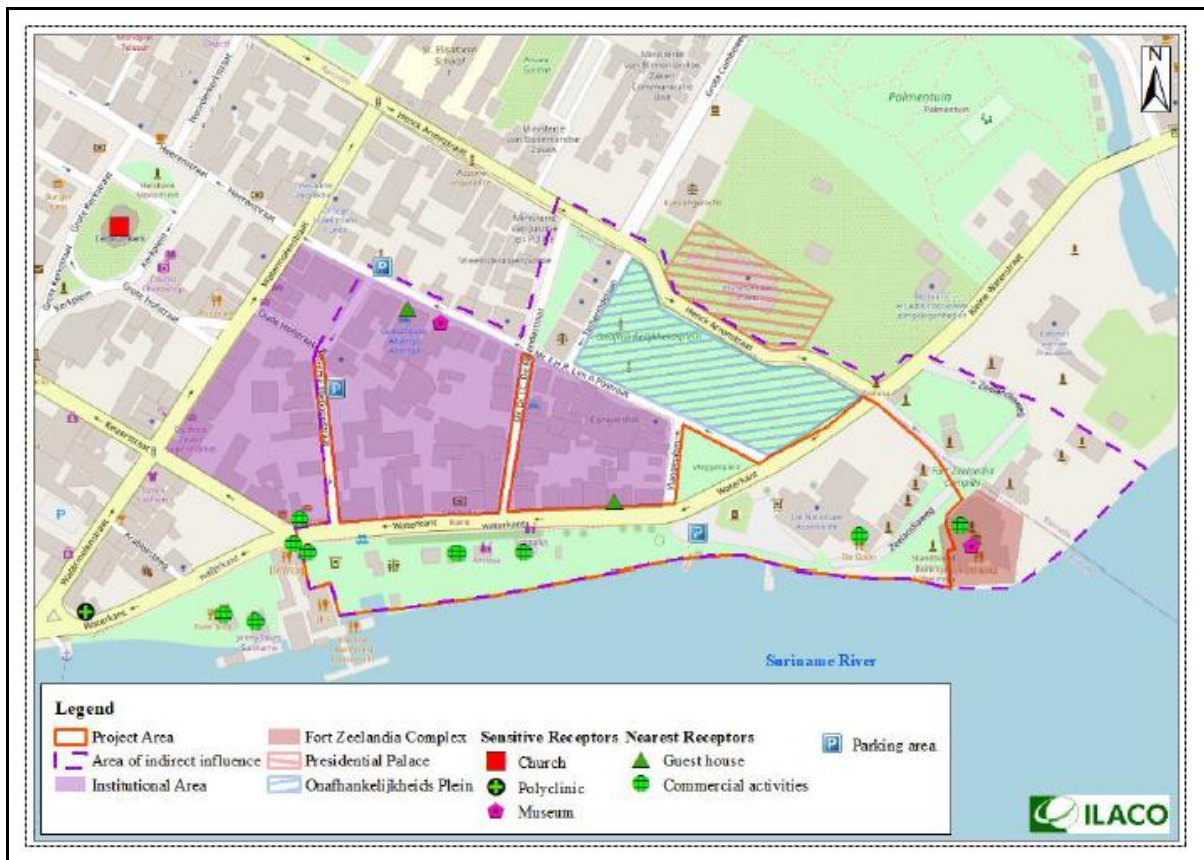


Figure 5-12: Overview of land use and nearest receptors within the project and wider study area. Source: Illaco, 2023c

Current noise levels were measured at locations that were selected by means of the previous noise studies, land use information and the presence of sensitive receptors within the wider study area. In total five (5) locations were selected (Figure 5-13):

- The SMS Pier complex (N1)
- The junction of the Mr. J.C. de Mirandastraat and the Waterkant (N2)
- The Oud Vlaggenplein at the junction of the Waterkant and the Mr. F.H.R. Lim A Postraat and near the Onafhankelijkheidsplein (N3)
- An open grass field along the Zeelandiaweg (N4) and
- The shore at Waterkant near the balcony over the Suriname River (N5).



Figure 5-13: Overview of the five noise measurement locations. Source: Illaco, 2023c

As previously mentioned, noise measurement results from 2018 and 2020 (all within the wider project area) are also used to determine the noise baseline. Table 5-7 gives an overview of the previous noise measurement results.

Table 5-7: Overview of previous noise measurement from 2018 and 2020

No	Location	Time period	Motorized traffic intensity	LAeq	Remarks	Year
N1	At the junction of the Henck Arronstraat and the Grote Combeweg.	06:30-07:00	658	67.6	5 m away from the axis of the Henck Arronstraat	2018
		12:30-13:00	848	68.5		
		16:00-16:30	854	68.1		
N2	At the junction of the Onafhankelijkheidsplein and the Kleine Waterstraat	07:15-07:45	849	72.5	5 m away from the axis of the Kleine Waterstraat	2018
		13:15-13:45	667	72.0		
		16:45-17:15	866	71.6		
N3	At the junction of Mr. J.C de Mirandastraat and Mr. F.H.R Lim A Po straat	08:00-08:30	400	63.7	5 m away from the axis of the Mr. J.C. De Mirandastraat	2018
		14:00-14:30	340	62.7		
		17:30-18:00	229	60.7		
N4	At the junction of the Kromme Elleboogstraat and Waterkant	09:00-09:30	497	69.3	5 m away from the axis of the Waterkant	2018
		15:00-15:30	420	68.8		
		18:15-18:45	390	70.2		
P-1	On the parking lot of the National Assembly, the terrain is covered with gravel and is along Waterkant (south-east) and the National Assembly.	9:16 – 9:46	345	52.8	45 m away from the axis of the Waterkant	2020

The main findings from the noise measurements conducted in 2018 (ILACO, 2019) are:

- Noise levels measured for the ESIA studies for the Reconstruction of the Parliament Building and Rehabilitation and operation of Historical Buildings in the inner city of Paramaribo varied between 60.7 and 72.5 dBA.
- During daytime, all noise levels exceeded the applicable IFC daytime standard of 55 dBA for residential / institutional areas at all locations.
- Noise levels at two locations, namely at the junction of the Onafhankelijkheidsplein and the Kleine Waterstraat (N2) and at the junction of the Kromme Elleboogstraat and the Waterkant (N4) also exceeded the applicable IFC daytime standard of 70 dBA for commercial areas.
- A high motorized traffic intensity was observed during the measurements, which also is the main source of the high noise levels recorded. It should be noted that the measurements were also conducted approx. 5m away from the axis of the roads.

The main findings from the noise measurements conducted in 2020 (ILACO, 2020) are:

- At the parking lot of the National Assembly (P-1), a daytime noise level of 52.8 dBA was measured.
- The noise level was below the applicable IFC daytime standard of 55 dBA for residential/institutional areas and 70 dBA for commercial areas.

For this study, noise measurements were conducted during one season (short rainy season), on February 1-3, 2023. The measurements were conducted for 30 minutes continuously during the daytime (7.00 AM – 10.00 PM) and nighttime (10.00 PM – 7.00 AM). During daytime measurements, the weather conditions were dominated by cloud cover without sun, and the wind speed varied from light air to light breeze. A predominant northeast wind direction was observed. During nighttime measurements, the weather conditions varied between clear sky with stars and cloud cover. The wind speed varied between calm and light air, and a predominant northeast wind direction was observed. No measurements were conducted during rainfall.

The results of the day and nighttime measurements, including count of motorized traffic passing by, are summarized in Table 5-8.

Table 5-8: Results of day and nighttime noise measurements (Ilaco, 2023)

ID #	Location	Daytime (7.00 AM - 10.00 PM)				Nighttime (10.00 PM - 7.00 AM)			
		Motorized traffic intensity	L10	L90	LAeq	Motorized traffic intensity	L10	L90	LAeq
			dB(A)				dB(A)		
N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden jetty in the Suriname River. Some boats were observed at the jetty.	543	54.5	46.4	51.1	324	52.7	45.3	50.6
N2	At the junction of the Mr. J.C. de Miranda and the Waterkant, approx. 3 m away from the edge of the road. The ground was paved with street tiles	451	73.0	57.7	70.0	198	68.5	55.3	65.3
N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F.H.R. Lim A Postraat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.	403	64.1	54.8	61.9	86	61.0	44.5	56.4
N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.	20	55.1	48.6	52.9	3	47.1	42.9	45.1
N5	Along the shore at Waterkant near the Balcony over the Suriname River, approx. 30 m from the Waterkant and 2 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.	289	65.8	53.1	60.9	65	54.4	38.5	50.3
	Exceeds the IFC noise standard of 55 dB(A) for institutional areas at daytime (7.00 AM - 10.00 PM)								
	Exceeds the IFC noise standards of 45 dB(A) for institutional areas at nighttime (10.00 PM - 7.00 AM)								

ID #	Location	Daytime (7.00 AM - 10.00 PM)				Nighttime (10.00 PM - 7.00 AM)			
		Motorized traffic intensity	L10	L90	LAeq	Motorized traffic intensity	L10	L90	LAeq
			dB(A)				dB(A)		
	Exceeds the IFC noise standard of 55 dB(A) for institutional areas and 70 dB(A) for commercial areas at daytime (7.00 AM - 10.00 PM)								

In the absence of specific national guidelines for noise levels, the international standards (IFC)¹⁴ for community-based noise limits are applied (Table 5-9). These guidelines are also used by NIMOS. The IFC states that noise impacts should be limited to a maximum increase above background levels of 3dB(A) at the nearest receptor location off-site (IFC 2007). For a person with average hearing acuity, an increase of less than 3 dB(A) in the general ambient noise level would not be detectable.

In the project area, the majority of buildings are offices and commercial buildings with operating hours between 7.00 AM - 5.00 PM. This situation requires applying both the standards for residential/institutional and commercial receptors for the measurement of noise levels during daytime. For nighttime, the residential standards were used to assess the measured noise levels, including the residents living within the wider study area.

Table 5-9: Applicable Outdoor Noise Standards for Community-based noise (Source: IFC, 2007)

Receptor	Maximum Allowable Ambient Noise Levels 1-hour LAeq (dB(A))	
	Daytime 07.00 AM - 10.00 PM	Nighttime 10.00 PM - 7.00 AM
Residential; institutional; educational	55	45
Industrial; commercial	70	70

¹⁴ IFC/World Bank, 2007. Environmental, Health, and Safety (EHS) Guidelines GENERAL EHS GUIDELINES: ENVIRONMENTAL NOISE MANAGEMENT

The main findings and conclusions of the noise study are:

- During daytime, the measured LAeq levels varied between 51.1 dB(A) and 70.0 dB(A). The main noise source was the continuous noise of traffic passing by. Location N2 and N3 (see Table 5-8) were along main roads (respectively 3 m and 15 m away from the edge of the main roads), where the higher noise levels were measured.
- During nighttime, the measured LAeq levels varied between 45.1 dB(A) and 65.3 dB(A). The main noise sources came from music playing in the background and passing traffic. Other frequently observed noise sources were from starting engines of mopeds, from people talking at N2, and from birds singing at N4.
- It is observed that the noise levels from the current noise measurements are within the same range compared to noise levels from previous noise measurements. Higher noise levels are recorded along the main roads, because of the intensity of passing vehicles. The noise levels decrease with the increasing distance from the main roads. It is expected that people situated in buildings located further from the main roads will experience lower noise levels than those along the main roads.

5.1.5 Flora and Fauna

a. Flora

The main vegetation types in the Suriname River riparian zone are mangrove forest, inundated forest, open savannah, and secondary vegetation. Most of the original vegetation along the riverside of the project area has been replaced by man-made structures. However, a few mangrove plants have been observed along the sheet pile wall at the Waterkant shore riverside. It is highly possible that mangrove trees have been removed in the past. Mangrove vegetation is particularly important as it prevents riverbank erosion.

The main vegetation existing in the project area consists of the well-known Almond trees (24) most of them planted in a row along the riverside within the paved sidewalks, Mahogany trees (17) located mainly near Fort Zeelandia and Tamarind trees (16) surrounding the Independent square.

Trees present at the study site include the Koningspalm (8), Obe palm (3), Groenhart tree (3), and Bottenschaar palm (2). There are also several tree types with only 1 species, including the Peltophorum, Denneboom, Arecapalm, Flamboyant, Bosamandel, and Bougainville (Table 5-10). An inventory conducted by the Ministry of Public Works - Department of Public Green Areas of the existing tree species and their location within the project area is presented in **Appendix N**.

Table 5-10: Identified Flora within the project.

Local name	Scientific name ¹⁵	Amount
Almond Tree	<i>Terminalia catappa</i> L.	24
Mahogany Tree	<i>Swietenia mahagoni</i> (L.) Jacq.	17
Tamarind Tree	<i>TAMARINDUS indica</i> L.	16
Koningspalm	<i>Roystonea oleracea</i> O.F.Cook	8
Obe palm	<i>Elaeis guineensis</i> Jacq.	3
Groenhart Tree	<i>Handroanthus serratifolius</i> (Vahl) S.O.Grose	3
Bottenschaar palm	<i>Ptychosperma macarthurii</i> (H.Wendl. ex H.J.Veitch) H.Wendl. ex Hook.f.	2
Peltophorum	<i>Peltophorum pterocarpum</i> (DC.) Backer ex K.Heyne	1
Denneboom	<i>Pinus</i> L.	1
Arecapalm	<i>Dyopsis lutescens</i> (H.Wendl.) Beentje & J.Dransf.	1
Flamboyant	<i>Delonix regia</i> (Bojer ex Hook.) Raf.	1
Bosamandel	<i>Terminalia dichotoma</i> E.Mey.	1
Bougainville	<i>Bougainvillea Comm.</i> ex Juss.	1

Observations on the project site show that all plants were very common species, and no vulnerable, rare or endangered plant species were recorded. In addition, a few tree species are near threatened but all trees will be preserved. As such, there are no sensitive ecological areas in the study area.

b. Fauna

The lower Suriname River is a moderately to highly disturbed ecosystem that has been adversely affected by anthropogenic activities.

No unique fish species have been recorded in the Suriname river to date. However, one species - the Goliath Grouper (*Epinephelus itajara*) - is listed as Critically Endangered by the IUCN¹⁶. This species is scarce because of overfishing, although the species is commonly caught in Suriname by local fishermen. A total of 36 different fish species were recorded near Paramaribo where estuarine and freshwaters converge (SRK Consulting, 2019). Other aquatic or semi-aquatic species that may occur in the Suriname River are amphibians (frogs and toads) and reptiles (caimans and turtles).

¹⁵ Verified by E. Zschuschen, Head-National Herbarium of Suriname (March, 2023)

¹⁶ <https://www.iucnredlist.org/>

Common fauna found in Suriname, including Paramaribo's inner city, are the lizards (in Dutch: hagedissen, langadisa, sapakara, legwana, etc.). Lizards are mostly found in trees. Many waterbirds have been spotted along the riverside at the Waterfront. The most common are the Tricolored Heron, Little Blue Heron, and the Great and Snowy Egret. Others that have been noticed as well are the White-winged Swallow, Tropical Mockingbird, Southern House Wren and without a doubt the Great Kiskadee, the Fork-tailed Flycatcher, Ruddy Ground Dove and Black-throated Mango¹⁷. Although only a few mangroves have been observed along the sheet pile wall at the Waterkant shore, crabs have been spotted in surrounding areas (e.g., the Central market). No sensitive aquatic habitats have been identified in the Suriname River near the study area.

5.1.6 Disasters Risks

When considering the potential impacts of a project, it is essential to consider the possibility of disaster risks that may occur in the area. Natural hazards, such as floods, droughts, and wildfires, can have devastating effects on communities and infrastructure, causing loss of life, property damage, and economic disruption (disasters). Table 5-11 shows the natural hazards that have been identified/ classified as high for Suriname, Paramaribo (GFDRR,2020).

Table 5-11: Overview Natural Hazard Suriname. Source:(GFDRR,2020).

Type of Hazard	Overall classification Suriname	Classification Paramaribo District	Method of classification and remarks.
Wildfire	High	Low	According to the information currently available.
Coastal flood	High	High	According to the information that is currently available. High: Potentially damaging waves are expected to flood the coast at least once in the next 10 years. Impact of coastal flood must be considered in different phases of projects for any activities located near the coast. Project planning decisions, project design, and construction methods must take into account the level of coastal flood hazard

¹⁷ <https://theurbanbirderworld.com/urban-birding-in-paramaribo/>

Type of Hazard	Overall classification Suriname	Classification Paramaribo District	Method of classification and remarks.
Urban flood	High	High	Based on modeled flood information currently available. High: Potentially damaging and life-threatening urban floods are expected to occur at least once in the next 10 years. Project planning decisions, project design, and construction methods must take into account the level of urban flood hazard
River flood	High	High	Based on modeled flood information currently available High: Potentially damaging and life-threatening river floods are expected to occur at least once in the next 10 years. Project planning decisions, project design, and construction methods must take into account the level of river flood hazard

a. Climate Scenarios

The proposed Climate Projections for the Third National Communications by the year 2100 are:

1. sea-level rise of 1.0 m;
2. rainfall decrease of 10%;
3. temperature increase (unknown value);
4. possible changes in wind speeds.

In a recent study, the State of the Climate (2021), climate projections have been developed, which can be summarized as follows:

Temperature

- Daily mean, minimum, and maximum temperatures are projected to increase in the entire country, although less at the coast and more in the southwest.
- Frequencies of hot days and hot nights increase throughout the country.
- Frequencies of cold days and cold nights will decrease and almost disappear.

Precipitation

- Yearly accumulated rainfall is expected to decrease strongly. In general, the decrease could surpass 20% of the historical average.
- The number of rainy days per year decreases, especially on the coast.
- Maximum precipitation in 5 days and in 1 day will increase greatly for all locations. This, together with the decrease in the number of rainy days, points to a change of rain regime towards fewer but more intense precipitation events.
- The Short dry season precipitation, dry season precipitation and short rainy precipitation will become drier throughout the country.
- This rainy season becomes drier at the coast but wetter in the interior.

Winds

- Maximum daily winds, gale wind days and strong wind days are projected to vary little. The main patterns visible in the historical map change very little in all scenarios and time horizons.

Humidity

- The climate in Suriname is expected to become drier, particularly in the South-West of the country.

In the Third National Communication on Climate Change, which has been finished recently, the climate scenario from the Second National Communication is adopted.

b. Historical Floods and Other Disaster Risk

According to the Environment Statistics (ABS, 2022), Suriname experiences frequent floods in the coastal plain and rivers. Inland and coastal flooding in urban areas (e.g., Paramaribo, Weg naar Zee, Jagtlust) usually results from a high volume of precipitation, poor drainage, and rising sea and river water levels. Although Suriname lies outside the hurricane zone, the country can still be impacted by hurricanes in the form of heavy rainfall. In 2022, both the interior and the districts of Saramacca, Nickerie and Paramaribo experienced extreme flooding. Severe flooding occurred during the period January to September 2022, which was pluvial flooding combined with river flooding events. The flooding mostly affected the interior of the country (District Sipaliwini and Brokopondo).

According to the data (ABS, 2022), there were a total of 39 registered disasters that occurred between 2017 and 2021, and none of them occurred in subsequent days. All the disasters were rainfall related, of which in 28 of the 39 days the rainfall events (71.8 %) were accompanied by heavy wind. In at least 20 of these last-mentioned days the roofs of houses and buildings were torn away. During 29 of the 39 days (74.4%) when the rainfall related hazard occurred, these events occurred in Paramaribo. According to Table 5-12 and Table 5-13, disaster risks do occur frequently in Paramaribo.

Table 5-12: Types of natural disaster and households affected between 2017 -2018. Source: ABS, 2022

Period D/MY	Type of Natural Disaster	Areas mostly Affected	Households Affected
2017			
25 May 2017	Heavy rainfall with heavy winds	Paramaribo, Wanica & Commewijne: Roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.	69
17 t/m 19 August 2017		Paramaribo, Wanica & Commewijne: roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.	10+
12 September 2017	Tail of a heavy tropical storm	Paramaribo, Wanica, Commewijne en Cornie: roofs torn away	30
Total natural disasters 2017			109
Period D/MY	Type of Natural Disaster	Areas mostly Affected	Households Affected
2018			
4 March 2018	Heavy rainfall with heavy winds	Paramaribo (Kwatta): Roofs torn away	1
7 April 2018		Paramaribo: (Parmaribo-North, Commewijne, Marowijne & Saramacca: were flooded	-
21 April 2018 23 April 2018		Paramaribo (Latour & Centrum): Roofs torn away	5
8 October 2018	Heavy rainfall with heavy winds.	Paramaribo (Blauwgrond): Roofs torn away after understorm	10
29 October 2018		Paramaribo: Roofs torn away after thunderstorm	1
Total natural disasters 2018			17
Remark: - = zero			

Table 5-13: Types of natural disaster and households affected between 2019 -2021. Source: ABS, 2022

Period D/MY	Type of Natural Disaster	Areas mostly Affected	Households Affected
2019			
7 March 2019	Heavy rainfall with heavy winds	Paramaribo (Rainville) & Commewijne (Meerzorg)	4
23 April 2019		Paramaribo (Paramaribo-North, Centrum, Kwatta & area Abraboki: were flooded	-
20 July 2019	Heavy rainfall with heavy winds	Paramaribo (Centrum) and Wanica (Leiding): roofs torn away	19
27 July 2019	Heavy rainfall with heavy winds	Paramaribo (Centrum & Munder): roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting. Also the roof of a school was torn away.	3
2 August 2019	Heavy rainfall	Paramaribo, Wanica & Commewijne: were flooded	2
12 August 2019	Heavy rainfall with heavy winds	Paramaribo (Morgenstond, Charlesburg, Tourtonne, Geyersvlijt) & Commewijne: were flooded and deprived of electricity	1
1 October 2019	Tail of a heavy tropical storm	Paramaribo (Centrum): roofs torn away	5
13 October 2019		Paramaribo (Rainville & Centrum): roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.	31
Total natural disasters 2019			65
Period D/MY	Type of Natural Disaster	Areas mostly Affected	Households Affected
2020			
8 July 2020	Heavy rainfall with heavy winds	Paramaribo and Nickerie: Roofs torn away	-
Total natural disasters 2020			-
Period D/MY	Type of Natural Disaster	Areas mostly Affected	Households Affected
2021			
3 September 2021	Heavy rainfall with heavy Winds	Paramaribo: Roofs torn away	4
6 September 2021		Paramaribo, Centrum: Roofs torn away	2
2 September 2021		Paramaribo, Centrum: Roofs torn away	4
28 August 2021	Heavy rainfall with heavy Winds	Paramaribo, Pontbuiten: Roofs torn away	9
9 October 2021	Heavy rainfall with heavy Winds	Paramaribo, Blauwgrond: Roofs torn away	4
Total natural disasters 2021			23

The 2023 socio-economic survey showed that residents, businesses, vendors, and others experience several types of natural disasters including storms, extreme winds, and flooding (Figure 5-14). About 25% of the respondents indicated that they experience extreme weather conditions at least 1 to 4 times a year. Businesses have to close with extreme weather events, and crafters often leave the site to protect their goods from deteriorating due to getting wet.

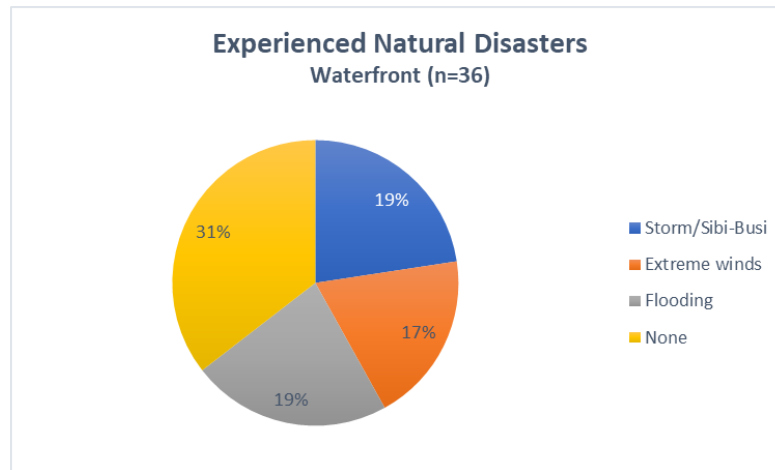


Figure 5-14: Survey participants who reported experiencing a natural disaster at the Waterfront.

c. Analysis Disaster Risk

Paramaribo, including the study area, is low-lying and is flat. These low-lying areas are threatened by the high river water level and erosion, causing river- and coastal flooding. During periods of heavy rainfall, flooding can be exacerbated when it occurs simultaneously with one of the two types mentioned. The following section provides the analysis of natural hazards on the Waterfront area. It involves evaluating the likelihood of:

- A) Pluvial flooding
- B) Flooding by intrusion of river water and Risk of Sea Level Rise
- C) Risk of erosion of the riverbank

A. Pluvial Flooding

Pluvial flooding refers to flooding that occurs as a result of heavy rainfall overwhelming the drainage systems and causing water to accumulate in streets, parking lots, and other low-lying areas. In January 2023, Surveying Company N.V. ENSUR conducted measurements to determine the ground level. Measurements were taken at about 300 selected locations at the Waterfront area and vicinity further referred to as the study area (Figure 5-15). The study area is located along the West Bank of the Suriname River and is within the city of Paramaribo. Contour lines were constructed for 1.80 m, 2.00 m, 2.20 m, 2.40 m, 2.60 m, 2.80 m, 3.00 m, 3.30 m, 3.50 m, 3.60 m, based on the measured elevation.



Figure 5-15: Overview of the study area to determine the existing natural hazards. (Source: POF).

Figure 5-16 gives an overview of the ground elevation zones within the study area, using the abovementioned contour lines (Amatali, 2023). The area enclosed by the Henck Arronstraat, Grote Combeweg and Heerenstraat is relatively high, ranging from about 3.00 m NSP to 3.70 m NSP, with a measured peak of 3,695 m NSP. At the North-East and South-West of this zone it is low elevated, with some zones lower than 1.80 m NSP. Outside the project area, at the North-East there are zones of which the ground level is lower than 1.50 m NSP. Along the river there is a fringe of which the elevation is lower than 1.50 m NSP.

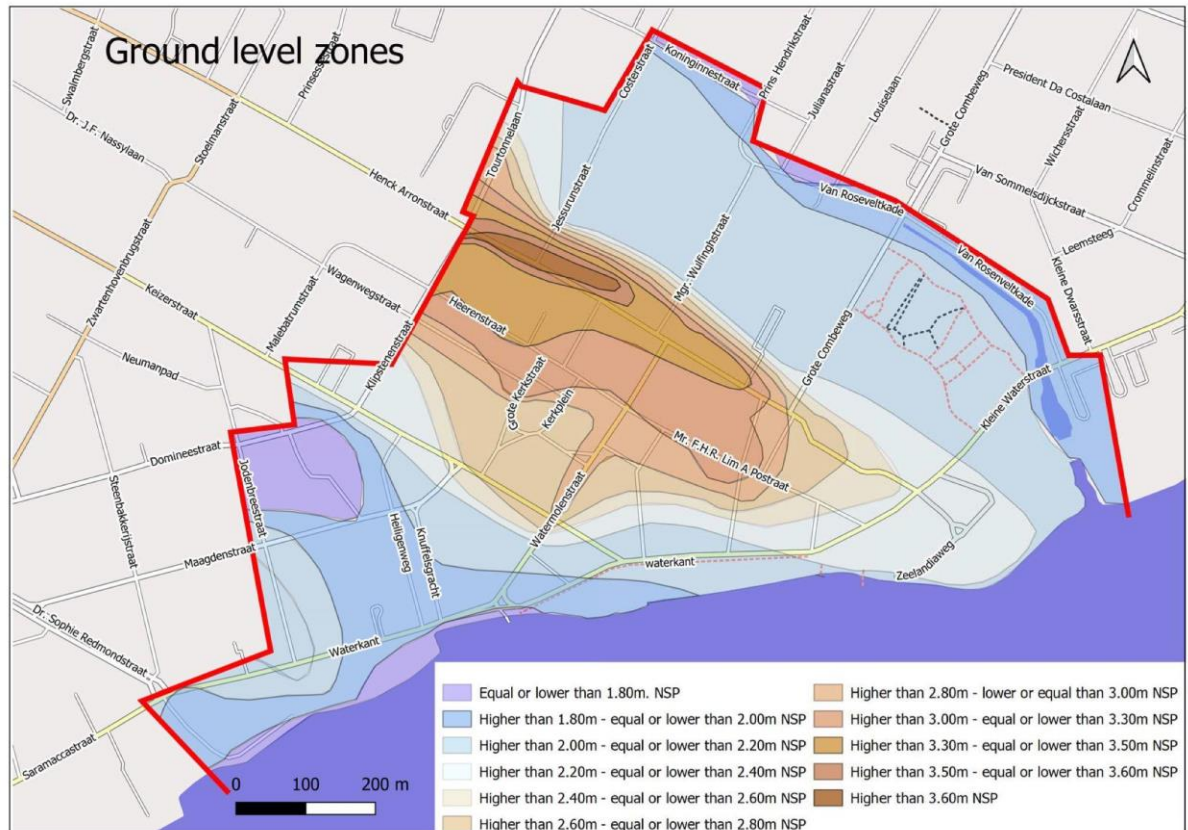


Figure 5-16: Topographic street map of study area. Source: Amatali & Naipal, 2023

Two (2) zones prone to frequent flooding can be observed in the study area, as depicted in Figure 5-17:

1. A small narrow zone (indicated by #1) close to the riverbank, at the junction of the Mr. J.C. de Mirandastraat and Waterkant (the ground level is equal or lower than 2.20 m NSP, which is relatively low); and
2. a larger zone (indicated by #2) located, at the Western part of the study area, near the junctions Maagdenstraat, Domineestraat, Jodenbreestraat and Neumanpad (with a spot of which the ground level is equal or less than 1.80 m and the remaining is higher than 1.80 m NSP and equal or less than 2.00 m NSP).



Figure 5-17: Drainage study area and flooding zones. Source: Amatali & Naipal, 2023

The study area is drained by two pumping stations and two sluices (Figure 5-17). About 64.4% of the study area, located at the North-East is drained by the pumping station at the outfall of the van Sommelsdijk Creek, see Pumping station 1. At this pumping station there is also a sluice for drainage properties.

Further upstream there is a pumping station at Knuffels gracht (Pumping station 2) and a sluice (Sluice 1) near the Central Market. These two drainage infrastructures are within one drainage area and drain about 32.9% of the study area located at the South-Western part of the area. Additionally, just upstream of the study area a sluice is located and drains about 2.7% of the study area.

Under the current condition no flooding of the road occurs in the project area (total study area is larger than project area). It often happens that water remains on the street due to poor inflow into the sewer. The area between the road and the sheet pile wall along the riverbank is poorly drained since drainage had never been carried out. As part of the update of the Master Plan for drainage of Great Paramaribo that is currently being executed, the capacity of the drainage system has been tested for future situations.

B.1 Flooding by intrusion of river water (without the consideration of sea level rise)

Flooding of the study area due to intrusion of river water depends mainly on the ground level of the area and the water level in the river. Based on the analysis of Amatali and Naipal, (2023), once in 2.5 years at least 2.6% of the study area is at risk, once in 5 years at least 20.2%, once in 25 years at least 57.2% and once in 50 years 70.8% without the consideration of sea level rise. Table 5-14 depicts the areas that are vulnerable to high water levels based on their corresponding return periods.

Table 5-14: Probability of High-Water Level in Paramaribo and Related Areas at risk without Sea Level Rise.

Return period (years)	Water level (m NSP)	Inundated Area (m2)	% of study area	Remarks
2.5	1.93	At least 14,434.12	2.6	Zones with earth's elevation 1.80 m NSP or lower. See Figure 5-18
5	2.05	At least 111,313.4	20.2	Zones with earth's elevation 2.00 m NSP or lower. See Figure 5-19
10	2.16	At least 111,313.4	20.2	Zones with earth's elevation 2.00 m NSP or lower. See Figure 5-19
25	2.30	At least 314,850.9	57.2	Zones with earth's elevation 2.20 m NSP or lower. See Figure 5-20
50	2.40	At least 389,743.9	70.8	Zones with earth's elevation 2.40 m NSP or lower. Figure 5-21
75	2.45	At Least 389,743.9	70.8	Zones with earth's elevation 2.40 m NSP or lower. Figure 5-21
100	2.50	At Least 389,743.9	70.8	Zones with earth's elevation 2.40 m NSP or lower. Figure 5-21

Figure 5-18 to Figure 5-27 depict the areas where the ground level is equal or below the contour lines of 1.80 m, 2.00 m, 2.20 m, 2.40 m, 2.60 m, 2.80 m, 3.00 m, 3.30 m, 3.50 m, and 3.60 m (Source: Amatali & Naipal, 2023).



Figure 5-18: Areas with ground level of 1.80 m NSP or lower. (Source: POF).



Figure 5-19: Areas with ground level of 2.00 m NSP or lower.

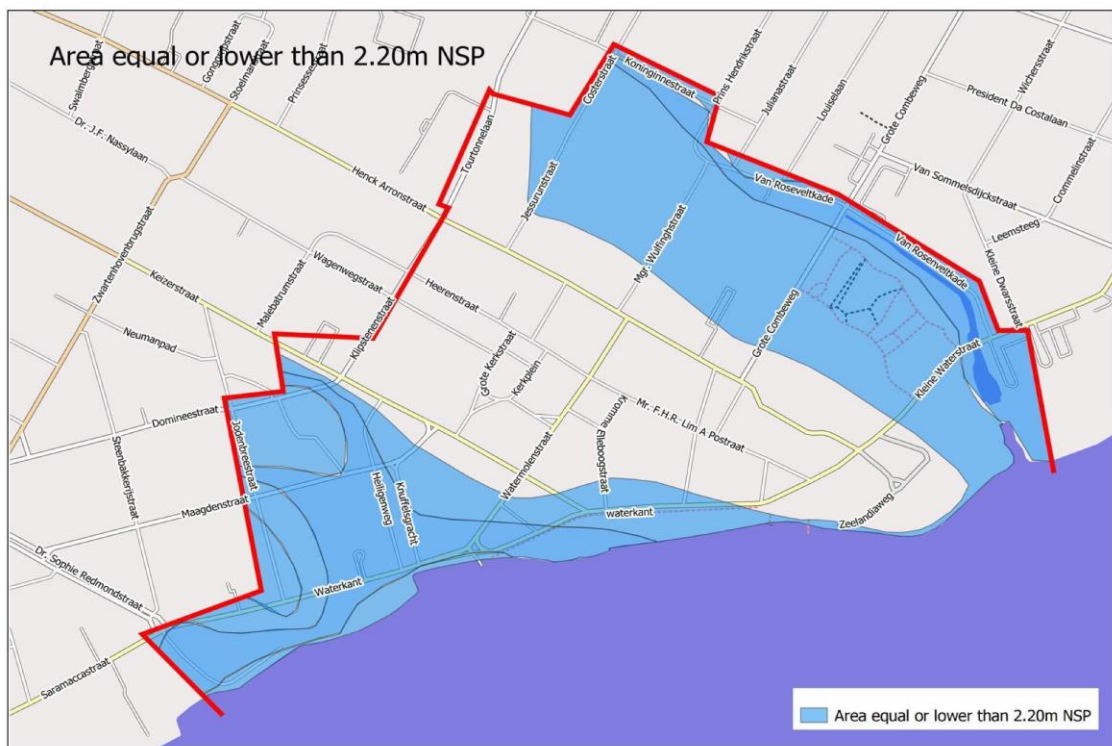


Figure 5-20: Areas with ground level of 2.20 m NSP or lower.

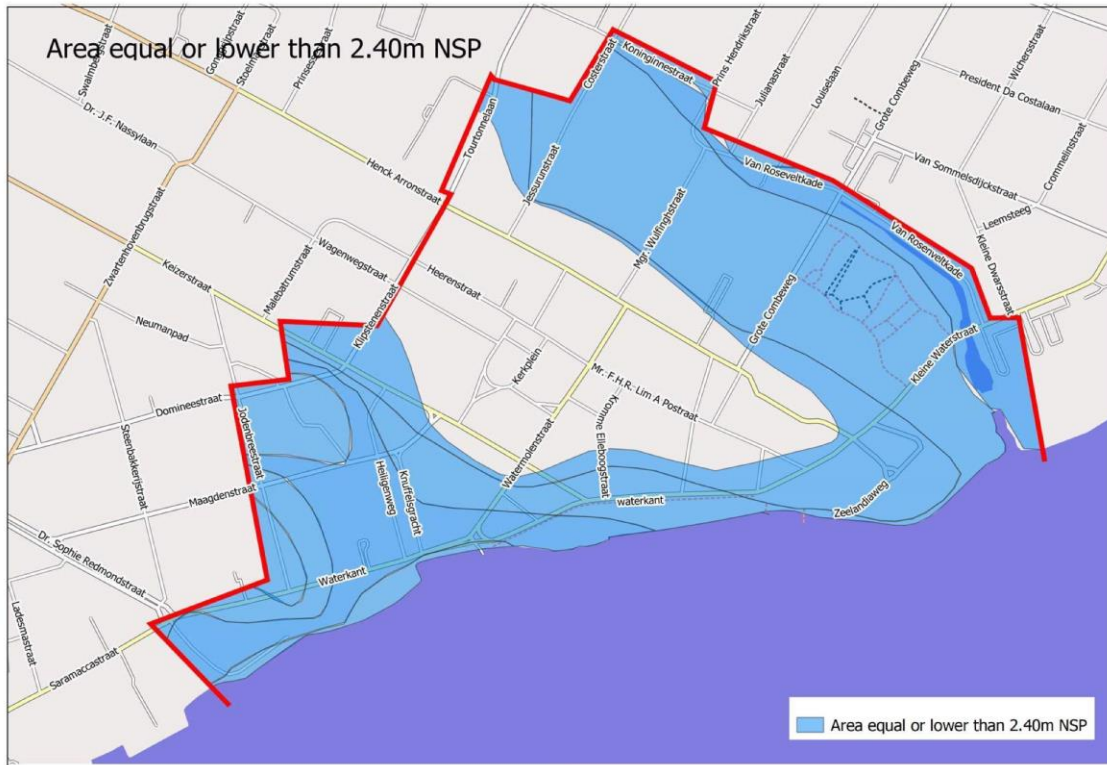


Figure 5-21: Areas with ground level of 2.40 m NSP or lower.

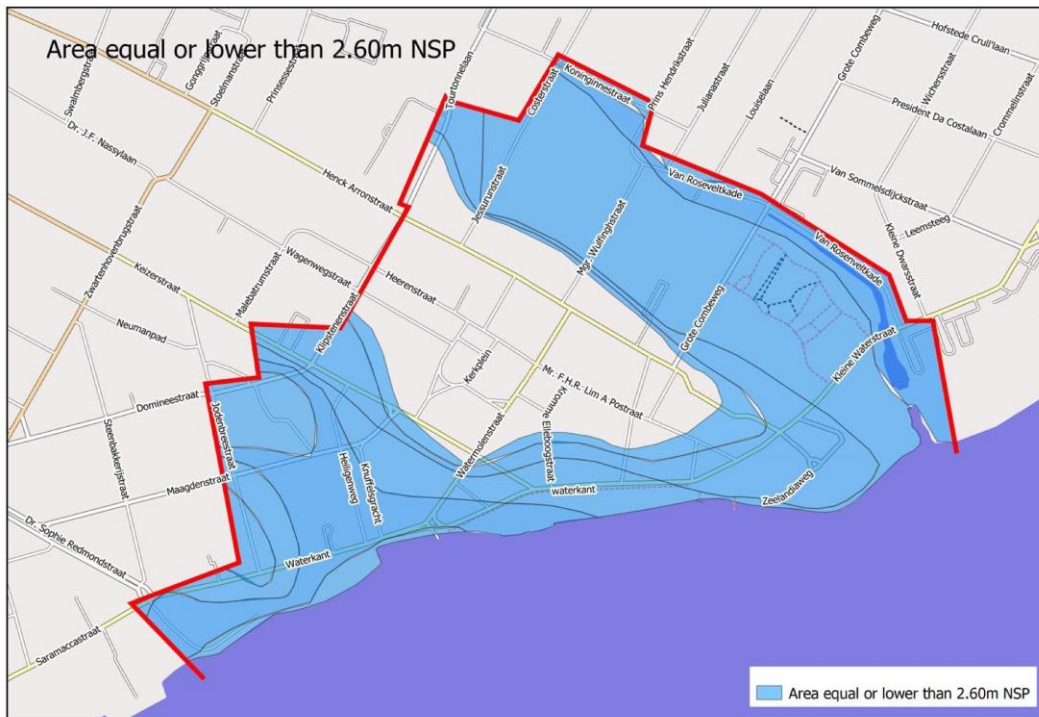


Figure 5-22: Areas with ground level of 2.60 m NSP or lower.

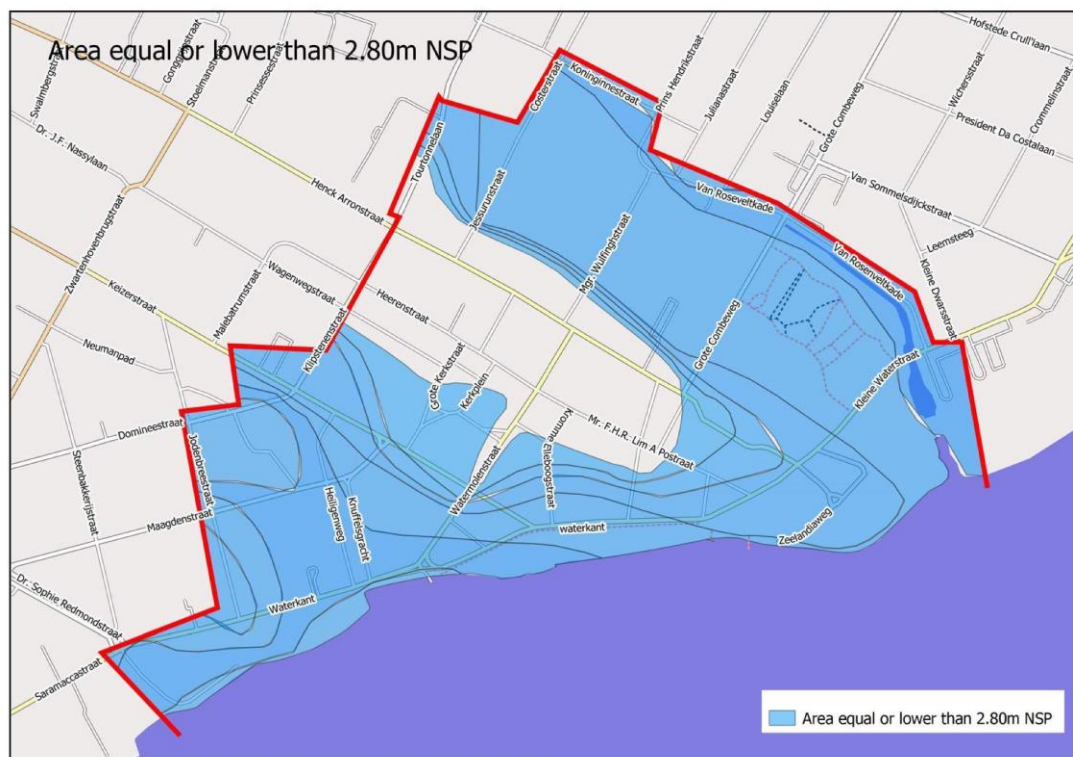


Figure 5-23: Areas with ground level of 2.80 m NSP or lower.

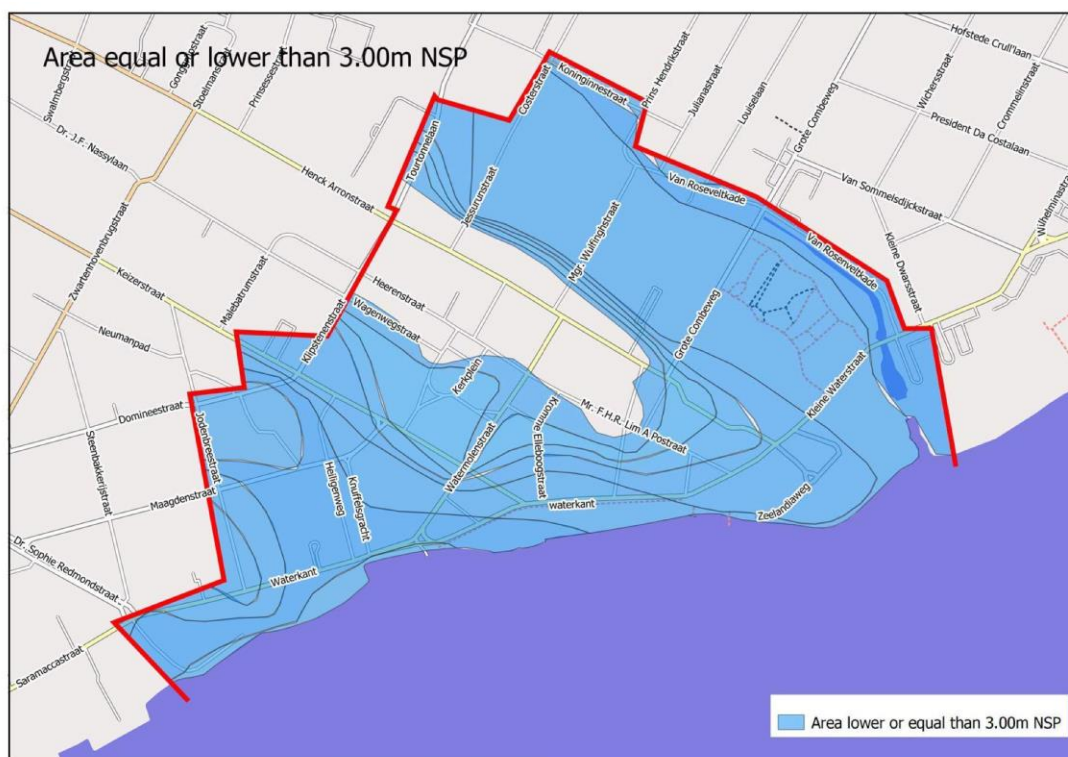


Figure 5-24: Areas with ground level of 3.00 m NSP or lower.

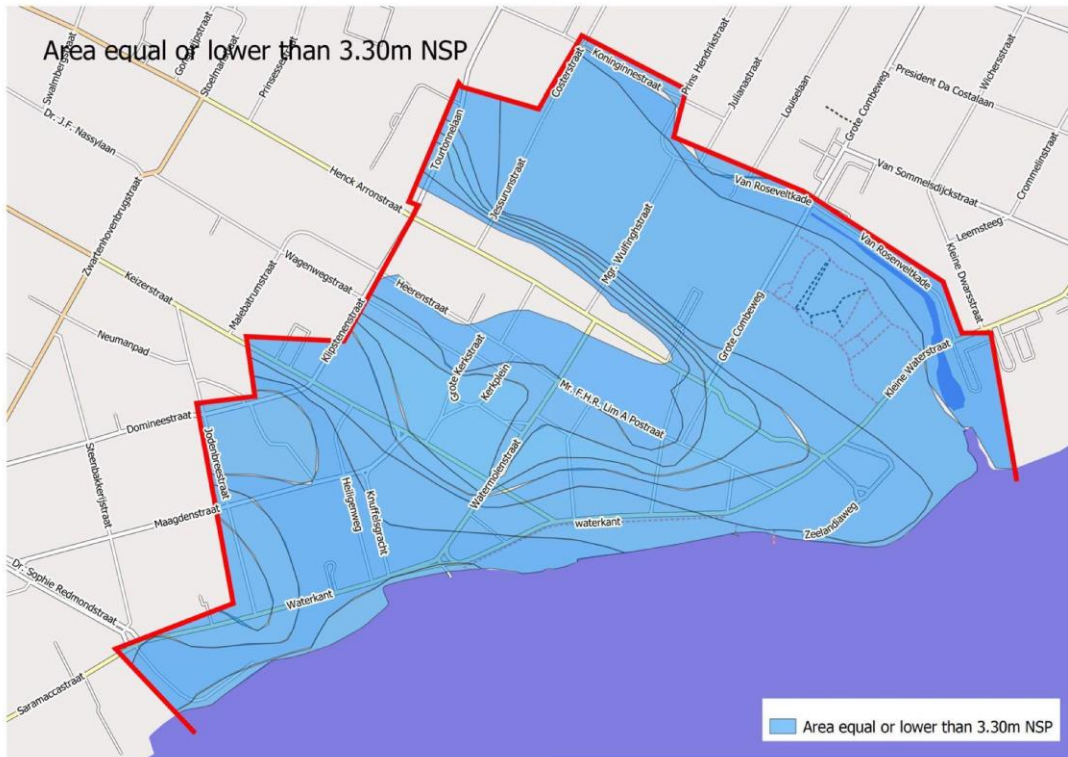


Figure 5-25: Areas with ground level of 3.30 m NSP or lower.

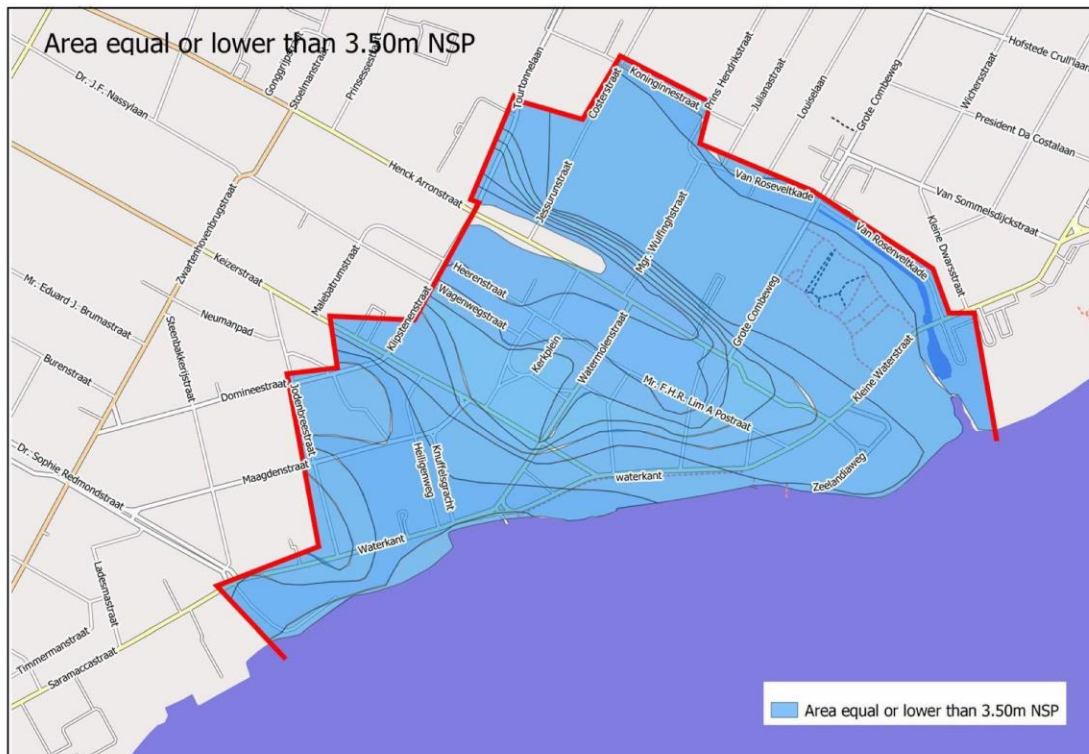


Figure 5-26: Areas with ground level of 3.50 m NSP or lower.

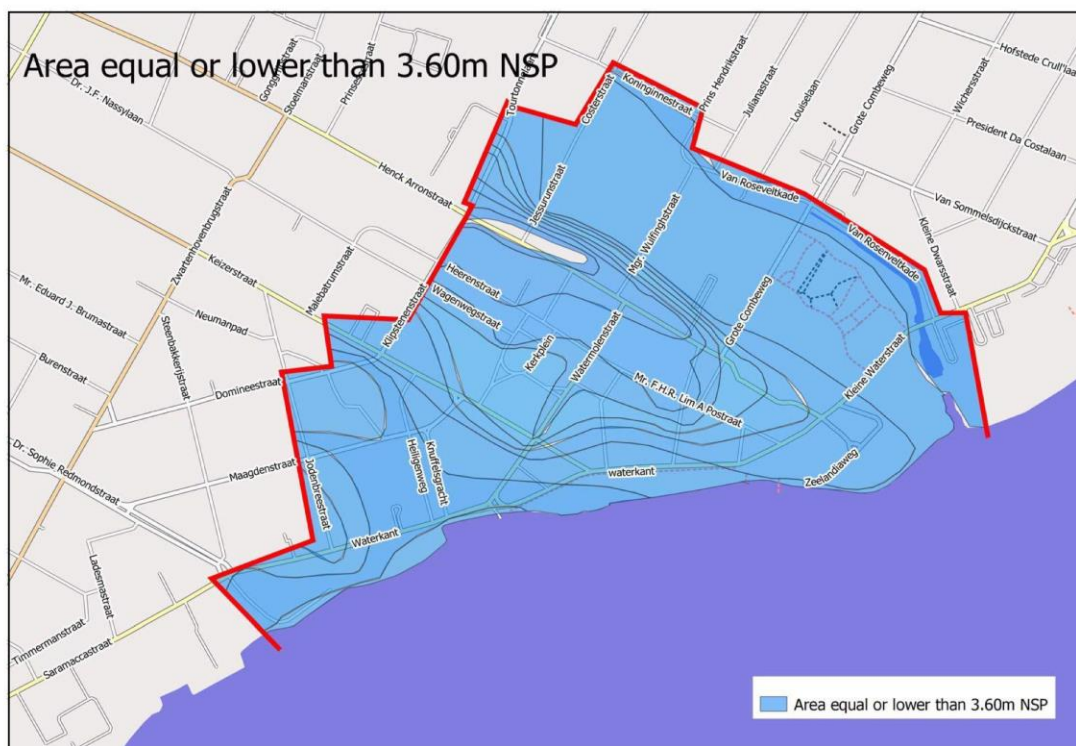


Figure 5-27: Areas with ground level of 3.60 m NSP or lower.

B.1.1 Flooding by intrusion of river water with Sea Level Rise of 1.00 m by the Year 2100.

Accelerated Sea Level Rise is expected in the future due to the development of emission of greenhouse gases. According to Amatali (2023) sea level rise in Suriname has been estimated at about 40 cm since 1956. In Table 5-15, the total area at risk for inundation by the river water is presented, related to the statistical occurrence of high river water level and 1.00 m sea level rise by the year of 2100. Based on an assumption of 1 cm sea level rise per year with 2008 as base year, the scenario for the next 25, 50 and 75 years is respectively, 25 cm, 50 cm, and 75 cm.

Table 5-15: Total area at risk for River Flooding Related to Statistical Occurrence of High River Water and 1.00 m Sea Level Rise by the Year 2100

Return period (years)	Water level (m NSP)	Sea Level Rise (m)	Total Water level (m)	Inundated Area (m2)	% of study area	Remarks
25	2.30	0.25	2.55	About 414,288.6	75.3	Zones with earth's elevation 2.60 m NSP or lower. See Figure 5-22

Return period (years)	Water level (m NSP)	Sea Level Rise (m)	Total Water level (m)	Inundated Area (m2)	% of study area	Remarks
50	2.40	0.50	2.90	About 483,960.7	87.9	Zones with earth's elevation 3.00 m NSP or lower. See Figure 5-24
75	2.45	0.75	3.20	About 512624,6	93.1	Zones with earth's elevation 3.50 m NSP or lower. See Figure 5-26

B.1.2 Flooding by intrusion of river water with Sea Level Rise of 2.00 m by the Year 2100.

According to Amatali (2023) the increase of an accelerated sea-level rise will be progressive and not linear. In Table 5-16, the total area at risk for inundation by the river water is presented, related to the statistical occurrence of high river water level and 2.00 m sea level rise by the year 2100. Based on an assumption of 2 cm sea level rise per year with 2008 as base year, the scenario for the next 25, 50 and 75 years is respectively, 50 cm, 100 cm and 150 cm.

Table 5-16: Total area at risk for River Flooding Related to Statistical Occurrence of High River Water and 2.00 m Sea Level Rise by the Year 2100

Return period (years)	Water level (m NSP)	Sea Level Rise (m)	Total Water level (m)	Inundated Area (m2)	% of study area	Remarks
25	2.30	0.50	2.80	483,960.7	87.9	Zones with earth's elevation 2.80 m NSP or lower. See Figure 5-23
50	2.40	1.00	3.40	512624,6	93.1	Zones with earth's elevation 3.30 m NSP or lower. See Figure 5-25
75	4.45	2.00	4.45	Total study area 550502,2	100.0	

C. Risk of erosion of the riverbank due to Waterflow in the River

The Suriname River at the study area is subjected to the tidal flow. The path of the river flow has been identified based on a bathymetric map of Maritime Authority Suriname (MAS), assuming that the water flows mainly through the thalweg¹⁸.

During the inflow of water from the sea, water flows along the right bank of the Suriname River, close to the bank, and crosses downstream of the riverbed the river towards the left bank close to the project area. Since the project area is near the outer bend of the river, it is expected that the water flow close to the riverbank will be intense. Due to the intense river flow, there is a risk of erosion in this section. Figure 5-28 shows that the water flow crosses from the right bank towards the left bank near the project area.



Figure 5-28: The path of the inflowing water in the river. Source: Amatali & Naipal, 2023

Figure 5-29 illustrates the path of the outflowing water from the river (where the water mainly flows) is close to the left bank as it approaches the bend, to approximately near the extension of the Dr. Sophie Redmondstraat and near the Keizerstraat. Beyond this location, the outflowing water crosses the river towards the right bank.

¹⁸ Definition: Thalweg refers to the line of lowest points in a river or stream bed, which defines the natural path of flowing water. It is essentially the line connecting the deepest parts of a watercourse or channel and is used to determine boundaries between countries or states that follow the course of a river. The term is commonly used in hydrology, geography, and cartography.

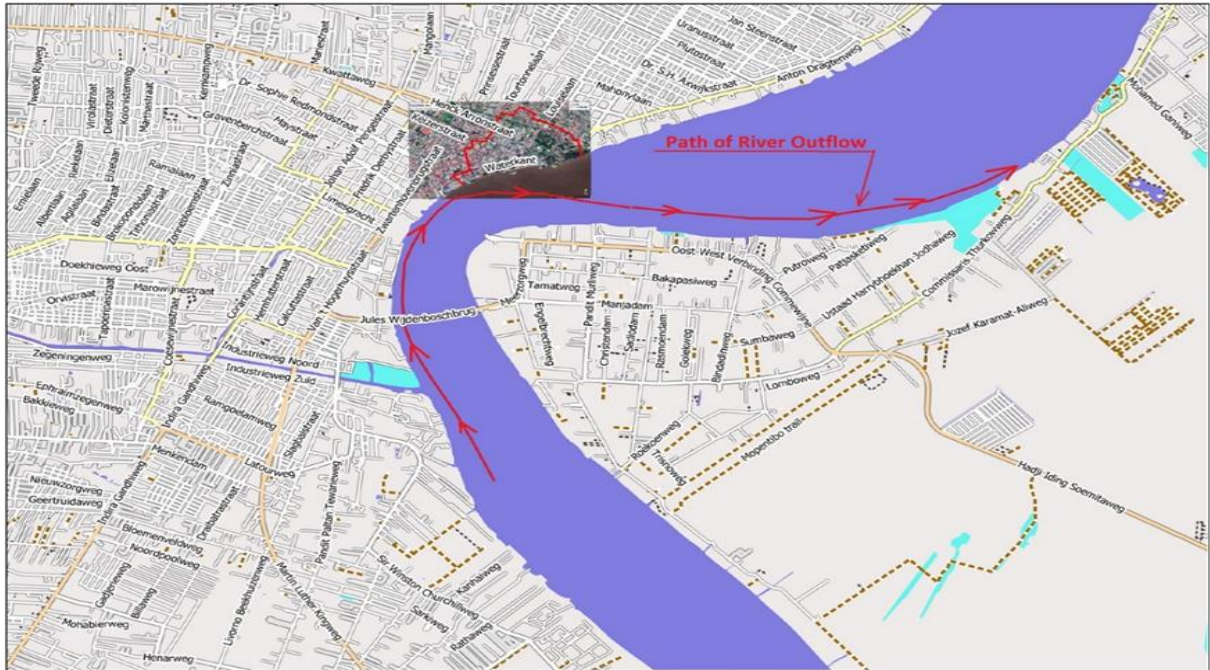


Figure 5-29: The identified Path of the outflowing water in the river.

Given the course of the inflowing and outflowing river water, it is expected that strong river currents are present from the vicinity of Fort Zeelandia to upstream of the river bend. The current in the river is also affected by the wreck of the sunken Goslar ship from the Second World War.

Data on depth contours of the riverbed from 2022 and 1993 have been constructed using bathymetric maps provided by MAS (see Figure 5-30).

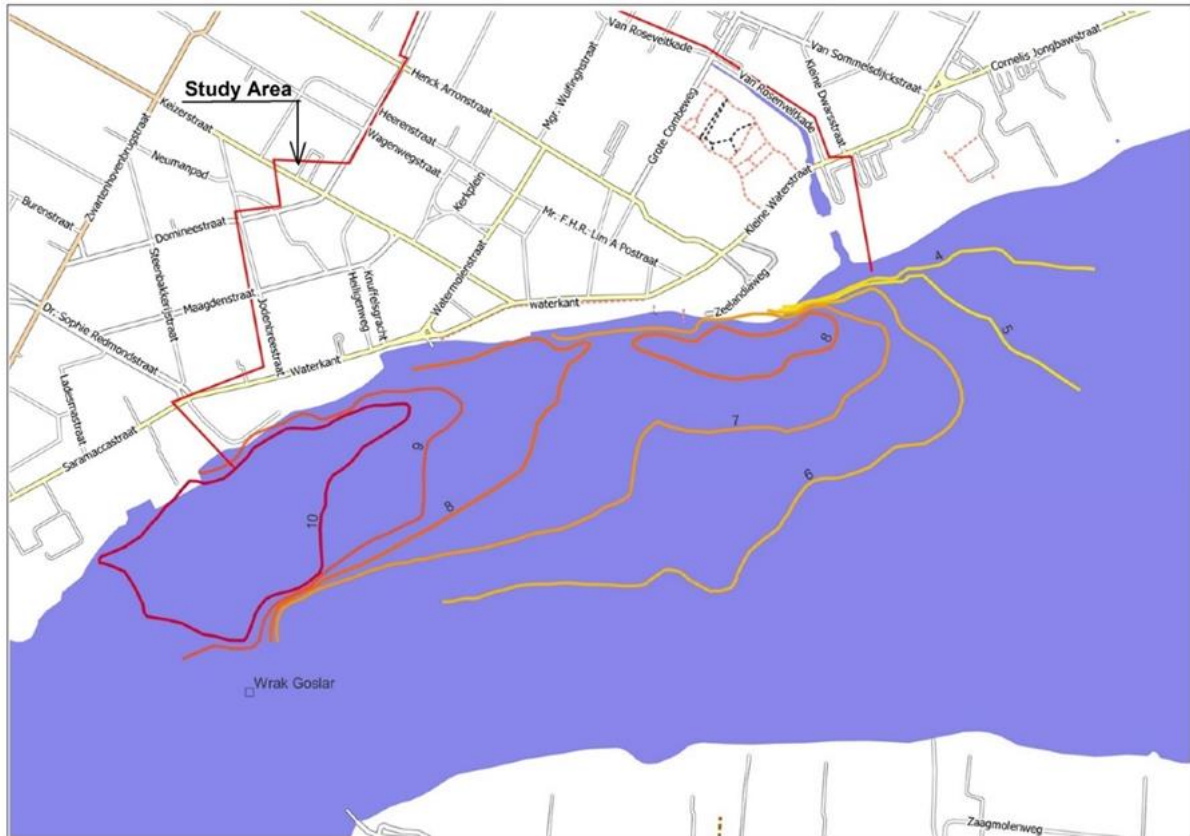


Figure 5-30: Bathymetry of the Riverbed near the Project Area in 2022.

Data from 2022 and 1993 on the depth contour lines of the riverbed have been compared. It has been observed that there has been a significant increase in depth towards the downstream direction, indicating instability in the riverbed and riverbank. Figure 5-30 **Error! Reference source not found.** shows a comparison of the 9 m and 10 m contour lines from 2022 and 1993 revealing that the area enclosed by these contour lines has doubled in size and shifted downstream. The contour lines of 2022 are drawn in straight lines and the 1993 ones in dashed lines.

The same trend is observed for the 7 m and 8 m contour lines in Figure 5-31.



Figure 5-31: Comparison of the 7 m and 8 m depth contour lines of 2022 and 1993.

Additionally, the 5 m and 6 m contour lines have moved downstream as well, as shown in Figure 5-32, and the 3 m and 4 m contour lines have disappeared in the project area due to increased depth, as shown in Figure 5-33.



Figure 5-32: Comparison of the 5 m and 6 m depth contour lines of 2022 with the ones of 1993.



Figure 5-33: Comparison of the 3 m and 4 m depth contour lines of 2022 with the ones of 1993.

Stability of the riverbed and riverbank

When the river flow and the migration of the depth contour lines are considered, it may be concluded that the river is unstable, and that the riverbank is subjected to risk for erosion.

Conclusion

The risk analysis conducted for the Waterfront area and vicinity further referred to as the study area is vulnerable to natural hazards, particularly pluvial flooding, which is currently the dominant hazard in Paramaribo. Climate change and sea level rise are expected to intensify the severity of pluvial flooding, river flooding, and riverbank erosion in the future. Additionally, heavy rainfall events accompanied by strong winds that led to roof damage have become more frequent in Paramaribo.

Over 50% of the area is at risk of river flooding once every 25 years without the consideration of sea level rise. With a sea level rise of 1.00 m or 2.00 m by the year 2100, respectively 75% and 90% of the total project area will be at risk. In addition, there is a potential risk for riverbank erosion within the study area since the depth of this area has increased at all sections near the riverbank during the last three (3) decades.

5.2 Socio-economic Baseline Information

This section presents the socio-economic information in Suriname in general and from the study site. Data was collected mainly by desktop study to provide the general information and for Waterfront related information, field interviews and key-informant interviews were the main sources. The field interviews were taken from 65 individuals including 18 crafters, 11 food vendors, 24 workers, 5 residents and businesses, 4 Government/regulatory agencies and 2 educational institutions.

This socio-economic baseline study focused primarily on the most vulnerable groups in the study area - craft and food vendors and their workers. Although these groups participated fully, the information from residents and businesses focusses only on selected questions.

5.2.1 Archeology and cultural heritage

Archeology. Archeologist A.H. Versteeg (2003) conducted archeological research in Suriname between 1975 and 1982 and published a list of registered pre-Columbian archeological sites in Suriname. Table 5-17 presents the archeological and historical sites in the direct vicinity of the Waterfront area listed by Versteeg and by archaeologist Irene Meulenberg. It is important to recognize the Waterfront's rich history and therefore, archeological artifacts are likely to be found during excavation works.

Table 5-17: Archeological and historical sites in the direct study area. Source: Versteeg (2003) and Meulenberg (2022)

Number and site name	Coordinates (CBL Map)	Found by (name) and year	Description	Culture
Sur-33 Paramaribo Waterfront / Mr. J.C. de Mirandastraat	358.60/963.80	1941 De Groot; 1960-1961 D.C. Geijskes	Settlement with graves	Kwatta
Historical site Lim A Postraat 34		2018 Meulenberg, Samson	Grave	
Historical site Henck Arronstraat 2-6		2020 Meulenberg, Ganesh, Samson,		
Historical site Waterfront 30-32		2022 Meulenberg, Ganesh		

About 25% of the survey population indicated the Waterfront area has a religious, spiritual, or other special meaning to them. They mentioned the following culturally important places in the study area:

- The Waterfront area itself is of emotional value because of its history (ancestors)
- The Almond trees¹⁹
- The faucet at the Kromme Elleboogstraat
- The palm garden (Palmentuin) important for Indigenous rituals
- The Marine staircase (Marine Trap) where Hindustani rituals take place.

Cultural heritage. The Waterfront area, as part of the Historic Inner City, was inscribed on the World Heritage List on the basis of specific criteria in 2002 ²⁰. These criteria of integrity and authenticity are what distinguishes the site for holding Universal Outstanding Values (UOV's)²¹; which are the deciding factors for placing it on the World Heritage Site List. According to the Director of the Foundation for Build Heritage (SGES)²², the Waterfront area comprises the following attributes of UOV:

- The view on the river
- The almond trees (uncertainty about their origin)
- The historic heritage properties (buildings) across the street
- The history of the area as an old harbor area
- The location of the Waterfront within the core heritage area
- The area is traditionally the center for cultural activities/festivities especially on national holidays.

The proposed project includes rehabilitation of the existing infrastructure at the Waterfront site; therefore, the project is not expected to lead to the progressive erosion of any of the attributes that warrant inscription of the property on the World Heritage List. Moreover, no drastic changes will occur that will hamper or affect the view of the river or alter attributes that define the area's integrity and authenticity. The existing built infrastructures at the Waterfront (craft market, food stalls and public bathroom) are not heritage property and may therefore be subjected to demolition and/or renovation without comprising the OUV's.

¹⁹ Only one tree will have to be removed because of safety reason for the road.

²⁰ 1. Paramaribo is an exceptional example of the gradual fusion of European architecture and construction techniques with indigenous South America materials and crafts to create a new architectural idiom. 2. Paramaribo is a unique example of the contact between the European culture of the Netherlands and the indigenous cultures and environment of South America in the years of intensive colonization of this region in the 16th and 17th centuries. Also, the original urban pattern is still authentic in relation with the historical built environment because: no major infrastructural changes have taken place; no building lines have been altered; and no high-rising buildings have been built in the city center.

²¹ Outstanding Universal Value is defined by the UNESCO as: the cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity.

²² Personal communication Mr. Stephen Fokké, December 1, 2023.

5.2.2 Population and Demography

a. Population

General. According to official statistics presented in the 2012 Census, Suriname has a total population of 541,638 of which approximately half (45%) live in the urban district of Paramaribo. Paramaribo is divided into twelve administrative ressorts: Beekhuizen, Blauwgrond, Centrum, Flora, Latour, Livorno, Munder, Pontbuiten, Rainville, Tammenga, Weg Naar Zee and Welgelegen. The project site is located in the ressort **Centrum**.

Table 5-18 presents the population spread in district of Paramaribo throughout the different ressorts. The ressort of Blauwgrond is the largest in size and has the highest population number. Ressort **Centrum** scores low in both area size and population number compared to the other ressorts. This ressort accounts for only 8,6% of the total population in Paramaribo and for 5.2% of the total district size, which results in fifth place of ressorts in Paramaribo.

Population density. Paramaribo is the smallest district in size and encompasses a total area of 183 km² which takes up only 0.1% of Suriname's total land mass. While ressort Blauwgrond accounts for both the highest population number and area in Paramaribo, ressort Livorno is among the smallest in area but shows the highest population density of 944 people per square km. Ressort **Centrum** with only 2 (two) people per square km is among the ressorts with the lowest population densities in Paramaribo.

Gender. The gender division in Paramaribo shows a slightly higher percentage in women. Of the population in Paramaribo, 49.6% are men, and 50.4% women.

Age. Paramaribo has a relatively young population, which follows the national trend. People in the age group between 20 - 29 years form the largest group. They account for 17% of the total population in Paramaribo, followed by the age group between 10 - 19 years old (16.7%), and 0 - 9 years old (15.7%) (Figure 5-34). This age trend is also seen in ressort Centrum.

Table 5-18: Population, density, and area data of District Paramaribo. Source: ABS, 2012.

District	Ressort	Area (km ²)	Population (2012)	Population density (2012)
Paramaribo	Beekhuizen	6.3	17,185	3
	Blauwgrond	42.5	31,483	741
	Centrum	9.5	20,631	2
	Flora	4.2	19,538	5
	Latour	6.9	29,526	4
	Livorno	8.7	8,209	944
	Munder	13.7	17,234	1
	Pontbuiten	6.5	23,211	4
	Rainville	30.7	22,747	741
	Tammenga	6	15,819	3
	Weg naar Zee	41.1	16,037	390
	Welgelegen	6.9	19,304	3
Total		183	240924	1

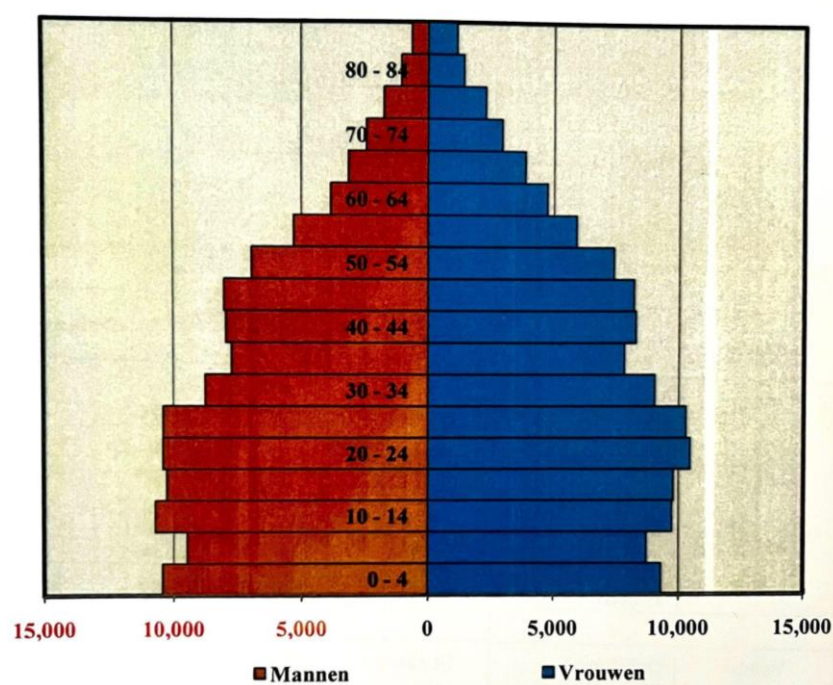


Figure 5-34: Age distribution in district Paramaribo. Source: ABS, 2012

b. Population Growth

Table 5-19 shows the population growth of Paramaribo resorts between 2004 and 2012. The resorts of Flora (27.3%), Weg naar Zee (21.8%) and Pontbuiten (19.2%) account for the highest percentage of growth in Paramaribo, while resorts Centrum (-29.5%), Rainville (-21.2%) and Welgelegen (-18.6%) show a significant decline in population. Resort Centrum accounts for the largest decline between 2004 and 2012. Throughout the years, residential areas in the city center were replaced by commercial areas, and the neighboring resorts became more attractive for trade in the housing market. The district of Paramaribo has seen an overall small decline in population between 2004 and 2012.

Table 5-19: Population growth in Paramaribo resorts 2004-2012. Source: ABS, 2012.

Resort	Population in 2004	Population in 2012	% growth
Beekhuizen	19,783	17,185	-13.1
Blauwgrond	28,436	31,483	10.7
Centrum	29,274	20,631	-29.5
Flora	15,346	19,538	27.3
Latour	26,148	29,526	12.9
Livorno	8,386	8,209	-2.1
Munder	16,049	17,234	7.4
Pontbuiten	19,477	23,211	19.2
Rainville	28,853	22,747	-21.2
Tammenga	14,313	15,819	10.5
Weg naar Zee	13,172	16,037	21.8
Welgelegen	23,709	19,304	-18.6
Total Paramaribo	242,946	240,924	-0.8%

c. Ethnicity and Religion

Creoles are the largest ethnic group present in resort Centrum (39.4%), followed by people with mixed ethnicity (22%), India-descendants (12%) and descendants from African slaves-maroons (11%). Smaller groups of people are formed by Chinese (5%), Javanese, (4.2%), Indigenous peoples (1.8%) and others (2%).

The ethnicity of the Suriname population shows a strong connection with their religious beliefs. Traditionally India-descendants practice Hinduism, Indonesian-descendants are Muslim and Creoles are Christians. Paramaribo is no exception to this national trend. The main religion practiced is Roman Catholic (28%), followed by Moravian Church (15%), Hinduism Sanatan (14%) and Evangelists (11.2%). Smaller groups of the population are atheists (6.5%) and Islam (5.6%).

5.2.3 Education

General. The education system in Suriname is divided into four levels: i) primary, ii) lower secondary, iii) upper secondary and iv) tertiary education.

- Pre-primary education starts from age 4 to 5 and primary education starts from age 6 to 12.
- Lower secondary education runs from age 12 to age 16 and is subdivided into: general education and secondary vocational education.
- Senior, continued, pre-university and higher vocational secondary education. Upon graduation, the student's grades for lower secondary education determine the choice of school for upper secondary education (age 16 to 18/19).
- Tertiary education (e.g., university/higher vocational) runs from age 19 and older.

a. Enrollment

General. Compulsory education runs from age 6 to age 12. Nationwide, approximately 85% of children complete primary education. However, there are major disparities in completion rates between different regions in Suriname. Urban areas (districts of Paramaribo/Wanica) tend to have higher completion rates across all levels of education than interior areas²³ (districts of Brokopondo/Sipaliwini).

In 2019, Paramaribo had a completion rate of 85% at the primary level, 56% at lower secondary levels and only 22% at upper secondary levels²⁴. Table 5-20 shows the number of pupils (male/female) enrolled in different levels of education in resort Centrum between 2019 and 2021. The number of pupils enrolled declines between 2019 and 2021 at all educational

²³ Most of the districts belonging to the Interior do not have upper secondary or tertiary schools. Tertiary education is only available in Paramaribo.

²⁴ Suriname Education Fact Sheets UNICEF. 2019 [online]

levels. More boys are enrolled in primary schools in ressort Centrum. At the lower and upper secondary levels, more girls are enrolled than boys. This follows the national trend in Suriname: boys are more likely to complete their primary education only, while girls are more likely to continue education on higher levels.

Drop-outs. Generally, enrollment rates in Suriname drop sharply after age 12, when schooling is no longer compulsory. Paramaribo follows this trend, as can be seen by the declining percentages of completion rates mentioned above.

Table 5-21 shows the number of dropouts²⁵ in ressort Centrum (male/female) between 2019 and 2020 for the primary level, junior secondary vocational level, and junior secondary general level. The number of dropouts at the primary and secondary vocational levels is considerably higher than the number of dropouts at secondary general level. The secondary vocational level has the highest number of dropouts, which increased between 2019 and 2020. Another trend worth mentioning is the number of girls dropping out of secondary general education has been higher (but decreasing) than that of boys from 2010 to 2020. Overall, more boys drop out of school than girls.

Table 5-20: Enrollment 2019 - 2021 of pupils in ressort Centrum

Primary level enrollment (GLO pupils) ressort Centrum 2019 - 2021

Primary level enrolment (GCE pupils) - ressort Centrum 2019 - 2021								
District	Ressort	Gender	Schoolyear					
			2019		2020		2021	
			Number of schools	Number of pupils	Number of schools	Number of pupils	Number of schools	Number of pupils
PARAMARIBO	CENTRUM	M	37	4,756	38	4,352	38	4,140
		4,510		4,295		3,976		
Total				9,266				8,647

Lower secondary enrollment (VOJ pupils) ressort Centrum 2019 - 2021

Educational level	District	Ressort	Gender	Schoolyear					
				2019		2020		2021	
				Number of schools	Number of pupils	Number of schools	Number of pupils	Number of schools	Number of pupils
LBO	PARAMARIBO	CENTRUM	M	14	3,053	14	3,205	14	2,811
			F		1,329		1,465		1,300
MULO	PARAMARIBO	CENTRUM	M	14	1,464	15	1,544	15	1,546
			F		2,403		2,467		2,518
Total				28	8,249	29	8,681	29	8,175

Upper secondary enrollment (VOS* pupils) ressort Centrum 2019 - 2021

District	Gender	Schoolyear					
		2019		2020		2021	
		Number of schools	Number of pupils	Number of schools	Number of pupils	Number of schools	Number of pupils
PARAMARIBO	M	5	939	7	1,263	4	438
	F		1,606		2,182		1,057
Total			2,545		3,445		1,495

*VOS data is incomplete

²⁵ The Ministry of Education (MinOWC) in Suriname defines “dropouts” as the number of pupils enrolled at a certain school in a certain school year and that are no longer enrolled in the next year. This definition is according to UNESCO guidelines.

Table 5-21: The number of dropouts in ressort Centrum 2019 - 2020

Number of drop-outs in ressort Centrum 2019			
Educational level:	Male:	Female:	Total:
Primary	421	305	726
Lower secondary-vocational	584	238	822
Lower secondary-general	148	271	419

Number of drop-outs in ressort Centrum 2020			
Educational level:	Male:	Female:	Total:
Primary	408	362	770
Lower secondary-vocational	643	235	878
Lower secondary-general	127	198	325

b. Educational Facilities

Error! Reference source not found. shows the spread of educational facilities (orange dots) throughout ressort Centrum. Ressort Centrum shows an interesting mix of different types of educational facilities: primary, secondary, and tertiary schools are available (public and private) as well as international schools and special needs schools. Table 5-21 shows the number of primary (38) and secondary schools (33) in 2021. There are two international schools in the ressort and three tertiary educational facilities, which are the FHR Institute (Business, finance, law) AHKCO Academy (Arts) and the Medical Scientific Institute.



Figure 5-35: The spread of educational facilities in ressort Centrum

c. Educational Levels

Literacy. In Suriname, the literacy rate of adults (15 years and older) is 94.38% (2018) and is unequal between men and women – 96.07% / 92.71% respectively. For youth between 15 and 24 years, the literacy rate is 98.65% and is equal among men and women – 98.9% / 98.4% respectively.

Level of education. Table 5-22 shows the population 15 years and older (men/women) by highest level of education in Paramaribo for 2012. The number of women without an education is slightly higher than men. We conclude that men dominate in primary and junior secondary education, and women dominate in higher levels of education (senior secondary and higher). Overall, the number of people decline by higher educational level. Both trends are seen overall in Suriname.

Table 5-22: Number of persons (15 years and older) by highest education level in Paramaribo in 2012. Source: ABS, 2012.

Highest level of education:	Men	%	Women	%	Total	%
No education	2,377	2.7	3,662	3.9	6,039	3.3
Primary education (pre-primary & primary)	17,021	19	16,848	18	33,869	18.5
Junior secondary education (vocational & general)	35,269	40	33,159	35.3	68,428	37.4
Senior secondary vocational education	9,390	10.5	12,303	13.1	21,693	12
Senior secondary general education	5,641	6.3	6,787	7.2	12,428	7
Higher Vocational education & University	8,348	9.4	11,517	12.3	19,865	11
Unknown	11,035	12.4	9,544	10.2	20,579	11.3
Total	89,081		93,820		182,901	

5.2.4 Employment and Income

a. Employment

Data from the latest census²⁶ shows that 100,322 persons of the active population between 15-64 years are working, which constitutes 42% of the active population in District Paramaribo. Similar to the national profile, District Paramaribo records a lower percentage of active women working (42.1%) than men (57.9%)²⁷. 9% of the active population in Paramaribo between 15 - 65 years have registered as unemployed. From the unemployed group is 62% women²⁸.

b. Income

From 2019 data provided by the World Bank²⁹, one person earns on average U\$ 726 a year, which is equal to an estimated U\$ 2 per day in Suriname. In February 2023, the poverty line was about to be set at SRD 6,000 (U\$ 193.50) monthly income for a 40-hour workweek, after the Government was forced to overturn this decision. We assume this value as the cut off point for vulnerable household because it was set recently by the Government³⁰.

5.2.5 Health

a. Relevant Basic Life Indicators

Life Expectancy. According to the latest demographic data for 2018 - 2021 (ABS, 2023), the national crude birth rate is 16.563. The life expectancy for males at birth is 67.17 and for females 71.95. Overall, life expectancy in Suriname has decreased over the past five years, showing disparities in health outcomes and life expectancy between different groups and regions within the country.

Causes of Death. The leading causes of death in Paramaribo are generally similar to those in other countries around the world, with some differences based on the local population and health conditions. In Suriname, Cardiovascular disease (CVD) is the leading cause of death, followed by diabetes mellitus, respiratory disease, and external causes, which include accidents, violence, and other traumatic injuries that can lead to death (Figure 5-36). Malignant neoplasms (cancer) and kidney disease are other frequent causes of death. Chronic kidney disease is a growing health problem and is a significant contributor to morbidity and mortality in Suriname.

²⁶ ABS, 2012. Census Statistieken

²⁷ *Ibid* ABS 2012

²⁸ *Ibid* ABS, 2012

²⁹ World Bank Open Data | Data. (n.d.). Retrieved January 23, 2023, from <https://data.worldbank.org/>

³⁰ <https://gov.sr/verduidelijking-in-kwestie-nieuw-algemeen-minimumloon/>

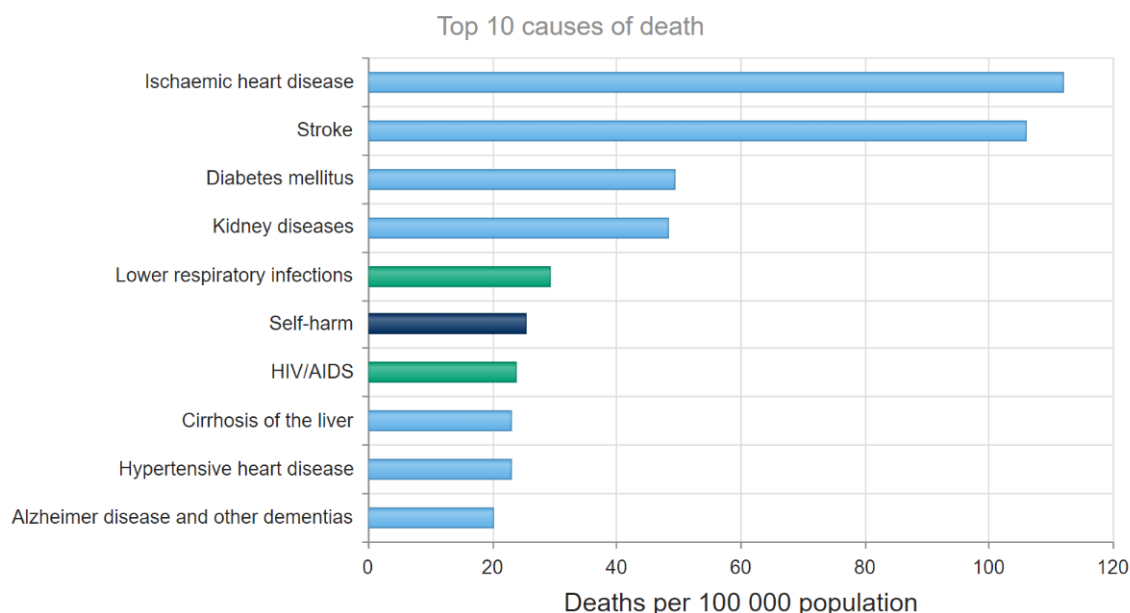


Figure 5-36: Leading causes of death recorded in Suriname 2019. Source: GHO, 2020

Morbidity. In Paramaribo, the most common causes of morbidity vary depending on the age group and other demographic factors. However, some of the most common causes of morbidity in Paramaribo include, i) Infectious diseases including vector-borne diseases and dengue fever, especially during the rainy season, and other, ii) Respiratory diseases including asthma, bronchitis, and pneumonia, which all may be caused by air pollution and other environmental factors, iii) Cardiovascular disease, iv) Diabetes Mellitus, v) Mental health disorders including depression and anxiety, vi) Gastrointestinal diseases including food poisoning and other digestive system disorders, which may be caused by poor sanitation- and hygiene practices.

In 2013, a national health survey was conducted to develop a comprehensive risk profile of Suriname's population using a standardized method for collecting, analyzing, and disseminating data in WHO member countries. The research revealed twice as many people with obesity in Suriname compared to data collected 35 years ago. This indicates an increased risk of diabetes, hypertension, and other cardiovascular-related diseases. The exact morbidity numbers for Paramaribo and in particular for the study area are currently unavailable because the Regional Healthcare Service (RGD) doesn't regularly collect data from the patients visiting their clinics.

The 2023 field survey also demonstrated that chronic diseases, including cardiovascular diseases (CVD), were found in at least 63.3% (n=30) of households of vendors, residents, and businesses. The top three most represented CDV diseases people are suffering from in descending order are hypertension (26%), hypertension/diabetes (26%), and diabetes (16%) (Figure 5-37).

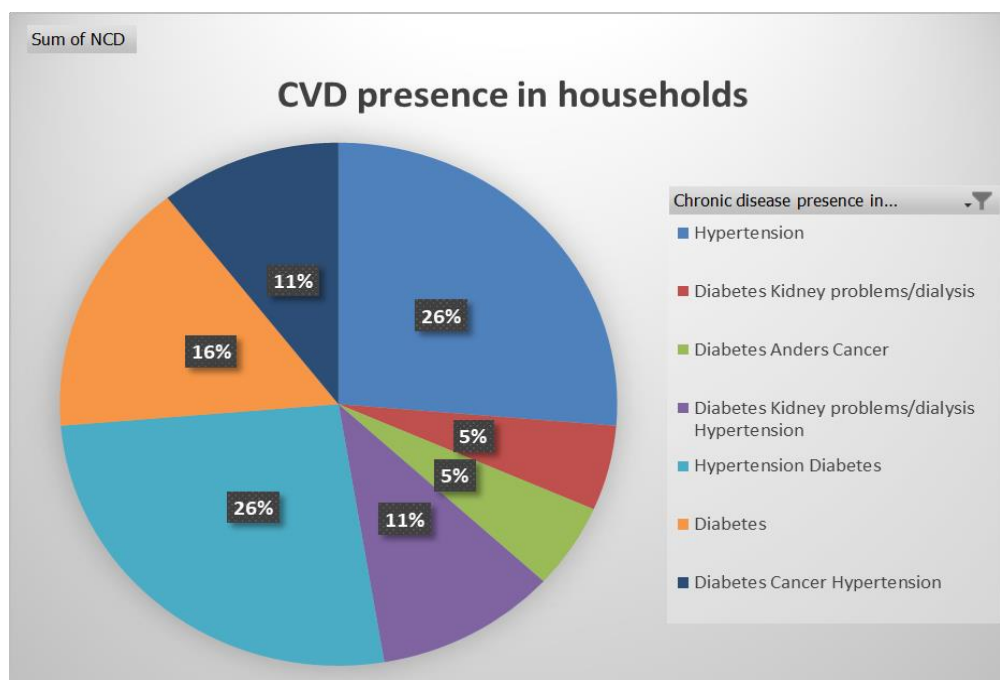


Figure 5-37: Cardiovascular diseases present in households of residents, businesses and vendors

Communicable Diseases. In the fight against HIV/AIDS, Suriname (ministry of health, 2020), has recently developed a six-year Strategic Plan (2021-2027) and a Sustainable Action Plan intending to transit away from donor funding. An estimated 250 new infections are registered annually despite the decrease in annual HIV incidence.

In Suriname, the HIV (PLHIV) prevalence rate increased: In 2019 approximately 5800 (4600 - 6900) people were living with HIV (PLHIV), of whom 3100 males and 2500 females. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS, 2021), the estimated HIV prevalence among adults (ages 15 - 49) is 1.3%, which is higher than the regional average for Latin America and the Caribbean.

According to the heatmap of incidence rate by District for 2013 - 2019, the incidence rate for Paramaribo is high (Figure 5-38Error! Reference source not found.). The Multiple Indicator Cluster Survey (2018) reported approximately 87% of women and 82% of men can find a place to test HIV, despite this, only 63% of women and 44% of men have ever been tested and have obtained their test results. Only 25.4% of women (Age 15 - 24) have comprehensive knowledge about HIV prevention in this district, while for men this percentage is 39.3%.

In Suriname, especially Paramaribo, there are various programs and initiatives available, including prevention and education programs, testing and treatment services, and access to antiretroviral therapy (ART) for those who are diagnosed with HIV. However, stigma and discrimination against people living with HIV remain a significant issue in Suriname, resulting in efforts to prevent and treat the disease being hindered.

HIV district incidentie rate, 2013 - 2019

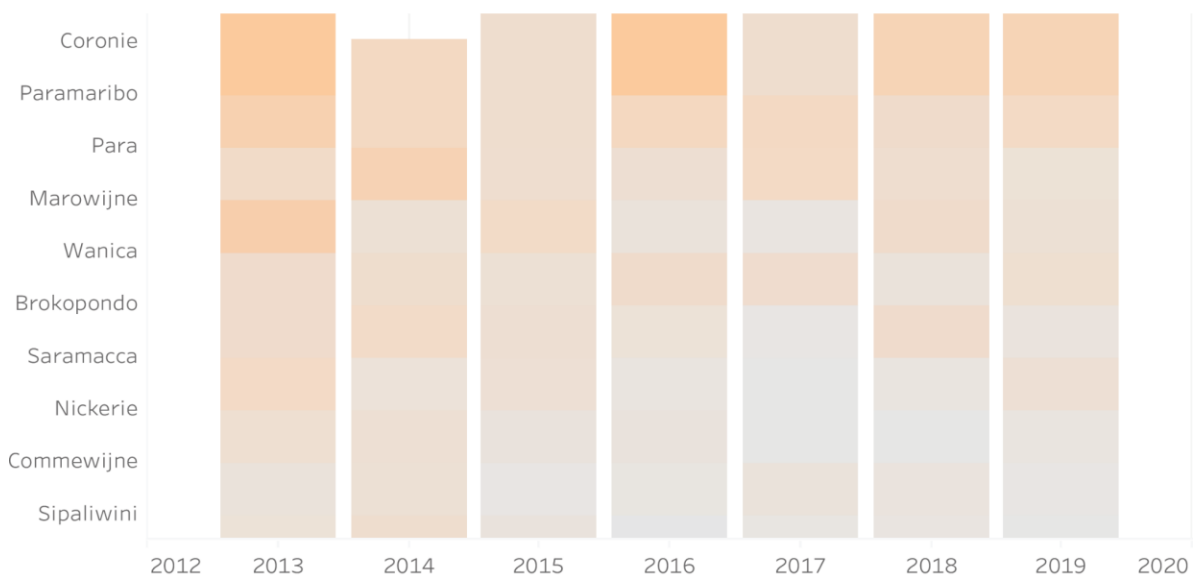


Figure 5-38: Heatmap of registration Incidentie rate by District, 2013 – 2019. Source: Ministry of Health. Note: the darker colored sections represent a higher incidence rate than light-colored sections.

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus and cutoff date of September 2021, the COVID-19 pandemic had affected Paramaribo, the capital city of Suriname, like many other cities around the world. This airborne communicable disease spreads through direct contact and droplets. COVID-19 spreads easily indoors and in crowded settings and can either develop into a serious illness which may require medical attention, or it develops mild to moderate symptoms from which one recovers without special treatment.

As of November 1st, 2021, 42% (n=481651)³¹ of the Suriname's population were fully vaccinated with one of the vaccines mentioned above. Enforcing MOHANA measures, which includes putting on a mouth-nose cover, washing/cleaning hands and keeping your distance, are important to prevent the spread of COVID-19, reduce the number of infections and prevent the disruption of business activities.

b. Healthcare Facilities

Government-Supported Health Care Facilities. The Regional Healthcare Service (RGD) is a health service organization in Suriname, responsible for providing primary health care services to the population in the coastal areas of Suriname. The RGD operates health centers and clinics in various regions throughout the country, offering general medical care, maternal and child health, and immunizations. In Paramaribo, the RGD is the primary healthcare provider with 4 (four) outpatient clinics in Sophia's Lust, Weg naar Zee, Flustraart and Uitvlucht,

³¹ Cumulative vaccination to date. Retrieved from <https://laatjevaccineren.sr/>

2 (two) health center at Flora, and Derde rijweg, and 3 (three) health centers with extended services at Limesgracht, Geyersvlijt and Latour.

Access to secondary care occurs through referrals by primary care physicians. There are 4 hospitals in the capital city Paramaribo: 1) Diakonessen hospital, 2) St. Vincentius hospital, 3) 's Lands hospital, and 4) Academisch hospital (AZP). The only psychiatric hospital is in the capital Paramaribo. Emergency care is provided at the Academisch hospital of Paramaribo (AZP) in Suriname.

The AZP emergency care unit is responsible for providing immediate assistance to patients who come to the hospital's emergency department. The team typically includes trained medical professionals equipped to handle a wide range of emergencies and injuries.

The Ministry of Health's department-Bureau of Public Health- is responsible for the public health programs including environmental health and sanitation. The Bureau of Public Health coordinates preventive health care, supervises and executes programs that provide information on the distribution of diseases and operates a public health laboratory.

5.2.6 Gender

The Global Gender Gap Index provides a measure to understand the gender gap in terms of economic, political, educational and health criteria and ranks countries worldwide. With a Gender Gap Index of 0.74 in 2022, women in Suriname are 26% less likely than men to have equal opportunities. Suriname ranks 44th of the 156 countries assessed globally in 2022. Further analysis shows Suriname scores very low in the area of "political empowerment", while scoring extremely high in the areas of "educational attainment" and "health and survival" (Table 5-23)³².

Table 5-23: Dimensions of Gender Gap Index of Suriname 2022. Source: World Economic Forum, 2022

Gender Gap Index	Economic participation and opportunity	Educational attainment	Health and survival	Political empowerment
Score	0.731	0.992	0.973	0.253

An overview of the gender profile of the **crafters and food vendors** is given below. This profile demonstrates the vulnerability of this group.

³² <https://www.weforum.org/reports/global-gender-gap-report-2022/>

Health. Women have special needs in healthcare compared to men. In Paramaribo, overall, approximately 80% of pregnant women between 15 - 49 years (n=370) received prenatal care from doctors, nurses, midwives, or other health care workers during pregnancy. The percentage of live births among women is also relatively high with 96.3% (n=685)³³.

Power and Decision-Making. The 2009/2010 gender inequality index for District Paramaribo 0.407, showing that women have slightly less opportunity than men.

Gender-Related Violence. Violence occurs in 32% of partnered women in Suriname. Emotional violence is the most common occurring in 35% of women in their lifetime. Almost 1 in 3 women (27%) experience physical violence by their partner, and a little over 1 in 10 women (13%) experiences sexual violence by their partner in their lifetime. Most women experience violence repeatedly.

Research in Paramaribo³⁴ (n=7,000) shows that 5.2% of women think it is justified to experience domestic violence when they either i) leave the house without notification, ii) neglects the children, iii) argues with her partner, iv) refuses sex with her partner or v) burns the food.

5.2.7 Infrastructure and Transportation

a. Infrastructure

Water Supply. The Suriname Water Company (SWM) is responsible for making available potable drink water in Suriname. In North Paramaribo, the main water station that supplies the Waterfront is located at Blauwgrond. This station pumps water from the A-Sand aquifer at a depth of approximately 170 m. After vertical pumping, water is distributed to households in pipes or other (unimproved) sources. Another station pumping water to the Waterfront is the William Kraanplein Station³⁵.

³³ Ministry of Social Affairs and Public Housing & UNICEF. 2018. Multiple Indicator Cluster Survey (MICS).

³⁴ *Ibid* Ministry of Social Affairs and Public Housing & UNICEF. 2018.

³⁵ Personal Communication Mr. Soekhoe, Suriname Water Supply Company

Table 5-24: Use of improved and unimproved water sources in Paramaribo. Source: Ministry of Social Affairs and Public Housing/UNICEF, 2018.

	Presence of Pipes	Main Source of Drinking Water	Percentage of Households (n=11,483)
Improved sources: sufficient safe drinking water available	Piped water	Piped into Dwelling	78.1
		Piped into yard/plot	9.9
		Piped to neighbor	0.8
		Public tap/ stand - pipe	0.3
		Tube -well/ bore-hole	0.0
		Protected well	0.4
		Protected spring	0.1
		Rainwater collection	2.4
		Tanker truck	0.1
		Bottled water	7.4
		Sachet water	0.0
Unimproved sources: drinking water unavailable and/or not safe		Unprotected water	0.0
		Unprotected spring	0.0
		Surface water	0.0
		Other	0.4
		Missing	0.0
Percentage using improved sources of drinking water			99.6

The 2018 MICS study³⁶ shows 99.6% of the projected population of District Paramaribo have improved sources of drinking water, while 78.1% of people receive water directly into their house (Table 5-24).

Energy. In Suriname, electricity is supplied by the Government-owned company Energie Bedrijven Suriname (EBS) from the following sources: i) energy generated by hydropower (Afobaka Dam in district Brokopondo), ii) energy generated through diesel generators in Paramaribo.

The latest census (2012) shows that electricity supply in Paramaribo is managed primarily by the EBS, who connects 98.6% of the households to the electricity grid with 24/7-hour access³⁷.

³⁶ *Ibid* Ministry of Social Affairs and Public Housing & UNICEF. 2018.

³⁷ *Ibid* Ministry of Social Affairs and Public Housing & UNICEF. 2018.

The 2023 survey shows 100% of the residents, businesses and offices at the study site are connected to the EBS grid.

Telecommunication. The study site is provided with wireless signals from the telecom providers Telesur and Digicel through telecommunications towers. Telesur is the main telecommunications company that provides both fixed-line and broadband internet services at residences, businesses, and offices at the study site. The majority of radio and TV stations broadcast from Paramaribo and are well received in the study area.

Housing. Housing in the study area is considered high-status because of the prominent location. Houses are made from wood, concrete or a mixture and are usually cooled with air conditioning. Along the riverside, there are several buildings which provide workspace for management and local vendors.

b. Transportation

Road Network. The Waterkant is a one-way paved street serving as the main route out of the Paramaribo inner city. People connecting from the north also rely on the Waterkant (Figure 5-43 Access Point 1). In addition, two streets - Mr. J.C. de Mirandastraat and the Kromme Elleboogstraat - culminate into the Waterfront (Figure 5-39 Access Point 3 and 4 respectively). From the road along the Waterfront two directions can be chosen: into downtown Paramaribo (Route 1 and 2) or towards Paramaribo South (Route 3).



Figure 5-39: Road network in the study area

Road Quality. The roads are generally of good quality and have an average width, except for the road along the Waterkant that is wider. Signage on the roads is at the level of what is minimally needed to instruct the road user and non-existent for pedestrian crossings.

Road Safety. In the inner city of Paramaribo, road safety is of less concern because driving speeds are relatively low - on average 20 km/h. However, along the Waterkant, drivers may pass on the one-way road with higher speeds up to 50 - 60 km/h (especially in the curve near the Old Flag Square).

The speed limits within the study area are currently set at 40 km/h, and after construction of the new Waterfront this will be lowered to 30 km/h. Three plateaus will be constructed to lower vehicle speeds and improve the safety of pedestrians.

District Paramaribo records between 17 - 22 fatalities annually and this accounts for approximately 30% of all fatalities in Suriname recorded between 2015 - 2019³⁸. The number of fatalities is significantly greater in men than in women (Figure 5-40Error! Reference source not found.).

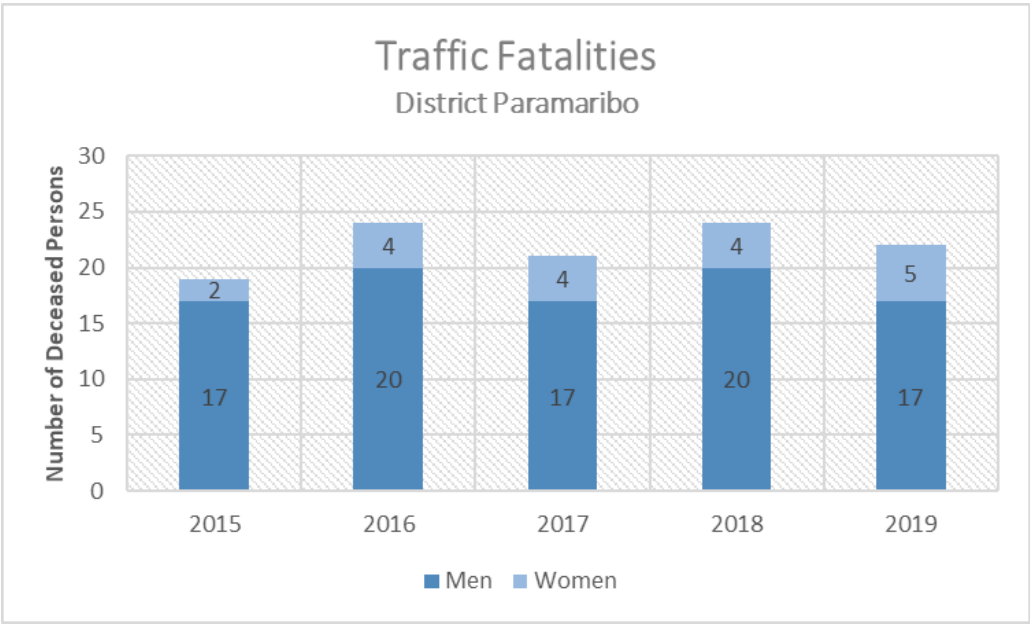


Figure 5-40: Deceased persons due to traffic incidents in District Paramaribo 2015 - 2018. Source: ABS, Ninth Environmental Statistics, 2015 - 2019.

³⁸ ABS. 2020. 9th Environment Statistic Publication 2015-2019.

Road Traffic. A 2019 traffic study³⁹ demonstrates that the road along the Waterfront is belonging to the busiest roads in the inner-city of Paramaribo, together with the Kleine Waterstraat, Mr. F.H.R, Lim A Postraat, Grote Combeweg and the Henck Arronstraat. On the peak periods between 6.30 AM - 9.30 AM, 12.30 PM - 3.30 PM and 4.00 PM - 6.45 PM, 1,324 motorized vehicles and 151 pedestrians passed the junction Waterkant/Kromme Elleboogstraat (Access Point 4).

Pedestrian walkways are absent, and people stroll in front of the buildings of the Mr. J.C. de Mirandastraat and the Kromme Elleboogstraat, and in between the cars parked along the roadsides. Along the Waterfront, there is more space for walking although the walkways are uneven and dangerous because of loose tiles. Bicycle paths are absent in the study area.

Figure 5-41 shows the perceptions of respondents about road traffic in Paramaribo.

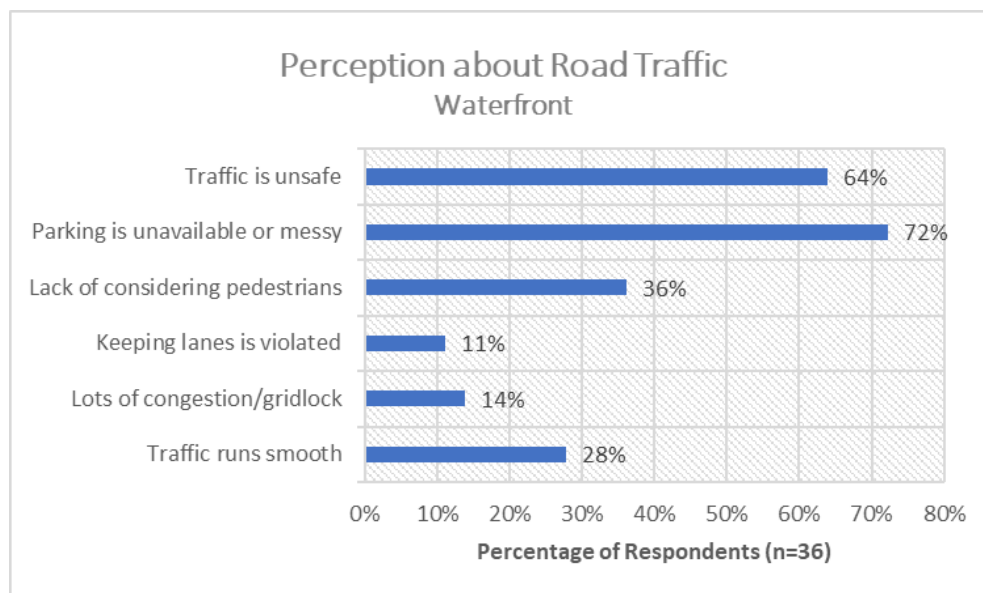


Figure 5-41: Perception of respondents about road traffic.

Parking Spaces. In the current situation, parking occurs alongside roads in- and around the study area, with an estimated 77 parking spaces in the following locations:

- Along the Waterfront - East, 32 parking spaces (Figure 5-42).
- Along the Mr. J.C. de Mirandastraat - Southside 6 parking spaces and Northside 12 parking spaces
- Along the Kromme Elleboogstraat - Southside 7 parking spaces and Northside 12 parking spaces
- Along the triangle near the Flag square - 8 parking spaces.

³⁹ Ilaco NV. 2019. ESIA for the Reconstruction of the Parliament Building.



Figure 5-42: Current parking along the Waterfront-East

Several private and public parking lots provided space for an estimated 221 cars in the following locations:

- Parking lot in front of Bar/Restaurant Broki, total 20 spaces (Figure 5-43, Parking Lot 1)
- Parking lot on the corner of Keizerstraat and the Waterfront, total 20 spaces (Figure 5-43, Parking Lot 2).
- Parking lot located at the corner of the Kromme Elleboogstraat and Waterfront, 36 spaces (Figure 5-43, Parking Lot 3).
- Parking lot in the Kromme Elleboogstraat, owned by the Central Bank, 48 spaces (Figure 5-43, Parking Lot 4)
- Parking lot near the National Assembly, 15 spaces (Figure 5-43, Parking Lot 5).
- Parking lot on the parcel of the National Assembly, 40 spaces (Figure 5-43, Parking Lot 7)
- Parking lot near the Cabinet of the President, 42 spaces (Figure 5-43, Parking Lot 7)
- Parking lot at the SMS, 15 spaces (Figure 5-43, Parking Lot 8)

In addition, several private residences have small parking spaces on their lot.

An overview of the current available parking options in and near the study area is shown in Figure 5-43.



Figure 5-43: Current available parking options in and near the study area

Parking Plans. A recent parking study⁴⁰ demonstrated the parking demand during 7.45 AM - 3.15 PM is too high for the available parking spaces, and this was supported by the respondents during the field survey. Creating more parking spaces in the inner city is impossible.

For the construction phase, a plan⁴¹ made by businesses/residents was available for parking configuration during project construction. The plan proposes access to the residents/businesses of Findlay, VSH Real Estate, La Petite Maison NV, Hoekgebouw and Congresgebouw. Four options are being presented for access to the private parking lots of the residents/businesses (Figure 5-44).

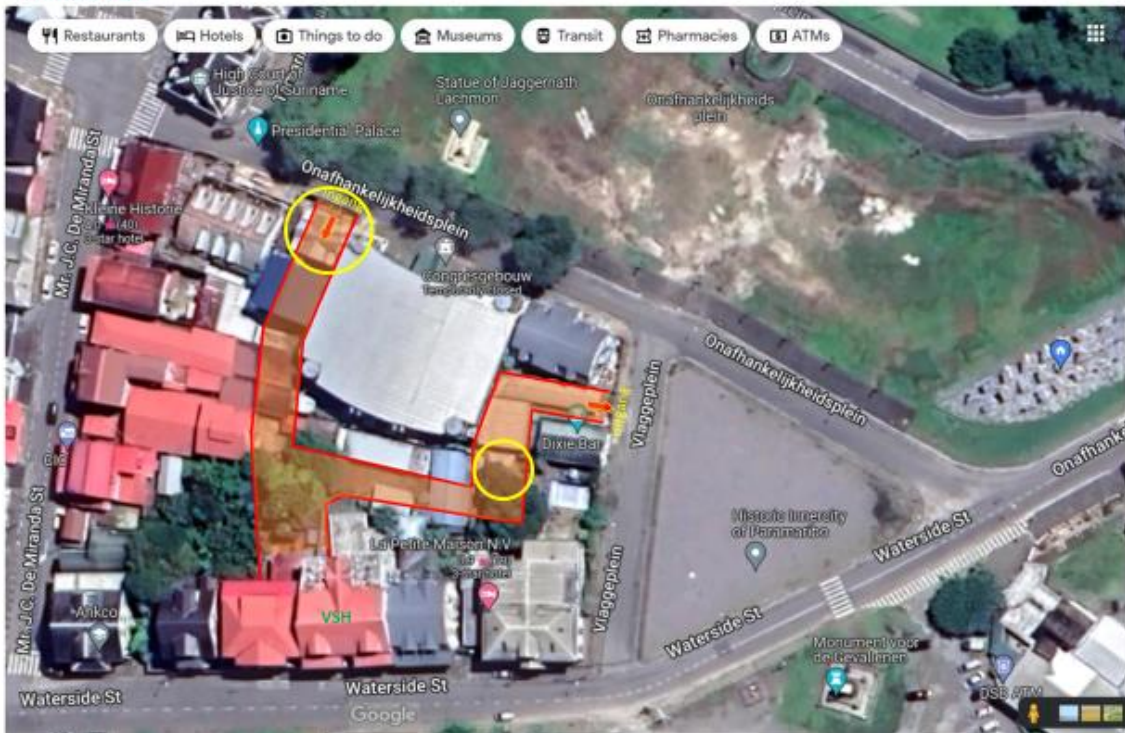
Unfortunately, the options don't seem feasible given Paramaribo's status as a world heritage site⁴². All four options would require demolition of one or two monumental buildings (see yellow circles in Figure 5-44).

⁴⁰ Mcrit/Ilaco NV. 2022. Parking Policy for the Paramaribo Inner Center

⁴¹ Plan made by businesses and residents led by VSH, February 2023

⁴² Personal communication Stephen Fokké, February 2023

Voorstel optie 1



Voorstel optie 2

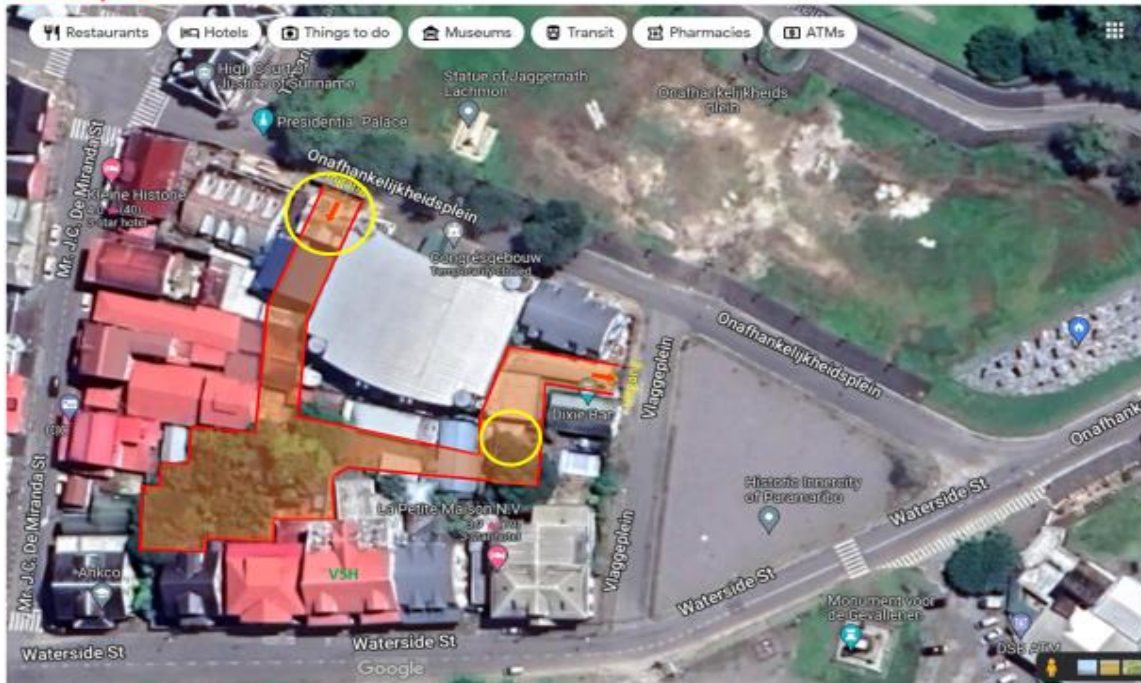




Figure 5-44: Four options presented for access to premises and parking during construction phase.

For the operations phase, the number of parking spaces in the area will significantly decrease: an estimated 32 parking spaces along the Waterfront-East, 19 spaces along the Kromme Elleboogstraat and 8 spaces along the triangle near the Flag square.

The following parking plans exist for the study area in the operations phase⁴³:

- Short stay parking spots with hourly rates and parking duration limit (Figure 5-45, blue lines). These spots are intended for users whose purpose is not related to working reasons
- Long stay parking spots with daily rates for unlimited parking per day. These spots are primarily intended for long stay users, who are mostly workers. (Figure 5-45, red lines).

Parking meters will be placed for payment.

The Mr. J.C. de Mirandastraat is intended for access to special needs and handicapped parking places, as well as for loading and unloading of goods. Other areas for loading/unloading of goods are in front of the Waag building and near the Flag square triangle.

People also have an opportunity to park outside and ride to the inner-city of Paramaribo. These park-and-ride options are planned in four areas⁴⁴ around greater Paramaribo and district Commewijne.



Figure 5-45: Parking availability after redevelopment of the Waterfront

⁴³ Ibid Mcrit/Ilaco NV. 2022

⁴⁴ Kamperveen Stadion, Livorno, Magentakanaalweg, Tamenga/Cocobiacoweg, Meerzorg – Ferry Station (Commewijne)

5.2.8 Tourism

The tourism sector accounted for 19 million dollars (0.66 percent of the GDP) in 2020⁴⁵. Tourists usually reside in Paramaribo with its cultural diversity and rich history and visit several sites. The number of tourists in Suriname has been gradually increasing over the last decade. Most visitors come from Europe, followed by South America and Asia. Non-residents who visited the country in 2018 included 111,214 Dutch citizens, 47,833 French citizens, 17,282 Brazilians, 266 Chinese and 1,618 India citizens, totaling 178,213 visitors. Often these visitors are attending friends and family or are attending business and stay between 1-21 days⁴⁶.

a. Tourism the Project Site

Visitors. The specific number of tourists visiting the Waterfront is unknown⁴⁷.

Hotel Accommodations. The VSH apartments rent apartments to people who are staying for longer periods of time, including expats, consultants, foreign tourists, and retirees. More than 50 people are working on the premises, which is open 24/7 hours.

Safety and Security. The Waterfront is being plagued by homeless people who have found a permanent residence at the site. They sleep on benches and wander along the Waterfront road during the day and night (Figure 5-46). The homeless people also litter, solicit money, vandalize goods and sometimes even attack vendors and visitors, amongst others. So far, no structural solution has been found. Figure 5-47 shows the safety violations in 2021 at the Waterfront.

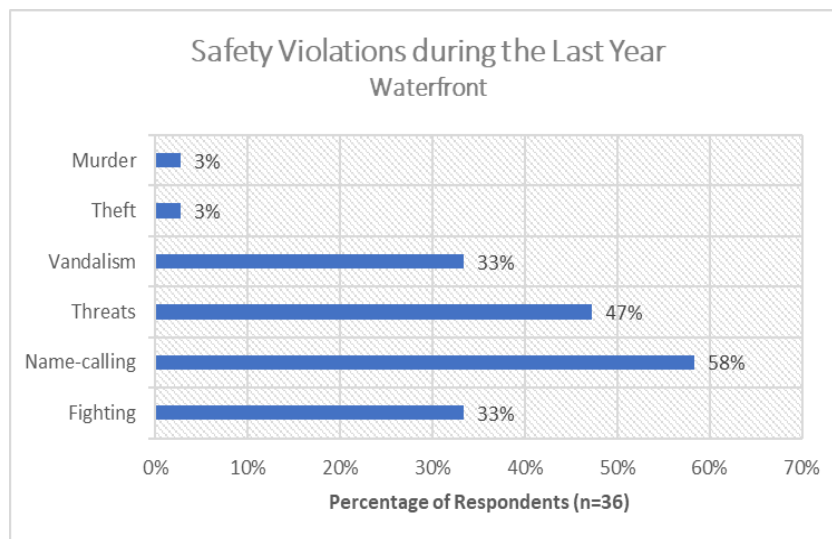


Figure 5-46: Safety violations at the Waterfront during the last year

⁴⁵ <https://www.worlddata.info/america/suriname/tourism.php>

⁴⁶ *Ibid* ABS. 2020. Ninth Environmental Statistics

⁴⁷ Personal communication R. Boedhha, Director Ministry of Tourism



Figure 5-47: Homeless people living at the Waterfront

5.2.9 Other Activities in the Area

a. Ongoing Activities

The study site is located in a busy area with numerous diverse activities which are described below (Figure 5-48). Activities at the sites described below may have either direct or indirect influence at the project site because of the flow of people and traffic that are passing through the Waterfront. During the execution of the project an increase of traffic congestion may occur or that less people will visit especially the sites adjacent to the project site. However, the expectation after the project is that the Waterfront will attract more people and therefore businesses around it will have opportunities to grow much more.



Figure 5-48: Other activities in the study area

Independence Square. Independence square is a public area adjacent to the projected amphitheater at the northern border of the study site. The area is used for sporting events, religious gatherings and other festivities which have a national character. Events and festivities attract numerous people who all have to park in the area. Visitors may also extend their activities to the Waterfront area due to the short walking distance.

Palmentuin. At a distance of 470 m northeast from the study site, there is a garden with more than 1000 Royal Palms situated in the backyard of the Presidential Palace.

People walk and stroll in this garden and spot the residing monkeys and parrots. Along the northern side cultural vendors and food/beverage shops, also known as Waka Pasi - are located which also attract tourists and visitors.

Entertainment Center. At a distance of 500 m northeast from the study site, there is an area concentrated with bars, restaurants, night clubs and hotels. Here, tourists and other visitors like to gather and find leisure. This area is busy during the day and night.

Fort Zeelandia Museum. Adjacent to the study site, the Fort Zeelandia Museum is located. The museum houses an important part of the history of Suriname and is open daily from 8.30 AM - 5.30 PM. Within the museum, a high-end restaurant - Baka Foto - is located.

Cabinet of the President. The Cabinet of the President is located next to Fort Zeelandia, in close vicinity of the study site. This central Government center attracts employees and visitors daily. The Cabinet has its own parking place to capture the high volume of employees and visitors.

Restaurants and Shops. Adjacent to the western border of the study site, three restaurants are operational, all of them facing the Suriname River. De Waag, Broki and Riverside attract customers during the day and night. In addition, the SMS pier also provides a small shopping area for art and cultural goods.

Central Market. The Central Market is located 625 m from the western border of the study site. Excessive rain results in flooding in the area between the Heiligenweg and the entrance of the market.

Bus Terminals. Two bus terminals of the National Transport Company (NVB) are located near the direct study area (Figure 5-49).

- The NVB terminal in front of Bar/Restaurant Riverside is located 110 m from the Waterfront. Buses that reside here come from the North (PG and Line 4) and run along the Waterfront.
- The NVB bus terminal “Heiligenweg” is located approximately 430 m from the Waterfront. From here buses run to the south and north direction from the study site during the day and at night.



Figure 5-49: Bus terminal in front of Bar/Restaurant Riverside

b. Plans for Area Improvement

Arts and Cultural Center. The Foundation Museum of National Arts and Culture (Monac) aims to revitalize and promote art and culture within the Surinamese society. Monac has prepared a plan to develop an arts and cultural center along the Waterfront for exhibitions, events, artist-in residence projects and food and beverage facilities. The Waterfront location is chosen for housing this art center because it complies with the following criteria: i) centrally located, ii) sufficient space for accommodating all aspects of the center including, iii) the area has the potential to become a landmark.

At this time, it is unknown when this work will start, and it is unlikely that works will happen at the same time. If it comes to the attention of the PIU that works will happen at the same time, there will need to be coordination meeting between the two project teams to help manage impacts. This plan stretches from the Waag building (directly south of the study site) to the Central Market. It includes the following components:

- Art museum houses exhibitions from national and international artists, art fairs and space for artist-in-residence projects.
- Multifunctional theater for theater, music, dance. It will include a large room and a practice room and other necessary facilities.
- Amphitheater for open air dance and music performances with large crowds. It will partly hang over the Suriname river.

- Commercially operated event center with modern conference and meeting facilities
- An art-infused park with a wide boulevard, greenery and opportunities for refreshments. The park will provide space for art performers. Sufficient facilities for parking and a marina are included⁴⁸.

An overview of the plans is shown in Figure 5-50.



Figure 5-50: a. Current area south of the study site. b. Plan for the art and cultural center. Source: Monac

⁴⁸ www.monacsr.org. Personal information Mr. E. Hogeboom.

SMS Ship Terminal. The Suriname Shipping Company (SMS) has plans to renovate their shipping dock to provide a temporary dock for ships waiting for the tide to dock at the main harbor Nieuwe Haven. The dock has deteriorated since 2017, but plans are underway rebuilding the dock in concrete and steel instead of the current wooden construction (Figure 5-51). The renovation project occurring in collaboration with the Maritime Authority Suriname (MAS), includes the certification by the International Standard for Port Security (ISPS) including fencing the area and restricting in-out traffic of people⁴⁹.

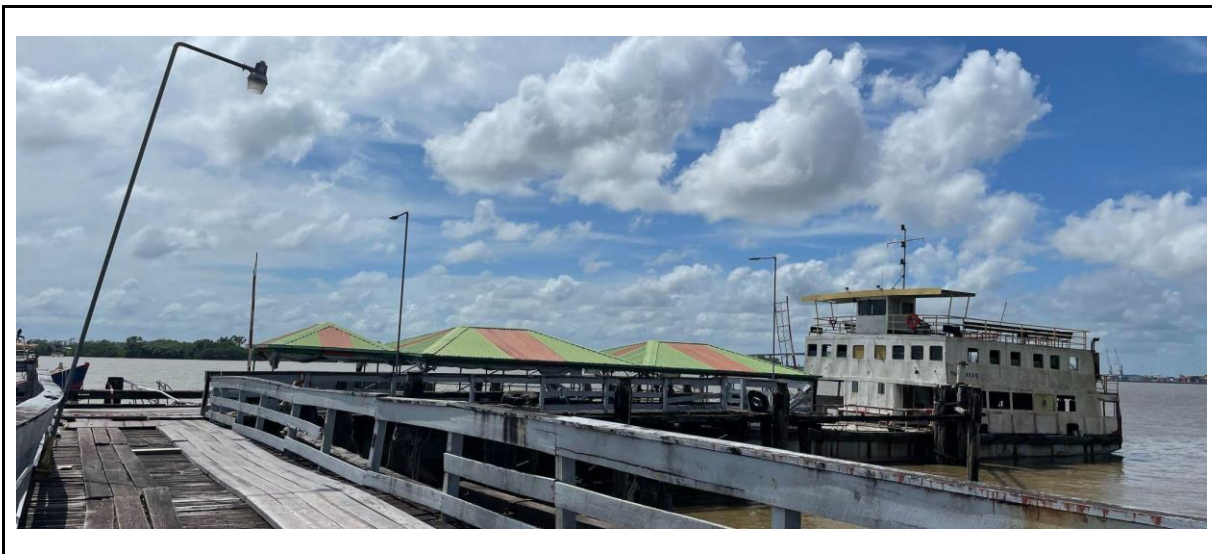


Figure 5-51: Plans for renovation of the SMS shipping dock

VSB Public-Private Partnership. The Association for Businesses in Suriname (VSB) are planning to improve the Paramaribo inner city towards a clean, accessible, safe and green place. The VSB started a public-private partnership (PPP) with the Foundation Entertainment Center (SUPS) and the Government - the Ministry of Public Works and the District Commissioner Paramaribo North-East in December 2021. Ever Since, the PPP has paid special attention to i) rehabilitation of the inner city as residential area, ii) removing illegal vendors and parking regulators, iii) identification and assessment of problem areas in the inner city. Other areas of interest include improving the access to restrooms, resolving the lack of parking places, improving drainage in the area, creating green spaces, and structurally removing the homeless people from the inner city⁵⁰.

Royal Breeze Hotel and Partners. The Government together with the local business (public-private partnership) are preparing to rehabilitate the central market area, as

⁴⁹ Personal information, Ms. Koffie-Rozenhout, 17 January 2023

⁵⁰ Personal information Mr. C. Issa

part of operationalization of the Royal Breeze hotel, located across from the Central Market.

The following infrastructural works are being implemented^{51, 52}: i) rehabilitation of sewage system, ii) construction of footpaths, iii) lightning, iv) landscaping and greenery.

Yokohama. The Yokohama group plans to improve the fountain at the Vaillant Square, as this is located behind one of their buildings. More information about this project was unavailable at the time of this study. The rehabilitation of the fountain is currently underway.

⁵¹ Personal information Ir. Mohan, Ministry of Public Works

⁵² <https://www.youtube.com/watch?v=9V5fMHUYi9Y>

5.3 Socio-Economic Profile of Crafters, Food Vendors and workers operating at the Waterfront

This Chapter presents the socio-economic profile of the people who will be temporarily displaced by the project: crafters, food vendors and workers (Figure 5-52), also called Project Affected People (PAP) within the scope of the redevelopment of the Waterfront and Improvement of Mobility Infrastructure. The socio-economic profile served as the baseline to identify the PAPs and assess the extent of impact of the proposed project. A survey was conducted and interviews at the project site among all PAPs, namely the crafters, food vendors and workers were held. Data was collected from January - March 2023 and data verification process was carried out from September - November 2023.



a.



b.

Figure 5-52: a. Crafter stalls at the Waterfront b. Food vendors at the Waterfront

5.3.1 Demographics

a. Population

Based on their current operations and activities at the Waterfront, the survey identified crafters, food vendors and workers linked to the food vendors, as PAP.

The project will adversely impact a total of 53 people during the construction phase. The number of PAP identified per category at the site are 18 craft vendors, 11 food vendors and 24 workers with an estimated household size of approximately 3 persons. Compared to workers, food vendors and crafters have more household members. This is illustrated in Table 5-25. The workers consist of 9 males and 15 females⁵³.

Table 5-25: Household size PAPs

Type of Stakeholder	Number of PAPs	Average Household Size
Craft Vendors	18	4
Food Vendors	11	5
*Workers	19	2

**Workers average household size based on information collected from 19 out of the 24 workers encountered during the interview period. The remaining 5 workers consist of 2 males and 3 females.*

b. Age and Gender

The gender of the PAPs is presented in Table 5-26. The collected data among the PAPs indicate that both the crafters and workers are mainly female, while the food vendors are predominantly male.

Table 5-26: Gender profile of PAPs

Stakeholder	Gender			
	Male		Female	
Craft Vendors	2	8%	16	48%
Food Vendors	7	28%	4	16%
Workers	9	37%	15	63%

⁵³ **Note:** individual interviews were conducted with only the 19 workers who were available at the time, therefore not all socioeconomic characterization includes the 24 identified.

The average age of the crafters is 52.3 years, while the food vendors are, on average slightly younger, 50.2 years. The majority of both the crafters and food vendors are in the range of 50-60 years. The majority of workers are in age groups 30-40 followed by 40-50 years. An overview is provided in Figure 5-53.

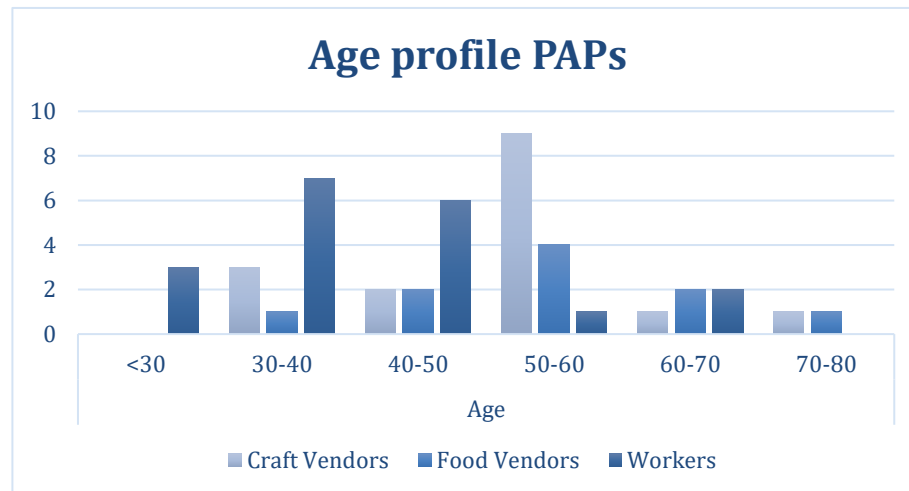


Figure 5-53: Age profile of PAPs

c. Religion and Ethnicity

The survey shows, the majority of the craft vendors, food vendors and workers are Roman Catholic, respectively 61%, 55% and 26%. Other religions that are also frequently practiced are Latter-Day-Saints, Moravian, Hinduism, Islam, and Pentecostalism.

In terms of ethnicity in Table 5-27, indigenous people make up the bulk among crafters 61%, followed by maroons 28% and creole and mixed people 6%. Creole food vendors comprise approximately 46% of the total, followed by maroon and mixed food vendors (18%). In the group of workers, the majority, 26%, consists of maroons.

Table 5-27: Religion and ethnicity of PAPs

Religion	Craft Vendors		Food Vendors		Workers		Ethnicity	Craft Vendors		Food Vendors		Workers	
	#	%	#	%	#	%		#	%	#	%	#	%
Latter-Day-Saints	3	16	1	9	0	0	Indigenous	11	61	0	0	0	0
Seven Day Adventist	1	5	0	0	0	0	Maroon	5	28	2	18	5	26
Roman Catholic	11	61	6	55	5	26	Creole	1	6	5	46	3	16

Winti Religion	1	5	0	0	0	0	Javanese	0	0	1	9	3	16
Moravian	0	0	2	18	2	11	Hindustani	0	0	1	9	3	16
Weslyan	1	5	0	0	0	0	Mixed	1	5	2	18	3	16
Hinduism	0	0	1	9	3	16	Other	0	0	0	0	2	10
Islam	0	0	1	9	3	16	Total	18	100	11	100	19	100
Atheist	1	6	0	0	1	5							
Pentacolism	0	0	0	0	3	16							
Other	0	0	0	0	1	5							
Total	18	100	11	100	19	100							

* *RELIGION: The category 'Other' relates to "who is open to all religions"*

**ETHNICITY: The category 'Other' relates to Cuban, Dominican*

5.3.2 Education and Skills

Table 5-28 illustrates data on education and skills. Among the crafters, the most highly educated with a secondary education, are 6 females, accounting. While 8 possess only an elementary education, 1 has no formal type of education. Among the men, both have a secondary education.

From the households, 6 crafters have dropped out of school due to the of lack of finances. Food vendors don't account for any school dropouts.

Based on the food vendors' data, all have a formal education. Five males, have a secondary education and 2 only have a primary education. Among the women only 1 has a primary education, while the remaining 3 have a secondary education. The workers have 1 female with a university education. Nine women have a secondary education compared to 7 men. A total of 4 workers has a primary education.

Table 5-28: Educational level of PAPs

Type of Education Completed	Craft Vendors		Food Vendors		Workers	
	M	F	M	F	M	F
University	0	0	0	0	0	1
Secondary: VWO/HAVO	0	0	1	1	0	1

Secondary: HBO	0	0	0	0	0	0
Secondary: Natin/AMTO	1	0	2	0	2	0
Secondary: IMEAO	0	2	0	1	0	3
Secondary: Kweekschool	0	2	0	0	0	1
Secondary: VOJ	1	2	2	1	3	4
Primary: GLO/BO	0	8	2	1	2	2
No education	0	2	0	0	0	0

Besides formal education, PAPs have also acquired additional skills. These are listed below according to PAP type.

- Crafters: knitting, sewing, crafting, cooking, nail and hair care, computer skills, agriculture, construction.
- Food Vendors: Sales, food and beverage handling, sewing, food and snack preparation, agriculture, leadership skills, business skills.
- Workers: Administration, Tourism, Agriculture.

5.3.3 Employment and Income

a. Employment

The craft- and food vendors operate along the Waterfront and therefore need to rent infrastructure. The craft vendors engage in production and sales of crafts, and the food vendors in production and sales of food and beverages. Food vendors operate at the Waterfront with the assistance of workers, while the crafters operate independently.

The average number of years that the vendors and their workers have been active at the Waterfront, is shown in Table 5-29. When comparing the vendors, it is evident that most food vendors, 8%, have been active at the site for more than 10 years, while most crafters between 3-5 years, accounting for 7%. The majority of the category of workers, 6%, have also been active at the site for more than 10 years.

Table 5-29: Duration of business activity on site

Number of business active on site	0-2 years	3-5 years	6-10 years	More than 10 year
Craft Vendors	4 (22%)	7 (39%)	5 (28%)	2 (11%)
Food Vendors	1 (9%)	0	2 (18%)	8 (73%)
Workers	6 (32%)	1 (5%)	3 (16%)	9 (47%)

Crafters

The crafters mostly have businesses consisting of one person, except for one crafter who has 11-20 workers. Almost half of the crafters have a secondary job to increase their household income. This information is listed in Table 5-30. Three of these earn an additional income through employment by the Government and retirement benefits, while others engage in painting, construction, sewing jobs or janitorial services.

The remaining crafters also have a vending place(s) at **another** location. The percentage of food vendors only selling goods at the Waterfront is slightly lower at 72%.

Food Vendors

Based on the collected information, food vendors appear to have larger businesses with a number varying from 2-5 workers on average, each vender has approximately 3 workers.

About 58% (11) of the workers are full-time employed with no other sources of income, while a mere 42% (7) has an alternative income.

The amount of food vendors having a secondary job is significantly lower comparison to crafters and consists of 27% (3). One food vendor manages the Waterfront's public restroom, while the rest engages in tailoring and construction work.

These informal jobs provide a social safety net for people working at the study site. particularly crucial in light of the current economic downturn during the COVID-19 epidemic and given the current economic crisis wherein citizens are faced with price increases while salary ratios are declining as a result of devaluation.

The authority (DC) discontinued renewing licenses some time ago awaiting the redevelopment of the Waterfront, and this was officially communicated with the vendors.

Table 5-30: Types of employment among PAPs

	Number of PAPs		Only Primary Business/ income	Secondary Job/ income	Unspecified	Type of Secondary Job
	M	F				
Craft Vendors	2	16	7	7	2	Government job (2), painting (1), construction (1), retirement benefits (1), janitor (1), sewing (1)
Food Vendors	7	4	8	3	0	Management Waterfront restroom (1), tailoring (1), construction (1)
Workers*	7	12	11	8	0	Unspecified

*These are the numbers of workers that were consulted during the revision

b. Income and Expenditure

On average food vendors earn SRD 26.393, - in a month while the crafters earn SRD 6.773, - Calculations are based on data that was provided by the vendors, after exclusion of outliers. Workers generally earn an average of SRD 7.100, -.

When analyzing the household expenditures (Table 5-31), important differences between crafters and food vendors are noticeable.

- Crafters use household monies mainly for basic human needs such as food, housing, utilities, travel, and communication.
- Food vendors spend money on these basic needs but have more money available for paying for education, healthcare, entertainment, and the internet.
- It is noteworthy that a large number of workers still enjoy some form of education.

Table 5-31: Household expenditures of PAPs

Monthly Household Expenditures	Crafters	Food Vendors	Workers
Food	13	11	17
Rent	4	2	8
Education	0	1	12
Healthcare	0	1	8
Electricity	7	8	17
Fuel	4	7	11
Clothing	0	0	11
Transport- taxi/car	4	0	17
Phone	4	5	18
Entertainment	0	1	11
Internet	0	4	12

5.3.4 Production and Infrastructure

a. Production and Sales

The number of products daily produced and sold is shown in Table 5-32. The majority of crafters report selling between on average 1-10 items per day, while the food vendors sell more than 10 items daily. Food vendors have reported that after the Covid-19 epidemic, sales are down, and one food vendor has ceased their business accordingly. The addition of Waka Pasi to choices for tourist has also contributed to lower sales at the Waterfront.

Table 5-32: Number of items sold

Daily Number of items sold	Don't know	1-10	11-25	26-50	More than 50
Craft Vendors	1	12	1	0	0
Food Vendors	0	0	4	5	1

For both the crafters and food vendors, November and December are the busiest months while January is the slowest month for business sales.

b. Infrastructure

Household Infrastructure. An overview of the household infrastructure is shown in Table 5-33. Although the basic infrastructure is apparent in most of the PAP households, a few lack infrastructure, namely toilets with running water, running water supply and electricity. Food vendors all possess a vehicle/ transport, while the majority of especially the workers rely on public transportation. Food vendors are the only households with freezers since they must store food for sale. Equipment like clothes dryers, generators, laptops, tablets, and computers are less common in PAP households.

Table 5-33: Household infrastructure of PAPs

	Craft Vendors		Food Vendors		Workers	
Household Infrastructure	M	F	M	F	M	F
Auto/minibus/pick-up truck	0	6	7	4	5	3
Bicycle	1	0	1	0	2	1
Computer/tablet/ Laptop	1	3	3	1	5	3
Toilet with running water	1	9	6	2	6	7
In-house water supply	2	10	6	4	7	8
In-house electricity	2	11	7	4	7	11
Washing machine	2	9	6	3	6	10
Clothing dryer	0	2	2	1	0	1
Fridge	1	9	7	4	6	11
Freezer	0	6	5	3	0	1
Generator	0	1	1	0	0	1

Internet connection	0	7	6	4	6	8
In-house kitchen	1	6	5	3	7	7
Outdoor kitchen	0	0	1	0	0	3

Rent infrastructure. 18 craft- and 11 food vendors are renting a space from the Government (Table 5-34), which specifics are listed below. One vendor sells food out of his own container which is located at the Waterfront.

Both food- and craft vendors use a public restroom on site, which costs SRD 15, (US\$ 0.48) every visit, which easily adds up to more than US\$1 per day. Table 5-34 illustrates the rent infrastructure of the surveyed vendors.

Table 5-34: Rent infrastructure for craft- and food vendors

	Craft Vendors	Food Vendors
Rental area	4m ²	16m ²
Electricity 120V	18	11
Water	0	11
Closed area	0	11
Bar	0	11
Sales table/stand	16	11
Concrete floor	16	11

5.3.5 Gender and Vulnerability

Female-headed Households. The survey revealed that 1 crafter and 4 food vendors (20% of Total PAPs) are female-headed households with children or other dependents to support.

Households below the Poverty Line. As of June 2023, the poverty line was set at SRD 7,500 (US\$ 197.35 with an exchange rate of SRD38 per US\$) monthly income for a 40-hour workweek. Using this value as the cut off point for vulnerable households, 5 PAPs (9% of Total PAPs) are living below the poverty line. Of these 5 households, 4 are crafters and 1 is a food vendor. These are all considered vulnerable households.

Two households can be classified as double vulnerability: female-headed with dependents and living below the poverty line.

5.4 Transportation

Transportation. Half of the residents, businesses and vendors commute by personal car, while others travel by bus (18%), taxi (14%) or lifting with others (7%) (see Figure 5-54). Travel durations from home to the Waterfront vary between 15 minutes or less to 120 minutes, with most within 30 minutes, as illustrated in Figure 5-55. The majority of residents, businesses and vendors reach the Waterfront from their residence within 30 minutes.

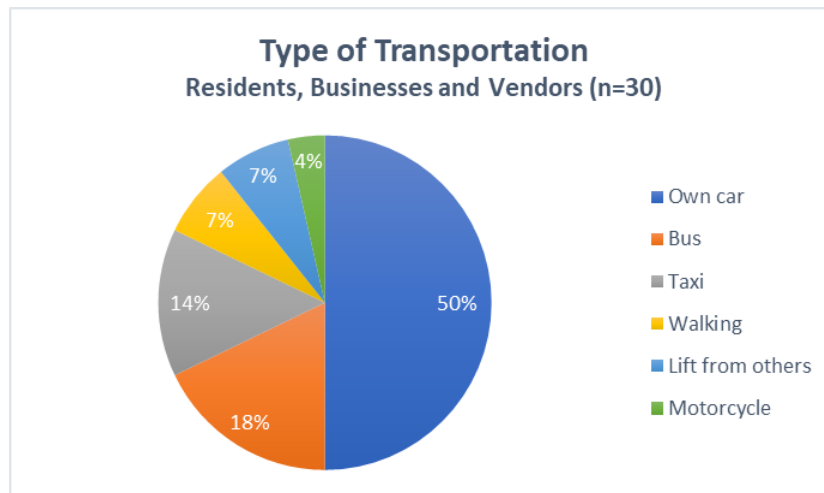


Figure 5-54: Type of Transportation to the Waterfront

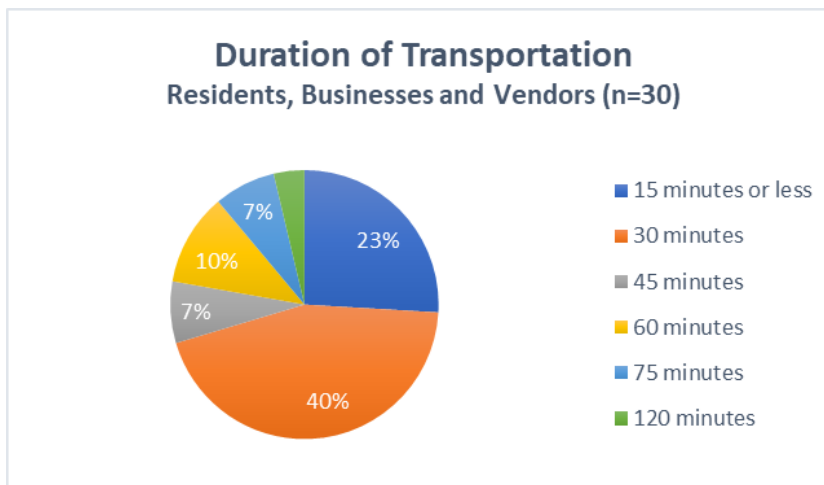


Figure 5-55: Duration of transportation to the Waterfront by residents, businesses, and vendors

Parking. Only a small percentage, 13%, of the residents, businesses and vendors make use of parking lots in the area as indicated in Figure 5-56. The businesses are mostly using the parking spaces located on their own parcel while vendors prefer to park close to their business, usually adjacent to the vendor stands.

Conflict over parking spaces has been reported at the site by 8% of respondents in the 2023 socio-economic survey.

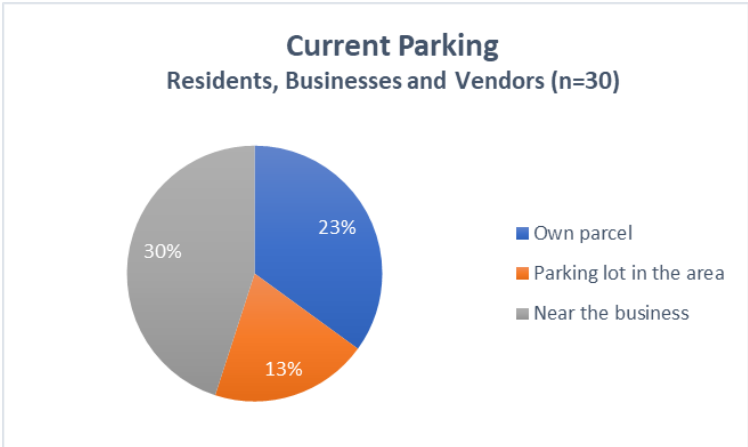


Figure 5-56: Current parking situation of residents, businesses and vendors

5.5 Perspectives about the Area and the Project

5.5.1 Traffic and Parking

Road Traffic. The perception of road traffic is shown in Figure 5-57.

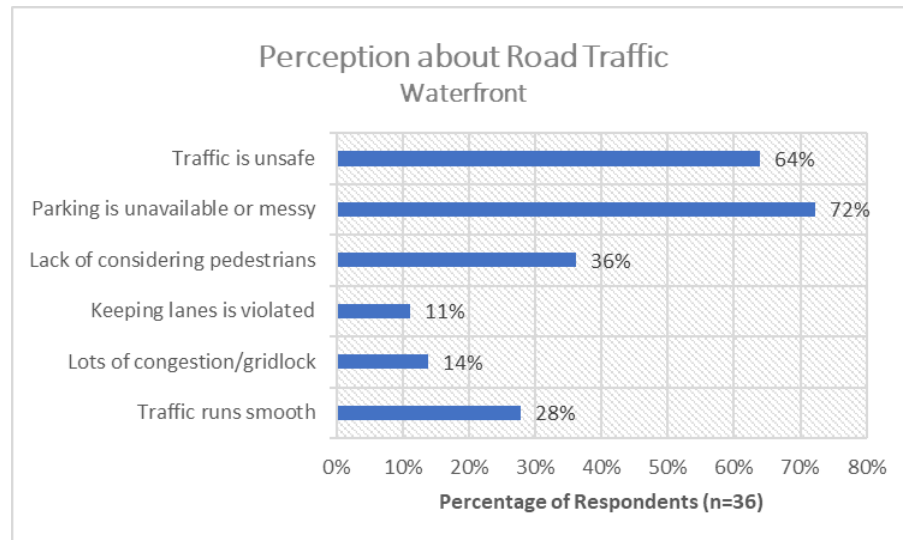


Figure 5-57: Perception of respondents about road traffic.

The residents, businesses, and vendors along the Waterkant reported experiencing traffic accidents. Figure 5-58 gives an overview of the observed traffic accidents in the last year.

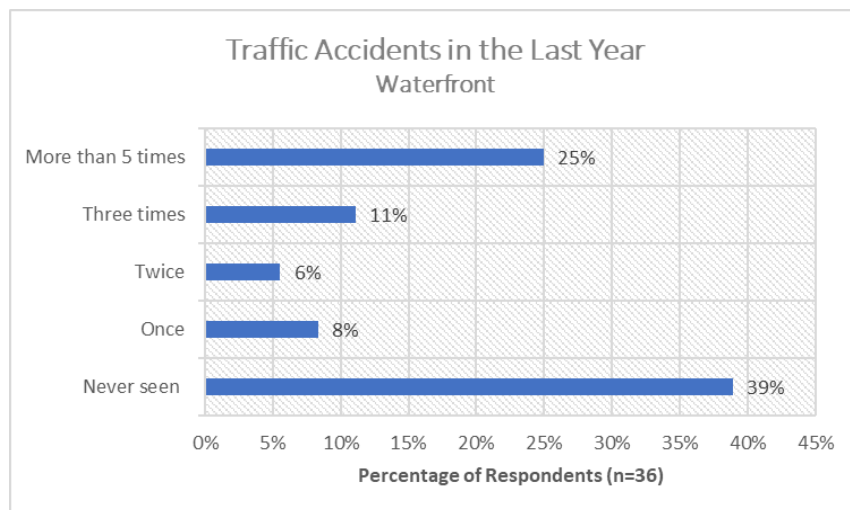


Figure 5-58: Observed traffic accidents by respondents along the Waterfront in the last year

Parking. Businesses and residents have expressed concern about access to their premises and parking during the construction phase. **Error! Reference source not found.** gives an overview of the preferences of these stakeholders.

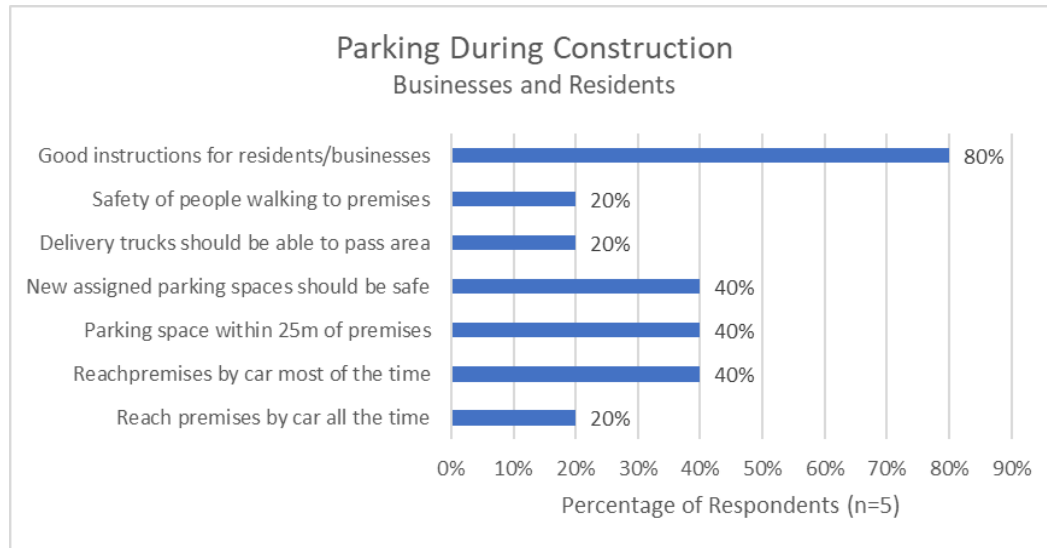


Figure 5-59: Preferences of residents/businesses access to premises and parking during construction

5.5.2 Safety and Security

The survey shows safety violations experienced by the majority of the residents, businesses, vendors and other active at the Waterfront. Name-calling is reported by 58% of respondents, followed by threats, vandalism and fighting **Error! Reference source not found..**

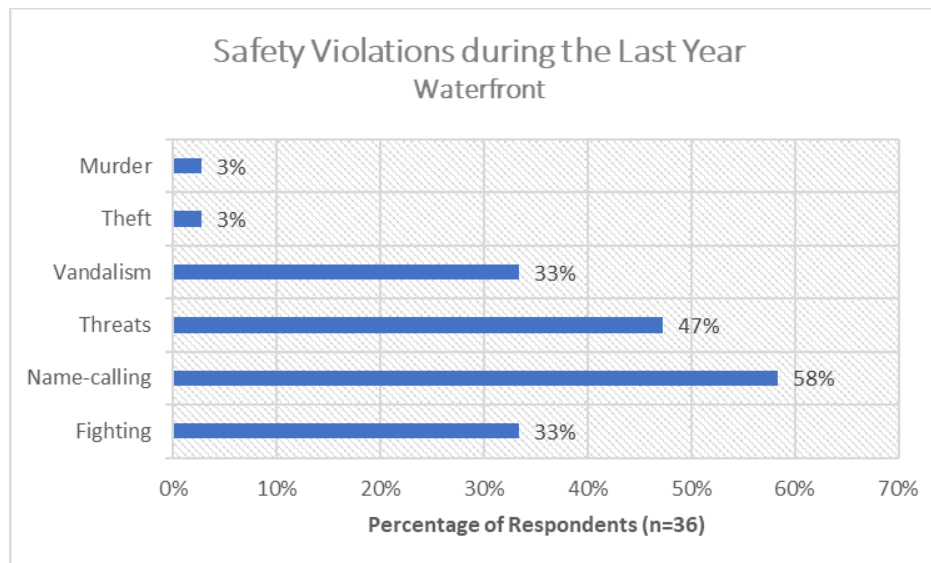


Figure 5-60: Safety violations at the Waterfront during the last year

5.5.3 Advantages of the Project

The majority of respondents (97%) think the project will bring significant improvement to the Waterfront and surrounding area (**Error! Reference source not found.**). Respondents also b

elieve the area will become safer (67%). An increase in tourists is expected, as well as more clients for vendors selling crafts and food.

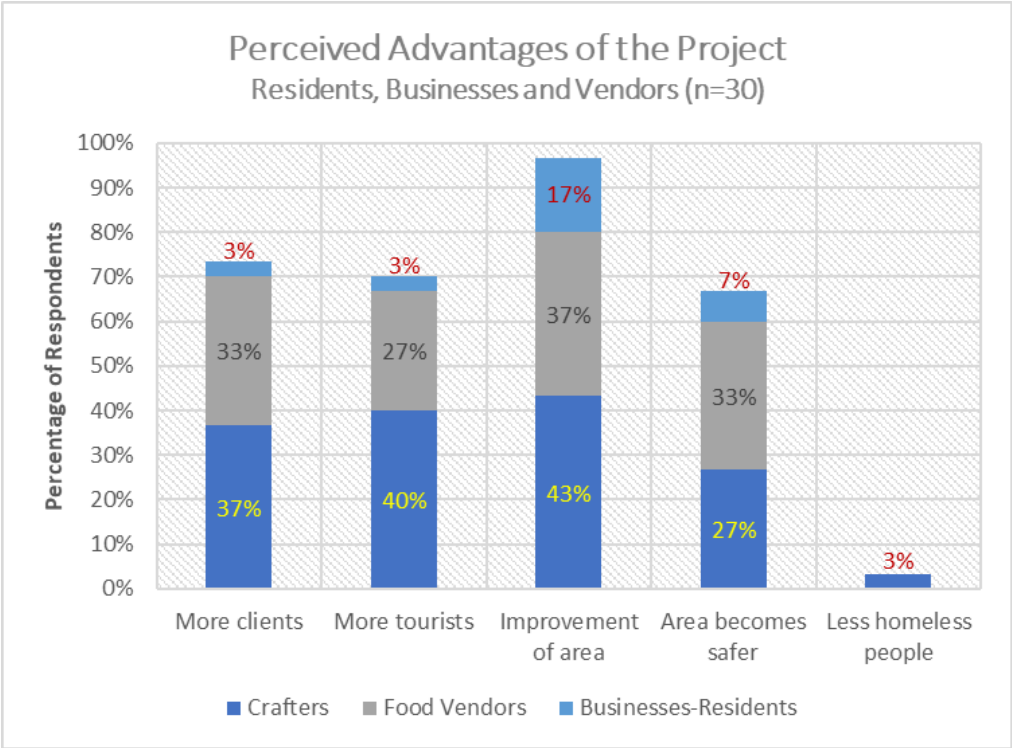


Figure 5-61: Perceived advantages of the Waterfront project

5.5.4 Project Impact Concerns

The data shows residents, businesses and vendors are predominantly concerned with the loss of clients, income or vending spots. Other important concerns include are business-related (loss of worker jobs, extra costs, increase rental rate of vending space, division of group) or related to property (damage to building), traffic (use of heavy machinery) or the environment (excessive dust release). This is illustrated in **Error! Reference source not found..**

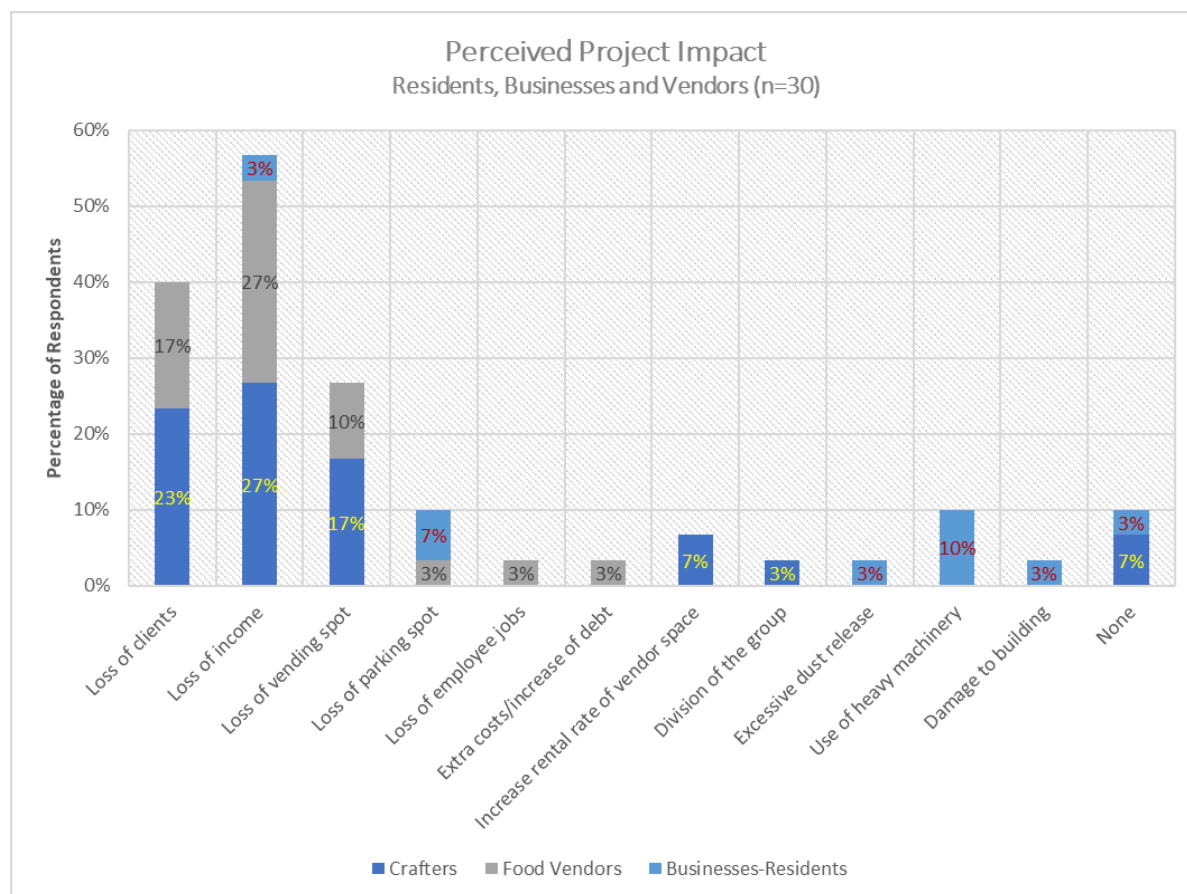


Figure 5-62: Concerns on Project Impact

5.5.5 Minimizing Negative Effects

The respondents were asked how the negative effects of the project could be minimized (**Error! Reference source not found.**). They reported having a good compensation package and a comparable new location (mostly crafters) would minimize the negative impacts. All round Information transfer seems very important to the respondents: they seek frequent communication (57% of respondents), clear instructions (27% of respondents) and sharing information about the negative effects (43% of respondents).

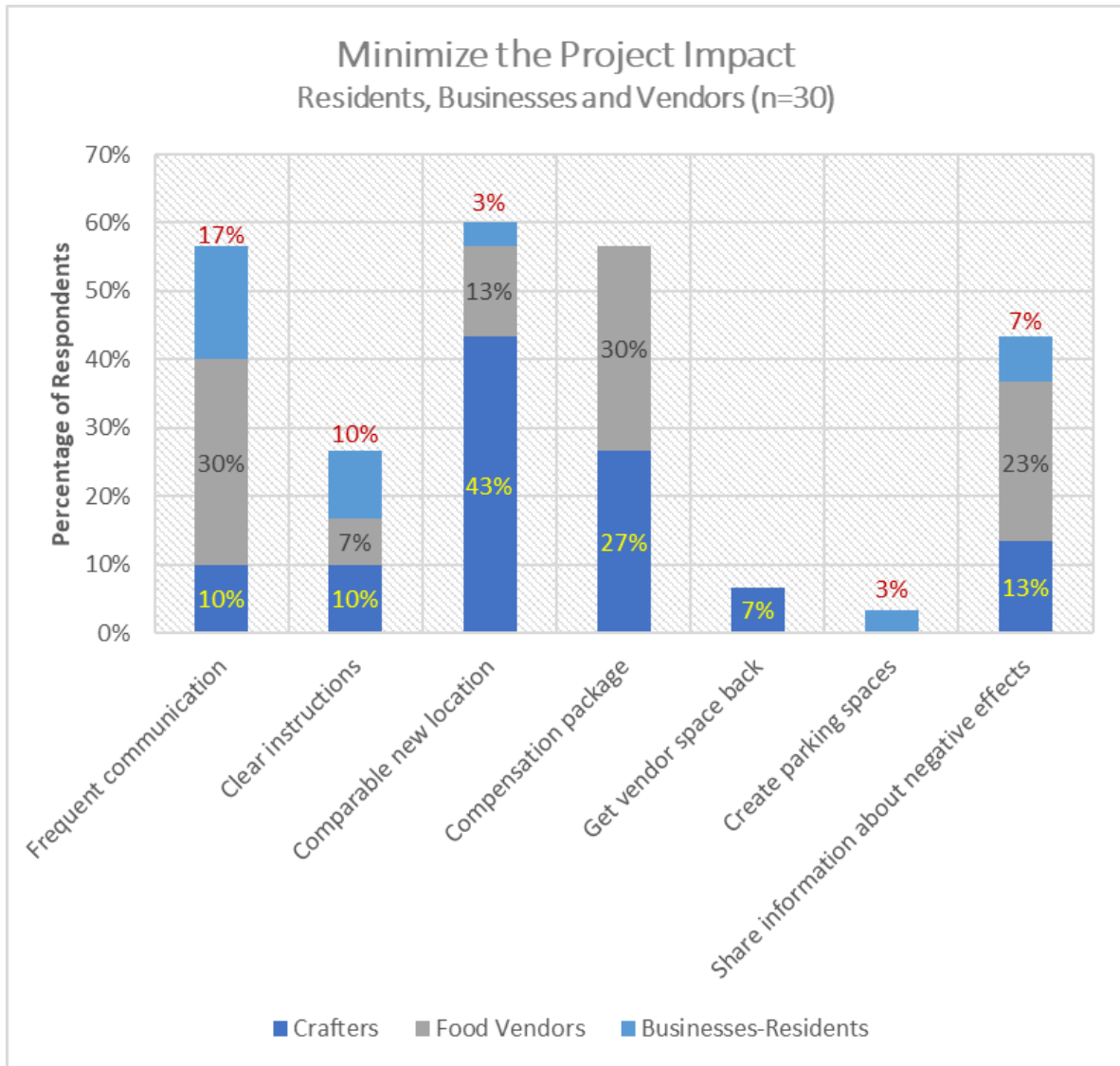


Figure 5-63: Perception of residents on minimizing the effects of the Waterfront project

6 Environmental Impact Assessment

This chapter provides an analysis of the potential direct and indirect impacts, both positive and negative, that will result from the proposed construction and operations phases of the Waterfront Redevelopment. The criteria used to determine the significance of each impact are presented in section 1.3.2.

6.1 Identification and Analysis of Environmental Impacts

This section describes the environmental impacts associated with the construction and operational phases of the Waterfront Redevelopment.

6.1.1 Impact of Disaster Risks and Climate Change

The following climate change influenced disaster risks have been identified for the project area:

- Risk of pluvial flooding (excessive precipitation) and heavy winds which may result in erosion with exposure/ damage to riverbanks and/ or facilities.
- Risk of erosion of riverbank due to waterflow in the river.
- Risk of river flooding by intrusion of river water with or without sea level rise which may result in high water levels and overland flow exposures or damages.

Based on the analysis of (Amatali and Naipal, 2023), once in 2.5 years at least 2.6% of the study area including the Waterfront area is at risk of being flooded due to intrusion of river water without the consideration of sea level rise. Likewise, once in 5 years at least 20.2%, once in 25 years at least 57.2% and once in 50 years 70.8% of the study area is at risk. Further analysis shows that once in the 25 years at least 75.3% of the study area is at risk with a sea level rise of 1 meter by year the 2100, while once in the 25 years at least 87.9% of the study area is at risk with a sea level rise of 2 m by year the 2100.

The risk of river flooding with and without sea level rise as a consequence of climate change were assessed. The impact of climate change with regard to river flooding without and with sea level rise is considered **major**, but with the implementation of the proposed mitigation measures it can be reduced to **moderate** (Table 6-1).

The goal should be to reduce the ecological footprint at the Waterfront. The implementation and monitoring of measures as described in **Error! Reference source not found.** is important to reach that goal. Whenever a continued rise of the river water level is detected through regular measurement of the river water level, necessary measures can/should be taken.

Table 6-1: Significance of potential impact of climate change during the construction and operations

Phase	Construction and Operations						
Environmental Impact	Impact of Climate Change (river flooding with and without sea level rise)						
Description	Risk of river flooding by intrusion of river water with or without sea level rise which may result in high water levels and overland flow exposures or damages.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	MT	LS	High	High	Major
Key mitigation measures / Recommendations							
Promote mangrove growth along the riverbank between Fort Zeelandia and the Central Market and protect the existing mangrove plants to combat river overflow							
Consider (green) measures for riverbank stabilization and prevention of river flooding as much as possible to long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the riverbank between Fort Zeelandia and Central market and protect the existing mangrove plants, to prevent erosion and river overflow							
Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection							
Monitoring of water level at the river to measure the highest and lowest water level during springtide (twice a month).							
Regular maintenance and inspection of riverbank protection							
Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices							
Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials)							
Implement the emergency response plan.							
Consider flood insurance to protect current properties at the Waterfront from potential damage.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	MS	Medium	Medium	Moderate

The risk of pluvial flooding as a consequence of climate change was assessed. The impact of climate change with regard to pluvial flooding is considered **major**, but with the implementation of the proposed mitigation measures it can be reduced to **minor** (Table 6-2).

Table 6-2: Significance of potential impact of climate change (pluvial flooding) during the construction and operations

Phase	Construction and Operations						
Environmental Impact	Impact of Climate Change (pluvial flooding)						
Description	Risk of pluvial flooding (excessive precipitation) and heavy winds which may result in exposure/ damage to facilities and other structures. Heavy rainfall have resulted in frequent flooding specifically at the small zone close to the riverbank, at the junction of the Mr. J.C. de Mirandastraat and Waterfront.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	MT	LS	High	High	Major
Key mitigation measures / Recommendations							
Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices							
Improve the existing drainage infrastructure and establish new sustainable measures against pluvial flooding, among others by catching excessive storm water and temporary storing in water reservoirs identified in the surrounding area, to reduce the risk of pluvial flooding							
Include strong roof construction of buildings, resistant to heavy winds during storms in the building codes.							
Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials)							
Implement the emergency response plan.							
Consider flood insurance to protect current properties at the Waterfront from potential damage.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	MS	Medium	Minor	Minor

Since the project area is near the outer bend of the Suriname river, it is expected that the water flow close to the river bank is intense with the risk for erosion in this section. Given the

course of the inflowing and outflowing river water, it is expected that strong river currents are present from the vicinity of Fort Zeelandia to upstream of the river bend.

The risk of river erosion as a consequence of climate change was assessed. The impact of climate change with regard to riverbank erosion is considered **major**, but with the implementation of the proposed mitigation measures it can be reduced to **minor** (Table 6-3).

Table 6-3: Significance of potential impact of climate change (risk of erosion of the riverbank) during the construction and operations

Phase	Construction and Operations						
Environmental Impact	Impact of Climate Change (risk of erosion of the riverbank)						
Description	Risk of erosion due to intense water flow close to the Suriname river bank						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	MT	LS	High	High	Major
Key mitigation measures / Recommendations							
Promote mangrove growth along the river bank between Fort Zeelandia and the Centrale Markt and protect the existing mangrove plants to combat river overflow							
Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection							
Consider (green) measures for river bank stabilization and prevention of river flooding as much as possible for long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Centrale markt and protect the existing mangrove plants, to prevent erosion and river overflow							
Monitor water level at the river and measure the highest water level during springtide (twice a month). In case an increasing trend of river water level is detected, implement measures to protect the Waterfront.							
Regular maintenance and inspection of river bank protection							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	MS	Medium	Minor	Minor

The impact of climate change on the Waterfront during construction will be similar as in the operations phase. Therefore, mitigation measures should be maintained during operations.

6.1.2 Impact on Climate Change

Construction Phase

The use of construction equipment/vehicles moved by fossil fuels, and the removal of unsafe trees as part of the construction at the Waterfront contribute to CO₂ emission release into the atmosphere. However, the construction of landscaping greenery, tree planting and vegetation will contribute to CO₂ absorption and capturing of dust particles during operations.

To reduce CO₂ emission release from equipment use, all equipment must be in good working condition. Therefore, an effective preventive maintenance program is required. Maintenance records and fossil fuel consumption records of each equipment should be kept ensuring that equipment is in good working condition and CO₂ emission release is kept as low as possible. It is recommended to only remove old and unsafe trees.

The impact on climate change is considered **minor**, but with the implementation of the proposed mitigation measures it can be reduced to **negligible** (Table 6-4). The goal should be to reduce the ecological footprint at the Waterfront. The implementation and monitoring of measures as described in Table 6-4 is important to reach that goal.

Table 6-4: Significance of potential impact on climate change during the construction phase

Phase	Construction						
Environmental Impact	Impact on Climate Change						
Description	The use of construction equipment/machines and the removal of trees and vegetation contributes to the emissions of CO ₂ .						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	Medium	Minor
Key mitigation measures / Recommendations							
Maintain all construction equipment in accordance with manufacturer's specifications. Ensure regular maintenance of equipment and vehicles.							
Avoid unnecessary idling of construction equipment or delivery trucks when not in use. Equipment / machines used intermittently should be shut down between work periods.							
Remove only the old and unsafe trees and replace/ plant at least one new tree for every tree removed.							
Consider installing renewable energy sources such as solar panels to power lighting.							
With mitigation	Type of	Magnitude	Duration	Scale	Severity	Probability	Impact

	Impact						significance
	Negative	Low	ST	MS	Low	Low	Negligible

Operations Phase

The use of equipment (maintenance activities) and the movement of motor vehicles (traffic and parked vehicles) operated by fossil fuel will contribute to CO₂ emission release into the atmosphere during operations.

The impact on climate change due to CO₂ emissions from motorized vehicles and equipment is considered **moderate**, but with the implementation of the proposed mitigation measures it can be reduced to **minor** (Table 6-5). The goal should be to reduce the ecological footprint of the Waterfront. The implementation and monitoring of measures is important to reach that goal.

However, the construction of landscaping greenery, tree planting and vegetation will contribute to CO₂ absorption and capturing of dust particles during operations (combating climate change). As such, the impact on climate change due to CO₂ absorption and capturing of dust particles during operations is considered **moderate (positive)**, and with the implementation of the proposed mitigation measures it can be increased to **major (positive)** (Table 6-6). The goal should be to reduce the ecological footprint of the Waterfront. The implementation and monitoring of measures is important to reach that goal.

Table 6-5: Significance of potential impact on climate change during the operations phase

Phase	Operations						
Environmental Impact	Impact on Climate Change						
Description	Movement of motorized vehicles and the use of maintenance equipment / machines contributes to release of CO ₂ emissions.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	LT	MS	Medium	High	Moderate
Key mitigation measures / Recommendations							
To reduce CO ₂ emission release from equipment use, all equipment must be in good working condition. An effective preventive maintenance program will contribute to lower CO ₂ emissions released by equipment and vehicles.							
Avoid unnecessary idling of maintenance equipment/ machines when not in use.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	MT	MS	Low	Medium	Minor

Table 6-6: Significance of potential impact on climate change during the operations phase

Phase	Operations						
Environmental Impact	Impact on Climate Change - Landscape Greenery						
Description	Construction of landscaping greenery, tree planting and vegetation contributes to CO ₂ absorption and capturing of dust particles.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Positive	Medium	MT	MS	Medium	Medium	Moderate positive
Key mitigation measures / Recommendations							
Develop and implement an effective maintenance plan for landscaping greenery vegetation and trees.							
Use water-efficient irrigation systems such as drip irrigation.							
Implement sustainable landscaping practices such as composting, mulching, and using organic fertilizers.							
Maintain the existing natural vegetation along the river intact.							
Avoid unnecessary idling of maintenance equipment/ machines when not in use.							
Maintain regular preventive maintenance of equipment/ machines.							
Consider using renewable energy sources such as solar panels to power lighting.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Positive	High	LT	LS	High	High	Major

6.1.3 Impact on Groundwater

Groundwater for human consumption is abstracted from the A-sand aquifer (in the Burnside Formation) at approximate depths between 120 m and 160 m within the project area. The aquifer thickness varies from 10 m - 60 m. It is unlikely that groundwater for drinking water purposes will be contaminated due to a spill at the construction site. Nonetheless, any spill that may occur should be cleaned up immediately. Run-off water from the construction site must be captured in a close drainage system with interceptors that can separate oil from water and trap sediment. Discharges into the environment must be controlled.

The potential impact of construction and operational activities on groundwater is considered **low**. With the implementation of the proposed mitigation measures as described in Table 6-7, the impact will be **negligible**.

Table 6-7: Significance of potential impact on groundwater during the construction and operational phase

Phase	Construction and Operations						
Environmental Impact	Impact on groundwater						
Description	The risk that groundwater for human purposes will be contaminated is very low. The aquifers from which groundwater is abstracted for drinking water purposes are located at depths between 120 m - 160 m. However, improper stormwater runoff, leaks and oil spills from construction sites can lead to groundwater pollution if caution is not taken.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	Medium	Minor
Mitigation measures / Recommendations							
Ensure leaks and spills of contaminants are contained and removed immediately.							
In the event that a drilling activity will take place, all necessary guidelines should be considered and the relevant institutes (SWM) should be contacted.							
Procedures for transport, storage, handling and spill response for fuels must be in place and implemented.							
Maintain project area and surroundings always clean (good housekeeping).							
	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Negligible	ST	SS	Negligible	Low	Negligible

6.1.4 Impact on Flora and Fauna

Construction Phase

At the Waterfront, no vulnerable or rare animal and plant species were observed other than birds passing by and other animal species whose presence are commonly associated with human presence and the presence of aquatic species in the Suriname river. As such, the impact of the construction activities on flora and fauna are considered insignificant. Moreover, landscaping of greenery and the removal of unsafe trees will have a positive impact on the Waterfront project area experienced during the operational phase.

The overall effect is assessed as **negligible**. With the recommended mitigation measures the impacts on flora and fauna can remain **negligible**. (Table 6-8).

Table 6-8: Significance of impact on flora and fauna during the construction phase

Phase	Construction						
Environmental Impact	Impact on Flora and Fauna						
Description	<p>Dust and gas emissions and noise resulting from demolition, construction works, asphalt pavement , mobilization of material and traffic, building works may scare away birds. Improper waste disposal, leaks and oil spills entering the river may negatively impact aquatic species in the Suriname river (dead fishes).</p> <p>On the other hand, the construction of greenery and planting beds and the removal of unsafe trees will positively impact the Waterfront project area.</p>						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Negligible	ST	MS	Negligible	Medium	Negligible
Key mitigation measures / Recommendations							
Implement a waste management plan to prevent soil and surface water contamination.							
Trees that are selected should be able to withstand extreme weather (strong winds) and should be regularly inspected for safety aspects.							
Remove only the old trees and trees that hinder or affect human safety.							
Composting of all removed trees and plant material.							
Plant at least one new tree for every tree removed.							
Maintain records of incidents with fauna and flora on land and in water							

With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Negligible	ST	SS	Negligible	Low	Negligible

Operations Phase

During the operational phase, the impact on flora and fauna will improve the livability of the Waterfront which is considered a positive impact. Planting beds and greenery including trees and plants located within the grass-covered landscaped area will contribute positively to the mental health of Waterfront users and visitors by reducing stress and attracting passersby. The trees planted along the roadside at the Waterfront area will contribute to capturing dust particles thereby minimizing further stirring up of dust affecting food and craft stands and other visitors.

Other positive effects of flora and fauna:

- Beautification of the Waterfront area to attract visitors
- Provision of shade from trees
- Absorption of heat and CO₂ (combating climate change).

The impact of flora and fauna during the operation phase is **major (positive)** (Table 6-9) and with the recommended mitigation measures the positive impact can remain **major**.

Table 6-9: Significance of impact on flora and fauna in the operations phase

Phase	Operations						
Environmental Impact	Impact of Flora and Fauna						
Description	Greenery including trees and plants within the grass covered landscaped area will improve the surrounding environment and may have a positive impact on mental health of Waterfront users and visitors by reducing stress and encouraging outdoor activities.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Positive	High	MT	LS	High	High	Major
Key mitigation measures / Recommendations							
Regularly inspect trees on tree health and human safety aspects.							

Select plant/ tree species that require minimal maintenance.							
Develop and implement a greenery/tree maintenance plan.							
Maintain records of incidents with fauna and flora on land and in water							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Positive	High	LT	LS	High	High	Major

6.1.5 Impacts on Air Quality

The air quality in the project area has been described to be suboptimal, due to human habitation and related activities (ILACO, 2023). Dust and exhaust emissions may lead to nuisance to people working or living in the direct neighborhood and may even lead to airway health issues.

Construction Phase

Construction activities will require using both non-road construction equipment as well as on-road vehicles. Non-road construction equipment includes equipment operating on-site such as excavators and loaders. On-road vehicles include construction trucks arriving to- and departing from the project area as well as operating on-site.

Emissions from non-road construction equipment and on-road vehicles, as well as dust-generating construction activities such as truck loading and unloading operations, have the potential to (negatively) affect air quality. Equipment based emissions are generated from the operating (diesel) engines on construction sites, whilst dust is generated from the construction activities themselves. The potential for dust emissions is higher during the dry season (especially when windy), and obviously much less during the rainy season.

Thus, the direct impacts on air quality following the foreseen Civil Construction works, include:

- Emissions of dust from construction activities and movement of vehicles and heavy machinery over unbound/unpaved surfaces
- Emissions of combustion/exhaust from equipment/ vehicles.

The impact on air quality during the construction is considered **moderate**. With the implementation of the mitigation measures and the prevailing northeast wind direction, the impact will be reduced to **minor** (Table 6-10).

Table 6-10: Significance of impact on air quality in the construction phase

Phase	Construction						
Environmental Impact	Air pollution						
Description	Dust and exhaust emissions will be generated from landscaping & vegetation, pavement erection, drainage infrastructure, road reconstruction and traffic provision.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	MS	Medium	High	Moderate
Key mitigation measures / Recommendations							
Use robust dust control programs to suppress dust as needed in all unpaved/ unbound areas (e.g., use of water trucks with sprays) especially during dry periods.							
No burning of any waste at construction sites.							
Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site.							
Cover work vehicles transporting granular & stone materials to prevent materials being spread around and off the site.							
Minimize drop heights of materials when conducting on or off-loading of soils, granular and stone materials							
Avoid unnecessary idling of construction equipment or delivery trucks when not in use.							
Maintain all construction equipment in accordance with manufacturer's specifications.							
Remove only poor-quality trees and maintain existing trees to contribute to air quality.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	High	Minor

Operations Phase

During the operational phase, it is expected that the movement of persons and traffic will be the main sources of air emissions in the Waterfront area. Although peaks of air quality parameters (PM_{2.5}, PM₁₀, NO₂ and SO₂) have been observed, all measured results show that air quality parameters were below the applicable WHO guidelines. The observed peaks resulted from traffic, moving vehicles and other commercial activities upwind of the project area. The impact zone is mostly related to the dominating north-eastern winds at day-time.

An impact of current air pollution only occurs where receptors are downwind and sufficiently close. Noteworthy to mention is that the air quality in the project area is described to be suboptimal, due to high road traffic, human habitation and related activities in the inner city.

The impact on air quality during the operations is considered **moderate**. With the implementation of the mitigation measures and the prevailing northeast wind direction, the impact will be reduced to **minor** (Table 6-11).

Table 6-11: Significance of impact on air quality in the operation phase

Phase	Operations						
Environmental Impact	Air pollution						
Description	Particulate matter and gasses emitted in the air result from fuel combustion generated by motorized vehicles at parking areas and traffic passing by the Waterfront, and from ships moored along the Suriname river (SMS pier). Other air emissions may result from food stands/ restaurants.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	LT	MS	Medium	High	Moderate
Key mitigation measures / Recommendations							
Maintain existing trees along the roadside to improve air quality (help to capture dust particles from passing traffic)							
Plant new trees in areas where poor quality trees have been removed.							
Regular maintenance/ sweeping of pavement to reduce dust blowing							
Cover open areas or unpaved areas with grass or other durable plants.							
Limit the intensity of traffic passing by along the Waterkant e.g. by prohibiting large trucks and containers.							
Avoid unnecessary idling of equipment/ machines during maintenance activities when not in use.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	LT	SS	Low	Medium	Minor

6.1.6 Noise (and Vibration) Impact

Noise nuisance results from unwanted or excessive noise with potential effects that range from causing a nuisance to more harmful effects such as sleep disturbance, high stress levels and, in extreme cases, hearing loss for humans.

Noise can also affect animals by interfering with their communication and navigation patterns. At the Waterfront area, no vulnerable or rare animal species were observed other than birds and some common species such as lizards whose presence are commonly associated with human presence. Noise can also affect people working at the construction site, but is further discussed in section 6.2.2. Occupational Health and Safety impacts.

Construction Phase (Noise and Vibration)

During construction, noise at the project site and the therein residing (business & residential) communities will be generated by:

- Noise from the operation of construction equipment
- Noise from construction and delivery vehicles traveling to and from the site.

Noise and vibration levels at a given location are dependent on:

- The type and quantity of construction equipment being operated
- The acoustical utilization factor of the equipment. This regards the %-of time an equipment is operating with a certain distance to the noise-sensitive receptors or the distance to any noise shield (e.g. from buildings, walls, or barriers)
- The objects being constructed, as well as the actual stage of construction reached versus the location of the construction activities relative to the noise-sensitive receptor locations.

The objects planned for construction, both civil- and structure wise, are deemed to require simple and standard construction equipment. Their noise generation is expected to be “customary” for inner city construction projects. Since piling works are not included in the scope, vibrations can also be qualitatively classified as low to very low.

Other sources of noise generation may result from other construction works nearby:

- At the junction of the Kromme Elleboogstraat and Waterkant (Ministry of Social Affairs and Housing)
- Near the junction of the Mr. F. H. R. Lim A Postraat and the Tamarindelaan.

However, these works may be completed at the time construction commences for the redevelopment of the Waterfront.

During the construction phase, noise is expected to have a **minor** impact, especially to the residents, and businesses/school in vicinity. With the implementation of the proposed mitigation measures as described in Table 6-12, the impacts will be **negligible**.

Table 6-12: Significance of impact of noise on the environment in the operations phase

Phase	Construction						
Environmental Impact	Noise and Vibration						
Description	During the construction period short term noise and vibrations will be produced. Overall, all construction works will generate noise, with relatively very limited noise from road side reconstruction (walkways) and recreational areas, especially the vegetation landscaping works.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Medium	High	Minor
Key mitigation measures / Recommendations							
Maintain all construction equipment in accordance with manufacturer's specifications.							
Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable.							
Schedule construction, modification, and rehabilitation work to minimize direct activity on the road during peak periods of traffic (if so relevant).							
Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g. residents, commercial businesses, and apartments) of construction activities especially when work is planned outside normal working hours and/ or weekdays.							
Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies).							
Avoid unnecessary idling of construction equipment or delivery trucks when not in use. Especially if near direct work areas or residents.							
In the event that noise related complaints are received short term (24-hour) ambient noise measurements should be conducted as part of investigating the complaints.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Negligible	ST	MS	Negligible	High	Negligible

Operations Phase

In the operation phase, noise nuisance may be mainly produced by traffic passing by along the roads, music played by cars parked along the Waterfront as well music from food stands and other commercial activities, and from the polishing machine(s) now and then used by craft vendor(s).

The impact assessment shows that noise may have a **moderate** impact on Waterfront communities (Table 6-13). Implementation of the mitigation measures to reduce the impact up to a **minor** level will be necessary. Nonetheless, social management measures (see Chapter 8) and a grievance mechanism should be established and well-managed, making it possible for residents and other stakeholders to file their complaints. The Waterfront Management Council will have to address each complaint according to the procedure outlined in the grievance mechanism (see section 10.2.4).

Table 6-13: Significance of impact of noise on the environment in the operations phase

Phase	Operations						
Environmental Impact	Noise nuisance						
Description	During the operational phase noise nuisance may be mainly produced by traffic passing by along the roads, music played by parked cars along the Waterfront as well music from food stands and other commercial activities, and from the polishing machine(s) now and then used by craft vendor(s).						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	LT	MS	Medium	High	Moderate
Key mitigation measures / Recommendations							
Noisy activities such as music played by cars parked along the Waterfront as well as music from food stands and other commercial activities should be prohibited during night hours.							
Notify any nearby receptors in advance of possible noise nuisance resulting from commercial activities/ street parties.							
Consider installing partial screening around the noisiest activities during commercial activities / street parties.							
Consider introducing lower speed limits for passing traffic.							
Review equipment and methods to be employed during maintenance works (trimming of trees, washing of building and other structures) to ensure the quietest technology used.							
Avoid <i>unnecessary idling</i> of construction equipment or delivery trucks when not in use. Especially if							

near direct work areas or residents.							
In the event that noise related complaints are received short term (24-hour) ambient noise measurements should be conducted as part of investigating the complaints.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	LT	SS	Low	Medium	Minor

6.1.7 Surface Water Impacts

The Suriname River and the Van Sommelsdijckse Creek are the two (2) ultimate surface water bodies within the project area where water is directly discharged into. The Van Sommelsdijckse Creek receives wastewater from houses and buildings and has no direct connection with the Suriname river. The Suriname River has a constant flow with lots of sediments transported and is the main surface water resource near the project site. The River is important for navigation, recreation and fisheries. The existing drainage system consists of a combination of open channels and closed systems and collects both excess stormwater and wastewater from residential and public septic tanks, hospitals, and restaurants. This water is ultimately discharged into the Suriname River.

Construction Phase

The Suriname River is the main surface water resource near the project site that may be impacted by construction and demolition works including leaks/ oil spills, improper waste discharge and solid waste disposal. The construction activities can cause a **moderate negative** impact to the Suriname River, especially when waste(water) is improperly disposed of or when a major oil spill occurs. With the proposed mitigation measures, it is expected that construction activities will have a **negligible** impact to surface waters in- and around the project site (Table 6.14).

Table 6-14: Significance of impact on surface water in the construction phase

Phase	Construction						
Environmental Impact	Pollution of surface water						
Description	Improper waste(water) handling and disposal, oil spills and leaks from equipment, sewage and contaminated stormwater may cause pollution of surface water						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance

	Negative	Medium	ST	LS	Medium	Medium	Moderate
Key mitigation measures / Recommendations							
Maintain good housekeeping of materials and equipment at the project area with specific care not to spill any rubbish, garbage, debris, oils or other contaminants into the Suriname River or in the project area.							
Implement the waste management plan and health, safety, and environment plan.							
Use spill prevention measures such as drip trays, to capture spills during refueling of construction equipment and handling of potential pollutants.							
Run-off water from areas with potential of oil contamination should be directed into an interceptor where oil can be separated from water.							
Collect and dispose of all used water discharged from temporary toilets, sanitary appliances and washing facilities at the construction site via the temporary sanitary facilities if any. No used water shall be discharged into drains, soil and surrounding environment.							
Undertake regular maintenance of construction vehicles and machinery to identify and repair minor leaks.							
Ensure all employees are trained in the use of spill prevention measures.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	SS	Negligible	Low	Negligible

Operations Phase

During operations, potential contamination of surface waters may be caused by improper waste disposal, spills and leaks of hydrocarbons (ships mooring at SMS pier) and contaminated stormwater. While stormwater will be conveyed directly into the sewer system, small amounts of contaminants may enter the sewer system, possibly from runoff contaminated by minor leaks and discharges such as hydrocarbons, cleaning solvents, oils in the Waterfront area, amongst others. All waste and contaminated materials should be handled properly and disposed of according to the waste management plan (see **Appendix F**). The operational activities may have a **moderate** impact on the surface water quality (Suriname river) (Table 6-15). This significance of impact may be reduced to **negligible** with the implementation of the mitigation measures.

Table 6-15: Significance of impact on surface water in the operations phase

Phase	Operations						
Environmental Impact	Pollution of surface water						
Description	Improper waste(water) handling and disposal, oil spills and leaks from moored ships, contaminated stormwater may cause pollution of surface water						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	LS	Medium	Medium	Moderate
Key mitigation measures / Recommendations							
Require installation of a grease separator at food stands / restaurants.							
Implement the waste management plan.							
Maintain good housekeeping to prevent waste dumping/ littering entering into the river.							
Clean any spill or leaks from moored ships immediately.							
Ensure that drainage system of the Waterfront food stands is not directly connected to the general drainage system of the area that discharges into the Suriname River							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	SS	Negligible	Low	Negligible

6.1.8 Impact from Waste

A waste management plan will be developed and deployed for both the construction and operational phase. All waste must be collected and disposed of regularly to prevent waste accumulation at the Waterfront area. Waste handlers must present “waste certificates” to demonstrate that waste is disposed of according to the agreement (i.e., the main goal of the agreement is that waste should be disposed of properly and may not cause any environmental damage or problem). PURP/ the assigned contractor will have to conduct periodic inspections at the site of the waste handlers to verify compliance with the agreement. Waste may only be disposed of at authorized landfills (e.g., Ornamibo) and/or by authorized waste handlers.

When solid waste is disposed of in the Suriname river or drainage system, it will obstruct the water flow, resulting in unhygienic conditions and inundations.

- Domestic waste can cause unhygienic situations and attract street dogs and pests (e.g., rats) and waste entering the river or sewage may cause eutrophication of the open drainage system, resulting in fish mortality and nasty smell of the surrounding. Therefore, it is necessary to designate waste collection areas/ bins for different waste types.
- Segregation of waste should be stimulated to enable recycling of certain waste types, such as plastics, glass, paper, metal scrap, wood, waste oil and with oil contaminated waste and composting of plant remains (trunks, leaves of trees).

Construction Phase

During the construction phase, construction and demolition waste will be generated, including domestic waste. These types of waste can cause negative impacts on the environment if not managed properly.

The impact of waste during the construction phase is considered to be **moderate**, but the impact significance can be downgraded to **negligible** if the proposed mitigation measures (Table 6-16) are implemented properly.

Table 6-16: Significance of impact of waste in the construction phase

Phase	Construction						
Environmental Impact	Solid and liquid waste						
Description	Waste generated during construction may cause clogging of the drainage system, pollution/ unhygienic conditions of the surrounding environment and the Suriname river.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	LS	Medium	Medium	Moderate
Key mitigation measures / Recommendations							
Develop and deploy waste management plan							
Reuse demolished materials (e.g. for the construction of the temporary facilities for workers)							
Composting of vegetation and trees residues							
Place separate waste collectors/ bins for different types of waste at the project site							
Ensure that waste is disposed of regularly to prevent waste accumulation							
Promote waste segregation on site and sign agreements with specialized waste handlers for recycling/reuse and disposal of certain waste types							

Ensure that waste is handled and disposed of adequately by authorized waste handlers.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	Low	Negligible

Operations Phase

In the operational phase, waste that may be generated includes mainly domestic waste (cooking oil, food, paper, plastic, glass, etc.) and sewage (public toilets). Other types of waste may include metal, wood, e-waste and plant remains from tree and vegetation maintenance. When not handled properly, these types of waste may have a negative impact on the environment.

The impact of waste during the operations phase is considered to be **moderate**, but the impact significance can be downgraded to **negligible** once the proposed mitigation measures (Table 6-17) are properly implemented.

Table 6-17: Significance of impact of waste during the operation phase

Phase	Operations						
Environmental Impact	Solid and liquid waste						
Description	During the operational phase waste may cause clogging of the drainage system, pollution / unhygienic conditions of the surrounding environment and the Suriname river.						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	LS	Medium	Medium	Moderate
Key mitigation measures / Recommendations							
Develop and deploy waste management plan							
Ensure that waste is disposed of regularly to prevent waste accumulation; timely emptying of waste bins							
Promote waste segregation on site and sign agreements with specialized waste handlers for recycling/reuse and disposal of certain waste types							

Promote waste reduction by having an adequate purchasing policy for vendors							
Ensure that all waste is handled and disposed of adequately by authorized waste handlers.							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	Low	Negligible

6.1.9 Summary of Environmental Impacts

Below is presented a summary of the environmental impacts for the construction and operations of the redevelopment of the Waterfront.

Table 6-18: Overview of the environmental impacts for the construction and operations of the redevelopment of the Waterfront.

Impact	Phase		Mitigation	Mitigation Measures	Positive (+)/ Negative (-)	Value
	Construction	Operations				
Impact of Climate Change- River flooding with and without sea level rise	X	X	Without mitigation		-	Major
			With mitigation	<ul style="list-style-type: none"> -Promote mangrove growth along the riverbank between Fort Zeelandia and the Central Market and protect the existing mangrove plants to combat river overflow -Consider (green) measures for riverbank stabilization and prevention of river flooding as much as possible to long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the riverbank between Fort Zeelandia and Central market and protect the existing mangrove plants, to prevent erosion and river overflow -Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection -Monitoring of water level at the river to measure the highest and lowest water level during springtide (twice a month). -Regular maintenance and inspection of river bank protection 	-	Moderate

				<ul style="list-style-type: none"> -Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices -Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials) - Implement the emergency response plan -Consider flood insurance to protect current properties at the Waterfront from potential damage. 	
Impact of Climate Change-Pluvial Flooding	X	X	Without mitigation	-	Major
			With mitigation	<ul style="list-style-type: none"> -Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices -Improve the existing drainage infrastructure and establish new sustainable measures against pluvial flooding, among others by catching excessive storm water and temporary storing in water reservoirs identified in the surrounding area, to reduce the risk of pluvial flooding -Include strong roof construction of buildings, resistant to heavy winds during storms in the building codes. - Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials) - Implement the emergency response plan -Consider flood insurance to protect current properties at the Waterfront from potential damage 	Minor

Impact of Climate Change-Risk of erosion of the riverbank	X	X	Without mitigation	-	Major
			With mitigation	-Promote mangrove growth along the river bank between Fort Zeelandia and the Centrale Markt and protect the existing mangrove plants to combat river overflow -Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection -Consider (green) measures for river bank stabilization and prevention of river flooding as much as possible for long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Centrale markt and protect the existing mangrove plants, to prevent erosion and river overflow -Monitor water level at the river and measure the highest water level during springtide (twice a month). In case an increasing trend of river water level is detected, implement measures to protect the Waterfront -Regular maintenance and inspection of river bank protection	Minor
Impact on Climate Change	X		Without mitigation	-	Minor
			With mitigation	-Maintain all construction equipment in accordance with manufacturer's specifications. Ensure regular maintenance of equipment and vehicles. -Avoid unnecessary idling of construction equipment or delivery trucks when not in use. Equipment / machines used intermittently should be shut down between work periods	Negligible

				-Remove only the old and unsafe trees and replace/ plant at least one new tree for every tree removed -Consider installing renewable energy sources such as solar panels to power lighting.	
		X	Without mitigation	-	Moderate
			With mitigation	-To reduce CO ₂ emission release from equipment use, all equipment must be in good working condition. An effective preventive maintenance program will contribute to lower CO ₂ emissions released by equipment and vehicles. -Avoid unnecessary idling of maintenance equipment/ machines when not in use.	Minor
Impact on Climate Change-Landscape Greenery		X	Without mitigation	+	Moderate positive
		X	With mitigation	-Develop and implement an effective maintenance plan for landscaping greenery vegetation and trees. -Use water-efficient irrigation systems such as drip irrigation. -Implement sustainable landscaping practices such as composting, mulching, and using organic fertilizers -Maintain the existing natural vegetation along the river intact. -Avoid unnecessary idling of maintenance equipment/ machines when not in use -Maintain regular preventive maintenance of equipment/ machines. -Consider using renewable energy sources such as solar panels to power lighting	Major
	X	X	Without mitigation	-	Minor

Impact on Groundwater			With mitigation	<ul style="list-style-type: none"> -Ensure leaks and spills of contaminants are contained and removed immediately. -In the event that a drilling activity will take place, all necessary guidelines should be considered and the relevant institutes (SWM) should be contacted -In the event that a drilling activity will take place, all necessary guidelines should be considered and the relevant institutes (SWM) should be contacted. -Procedures for transport, storage, handling and spill response for fuels must be in place and implemented -Maintain project area and surroundings always clean (good housekeeping). 	-	Negligible
Impact on/off Flora and Fauna	X		Without mitigation		-	Negligible
			With mitigation	<ul style="list-style-type: none"> -Implement a waste management plan to prevent soil and surface water contamination. -Trees that are selected should be able to withstand extreme weather (strong winds) and should be regularly inspected for safety aspects. -Remove only the old trees and trees that hinder or affect human safety. -Composting of all removed trees and plant material -Plant at least one new tree for every tree removed. -Maintain records of incidents with fauna and flora on land and in water 	-	Negligible
		X	Without mitigation		+	Major
			With mitigation	<ul style="list-style-type: none"> -Regularly inspect trees on tree health and human safety aspects. -Select plant/ tree species that require minimal maintenance. 	+	Major

				<ul style="list-style-type: none"> -Develop and implement a greenery/tree maintenance plan. -Maintain records of incidents with fauna and flora on land and in water 	
Impacts on Air Quality	X		Without mitigation	-	Moderate
			With mitigation	<ul style="list-style-type: none"> -Use robust dust control programs to suppress dust as needed in all unpaved/ unbound areas (e.g., use of water trucks with sprays) especially during dry periods. -No burning of any waste at construction sites. -Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site. -Cover work vehicles transporting granular & stone materials to prevent materials being spread around and off the site. -Minimize drop heights of materials when conducting on or off-loading of soils, granular and stone materials -Avoid unnecessary idling of construction equipment or delivery trucks when not in use. -Maintain all construction equipment in accordance with manufacturer's specifications. -Remove only poor-quality trees and maintain existing trees to contribute to air quality. 	Minor
		X	Without mitigation	-	Moderate
			With mitigation	<ul style="list-style-type: none"> -Maintain existing trees along the roadside to improve air quality (help to capture dust particles from passing traffic) -Plant new trees in areas where poor quality trees have been removed. -Regular maintenance/ sweeping of pavement to reduce dust blowing -Cover open areas or unpaved areas with grass or other durable plants. 	Minor

				<ul style="list-style-type: none"> -Limit the intensity of traffic passing by along the Waterkant e.g. by prohibiting large trucks and containers. -Avoid unnecessary idling of equipment/ machines during maintenance activities when not in use. 	
Noise & Vibration Nuisance	X		Without mitigation	-	Minor
			With mitigation	<ul style="list-style-type: none"> -Maintain all construction equipment in accordance with manufacturer's specifications -Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable. -Schedule construction, modification, and rehabilitation work to minimize direct activity on the road during peak periods of traffic (if so relevant). -Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g. residents, commercial businesses, and apartments) of construction activities especially when work is planned outside normal working hours and/ or weekdays. -Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies). -Avoid unnecessary idling of construction equipment or delivery trucks when not in use. Especially if near direct work areas or residents. -In the event that noise related complaints are received short term (24-hour) ambient noise measurements should be conducted as part of investigating the complaints. 	Negligible
		X	Without mitigation	-	Moderate

			With mitigation	<p>-Noisy activities such as music played by cars parked along the Waterfront as well as music from food stands and other commercial activities should be prohibited during night hours.</p> <p>-Notify any nearby receptors in advance of possible noise nuisance resulting from commercial activities/ street parties.</p> <p>-Consider installing partial screening around the noisiest activities during commercial activities / street parties.</p> <p>-Consider introducing lower speed limits for passing traffic.</p> <p>-Review equipment and methods to be employed during maintenance works (trimming of trees, washing of building and other structures) to ensure the quietest</p> <p>-Avoid <i>unnecessary idling</i> of construction equipment or delivery trucks when not in use. - Especially if near direct work areas or residents.</p> <p>-In the event that noise related complaints are received short term (24-hour) ambient noise measurements should be conducted as part of investigating the complaints.</p>	-	Minor
Surface Water Impacts	X		Without mitigation		-	Moderate
			With mitigation	<p>-Maintain good housekeeping of materials and equipment at the project area with specific care not to spill any rubbish, garbage, debris, oils or other contaminants into the Suriname River or in the project area.</p> <p>-Implement the waste management plan and health, safety and environment plan.</p> <p>-Use spill prevention measures such as drip trays, to capture spills during refueling of construction equipment and handling of potential pollutants.</p>	-	Negligible

				<ul style="list-style-type: none"> -Run-off water from areas with potential of oil contamination should be directed into an interceptor where oil can be separated from water. -Collect and dispose of all used water discharged from temporary toilets, sanitary appliances and washing facilities at the construction site via the temporary sanitary facilities if any. No used water shall be discharged into drains, soil and surrounding environment. -Undertake regular maintenance of construction vehicles and machinery to identify and repair minor leaks. -Ensure all employees are trained in the use of spill prevention measures. 	
		X	Without mitigation	-	Moderate
			With mitigation	<ul style="list-style-type: none"> -Implement the waste management plan. Require installation of a grease separator at food stands / restaurants. -Maintain good housekeeping to prevent waste dumping/ littering entering into the river. -Clean any spill or leaks from moored ships immediately. -Ensure that drainage system of the Waterfront food stands is not directly connected to the general drainage system of the area that discharges into the Suriname River 	Negligible
Impact from waste	X		Without mitigation	-	Moderate
			With mitigation	<ul style="list-style-type: none"> -Develop and deploy waste management plan Reuse demolished materials (e.g. for the construction of the temporary facilities for workers) -Composting of vegetation and trees residues 	Negligible

				<ul style="list-style-type: none">-Place separate waste collectors/ bins for different types of waste at the project site-Ensure that waste is disposed of regularly to prevent waste accumulation-Promote waste segregation on site and sign agreements with specialized waste handlers for recycling/reuse and disposal of certain waste types-Ensure that waste is handled and disposed of adequately by authorized waste handlers.	
		X	Without mitigation	-	Moderate
			With mitigation	<ul style="list-style-type: none">-Develop and deploy waste management plan-Ensure that waste is disposed of regularly to prevent waste accumulation; timely emptying of waste bins-Promote waste segregation on site and sign agreements with specialized waste handlers for recycling/reuse and disposal of certain waste types-Promote waste reduction by having an adequate purchasing policy for vendors-Ensure that all waste is handled and disposed of adequately by authorized waste handlers.	-

6.2 Socioeconomic Impact Assessment

This chapter provides a comprehensive assessment of the social and environmental impacts associated with the proposed project, "Redevelopment of the Waterfront and Improvement of Mobility Infrastructure." The assessment is conducted to understand the potential effects on the PAP and the surrounding environment. The assessment is based on inputs from various sources, including baseline information, socio-economic profiles, and consultations with PAPs.

6.2.1 General Methodology

The primary purpose of the ESA is to predict the impacts resulting from the proposed project. For the classification of the impacts, consideration was given to its significance by considering the magnitude and the importance of the impact. In the case of positive impacts, the significance is assigned as Positive. Significance was assigned for each impact using the matrix shown in Table 6-1 below.

Table 6-1: Impact Significance Evaluation scheme

		Impact importance		
		Low	Medium	High
Impact magnitude	Negative Impacts			
	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	High
	Large	Moderate	High	High
	Positive impacts			
	N/A	Positive	Positive	Positive

The following description of the significance applies:

- An impact of Negligible significance is one where the impact resource will not be affected by a particular activity, or the predicted effect is deemed to be imperceptible.
- An impact of Minor significance is one where the impact resource will experience a noticeable effect, but the impact magnitude is sufficiently small (with or without mitigation) and/or the resource is of Low importance. In either case, the magnitude should be well within applicable standards.

- An impact of Moderate significance has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is Minor, up to a level that might be just short of breaching a legal limit. For Moderate impacts it is believed that the impact is or will be reduced to reasonably practicable level. This does not necessarily mean that impacts of Moderate significance have to be reduced to Minor, but rather that Moderate impacts are being managed effectively and efficiently.
- An impact of Major significance is one where an accepted limit or standard may be exceeded, or Large magnitude impacts occur to highly valued/sensitive resources.
- An impact of Positive significance is one that has been identified as having a positive effect on the impact resource.

6.3 Analysis of Impacts

The following range of potential positive and negative socioeconomic impacts related to implementation of the project are identified:

6.3.1 Temporary economic displacement and Loss of (business) income

The proposed project involves the renovation and reconstruction of vendor stalls at the Waterfront, resulting in the temporary displacement of crafters and food vendors (Table 6-2). A total of eighteen (18) craft vendor and eleven (11) food vendor businesses will be directly impacted. Additionally, twenty-four (24) persons working for the food vendors will also endure loss of income. This economic displacement is expected to last for approximately 12 months, after which the businesses will be able to return to the Waterfront.

Table 6-2: Impact Significance and mitigation measures - Loss of (business) income

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Temporary Economic displacement and Loss of income for Businesses and workers	Construction	High	<p>A Livelihood Restoration Plan has been develop that includes a compensation scheme :</p> <ul style="list-style-type: none"> ▪ In-kind and or financial compensation for all PAPs who will lose (business) income, ▪ Financial compensation for vacating the area and moving all personal goods for business owners 	Moderate

			(crafters and food vendors) <ul style="list-style-type: none"> ▪ Re-location of crafters to an alternative location in close proximity of the current location and with considerable visibility ▪ Establish an open line of communication between the PIU and the PAPs ▪ Set up a dedicated grievance redress mechanism to promptly address concerns, complaints, or feedback from PAPs during the construction phase ▪ Provide training for business owners on e.g. marketing strategies, and financial management 	
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6.3.2 Loss of livelihood and clientele

Business owners on the Waterfront have built and sustained their enterprises over several years, with some establishments having operated for decades. These PAPs heavily depend on a loyal customer base and the continuity of their business operations. Therefore, there is worry about the potential impact of the project on their capacity to cater to their customers during the construction phase. There is also concern that the disruption of regular business operations during construction activities may lead to permanent loss of clientele (Table 6-3).

Table 6-3: Impact Significance and mitigation measures – Loss of livelihood and clientele

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Loss of livelihood and clientele	Construction	High	<ul style="list-style-type: none"> ▪ Use various channels such as social media and local newspapers to inform customers about the temporary relocation of craft market and closing of food stalls ▪ Develop and implement marketing campaigns to maintain visibility and awareness of businesses prior to re-opening ▪ Provide training for business owners and their workers on e.g. marketing strategies, and customer engagement ▪ Establish an open line of communication between the PIU and the PAPs ▪ Set up a dedicated grievance redress mechanism to promptly address concerns, complaints, or feedback from PAPs during the construction phase 	Moderate

6.3.3 Occupational Health and safety risk for construction workers

Construction sites inherently pose various health and safety risks to workers due to the nature of the tasks involved and the presence of machinery, tools, and other construction materials. Health and safety hazards include those that come from physical, chemical, and other hazards associated with the construction process. Workers are exposed to health- and safety hazards associated with the construction and operations of the Waterfront redevelopment project. General hazards are associated with hygiene, nuisance and working in sunny and rainy conditions. Potential physical hazards at the Waterfront redevelopment project are associated with handling building materials, industrial vehicle driving, rotating, and moving equipment at the project site, places that are not properly maintained, and excessive release of noise, vibration, and light. Chemical hazards include handling of toxic compounds, and fire/explosion hazards. An overview of potential occupational hazards associated with the Waterfront is described in Table 6-4.

Table 6-4: Overview of potential occupational hazards at the Waterfront redevelopment project

General Hazards	Physical Hazards	Chemical Hazards
Unhygienic working conditions in eating areas, lavatories and showers	Unexpected moving objects from on-site traffic can put workers at risk	Fugitive dust emission
Working in sun-prone conditions (heat stress) on the construction site	Collision between vehicles and persons on routes at the construction site	Hazards coming from lubricants that leaked at the construction site
Working in rainy conditions (slipping hazards) on the construction site	Accidents and injuries at transfer points of cargo and materials	Poor air quality caused by contaminants, which can result in respiratory irritation, discomfort, or illness to workers.
Exposure to fine particulates is associated with handling dry cargo	Accidents and injuries associated with manual handling of building materials and tools, such as sawing, grinding etc.	Fires and or explosions resulting from ignition of flammable materials or gasses.
Accidents and injuries associated with slip and fall in places that are not properly maintained.	Accidents and injuries associated from free fall of materials from lifting equipment	
	Excessive release of noise, vibration or illumination	
	Exposed or faulty electrical devices, bright and intense light from welding, and solid particles from a wide variety of industrial operations.	

	Injury from repetitive motion, over-exertion, and manual handling	
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Construction-related occupational health and safety hazards are expected to occur inside and outside the fences of the Waterfront redevelopment project (the latter because of moving objects). Construction site-related occupational health and safety standards need to be applied, to manage all risks identified for the current project. The overall effect is considered **minor** (Table 6-5).

The implementation of recommended management measures (in compliance with the local safety laws and regulations) would reduce the probability of a health and safety injury because protective measures are taken. The overall impact then becomes **negligible**.

Table 6-5: Significance of risk on occupational health and safety during construction

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Occupational health and safety (Physical and chemical hazards associated at the construction site can lead to accidents and injuries)	Construction	Minor	<ul style="list-style-type: none"> General: Contractors / subcontractors / staff are hired based on the existing national labor rights and policies General: Post posters explaining workers' rights on strategic locations on site General: Prepare and implement a Health and Safety Plan including stipulations on workers awareness General: Workers use of PPE 	Negligible

			<ul style="list-style-type: none"> ▪ General: Workers should follow and pass OHS orientation training consisting basic hazard awareness, safe work practices, emergency procedures and evacuations, and use of PPE ▪ General: Placement of chemical toilets during the construction phase, based on a ratio of one (1) toilet for 15 - 25 persons ▪ General: Regularly service and properly maintain construction offices and support facilities, including ablutions ▪ Physical hazard: Implement right of way, traffic patterns and speed limits to ensure safe traffic at the project site ▪ Physical hazard: Selection of tools and workstations that reduce force requirements and holding times ▪ Physical hazard: Implement administrative controls into work processes, such as job rotation and rest or stretch breaks ▪ Chemical hazard: Develop a fire prevention plan (as 	
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			<p>part of Emergency Response Plan) for welding/hot work and other fire hazards</p> <ul style="list-style-type: none"> ▪ Chemical hazard: Identify (potential) hazards with labeling and marking according to international standards (International Chemical Safety Cards, Material Safety Data Sheets) in easily understandable format ▪ Chemical hazard: Require license and work permits for hazards-prone tasks ▪ Chemical hazard: Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE 	
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In the operational phase, occupational hazards will be associated with general maintenance of the site. This includes small construction repairs, landscaping with small electric equipment and cleaning (e.g., pressure washing). The overall impact is categorized as **minor** and with mitigation measures it becomes **negligible** (Table 6-6).

Table 6-6: Significance of impact on occupational health and safety during operations

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Occupational health and safety (Physical and chemical hazards associated at the construction site can lead to accidents and injuries)	Operations	Minor	<ul style="list-style-type: none"> General: Contractors / subcontractors / staff are hired based on the existing national labor rights and policies General: Post posters explaining workers' rights on strategic locations on site General: Prepare and implement a Health and Safety Plan including stipulations on workers awareness General: Workers use of PPE General: Workers should follow and pass OHS orientation training consisting basic hazard awareness, safe work practices, emergency procedures and evacuations, and use of PPE Physical hazard: Implement administrative controls into work processes, such as job rotation and rest or stretch breaks Chemical hazard: Develop a fire 	Negligible

			prevention plan (as part of Emergency Response Plan) for welding/hot work and other fire hazards	
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6.3.4 Job creation

Construction activities will provide jobs to local construction companies and workers, and some materials to be used to implement the construction will likely be locally sourced. Also, during operation, it is expected that the improved Waterfront will create additional job opportunities, e.g. for security and overall maintenance of the area. The project will thus generally have a positive impact on Surinamese companies and workers (Table 6-7).

Table 6-7: Impact Significance and mitigation measures

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Job creation	Construction and Operation	Positive		

6.3.5 Attractiveness of the area

Currently there is a lack of 'attractiveness' of the area to both local residents and tourists, due to the overall condition of the Waterfront, including the state of the food stalls and a lack of appropriate public infrastructure (e.g., walking paths, shade, seating).

Throughout the construction phase, the area will be inaccessible and consequently cordoned off for the general public, intensifying its unattractiveness. However, the project's ultimate goal is to revitalize the site post-construction, making it more appealing to visitors, both local and tourists. This revitalization is expected to have a positive ripple effect, benefiting various businesses operating in the area (Table 6-8).

Table 6-8: Impact Significance and mitigation measures

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Attractiveness of the area	Construction	Moderate	<ul style="list-style-type: none"> ▪ Implement public awareness campaigns to inform local residents and tourists about the upcoming redevelopment project ▪ Install temporary signage and information points to guide visitors during the construction phase to alternative recreational spaces nearby ▪ Enhance the visual interest of the construction site by portraying art or informational displays on construction hoarding to showcase the projects goal ▪ Close off the project area during construction for safety purposes. Establish regular communication channels to update the public on the progress of the project. Highlight key milestones, share images of construction achievements, and maintain an open dialogue to manage expectations 	Minor

Attractiveness of the area	Operation	Positive
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6.3.6 Archaeology and Cultural Heritage

The project may pose a potential risk to two components of the historic waterfront area: 1. Archaeology and 2. The attributes that inscribe the area as a World Heritage site (the OUV's).

As mentioned in section 5.2.1, the Waterfront area is very rich in history and undiscovered archeological artifacts may be scattered across the project area and are likely to be uncovered during excavation works. Without adequate handling, these artifacts may be exposed to damage and/or theft during construction activities. This negative effect on archeology is expected to be felt in localized spots (only where construction will take place) for a short period of time (Table 6-9). The overall impact is considered **minor**. The implementation of recommended mitigation measures would reduce the probability of negative impact by minimizing damage or theft. The overall impact is then expected to become **negligible**. As per the mitigation measures an archeologist from the department of archeology will be present on site during the excavation works. This has been organized for previous works, and since the department of archeology is part of the Ministry of Education as the PIU this coordinate is easy. A request will be made to the department of archeology 2 weeks before any excavation works and then the department will organize an archaeologist to be on site during these activities. As per previous projects if a cultural heritage remains is found the work will stop and the chance find procedure will be followed (**Appendix J**). In addition, additional details are included in Annex xx which lists the procedures and steps for cultural heritage management.

Table 6-9: Significance of impact of the project on archeology in the area during construction

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Archaeology (Damage to/theft of archeological artifacts when exposed during construction works due to inadequate handling)	Construction	Minor	<ul style="list-style-type: none"> Implement a Chance Finds Procedure to adequately handle archeological findings with the Archeological Department (in abeyance of all relevant heritage and monument laws / guidelines) Provide training and detailed information sessions for project workers on how to handle archeological findings during construction/excavation The MESC will Have a representative of the Archeological Department on site during excavation works Minimize use of excavation and heavy equipment as much as possible on site 	Negligible

Neither the construction- nor operational activities of the project are expected to have a negative impact on the Universal Outstanding Values (OUV's) of the Waterfront area. The project aims to rehabilitate the existing infrastructure and, therefore, is not expected to alter or degrade the authenticity or integrity of the area. The built infrastructure will also maintain users' scenic view to the Suriname River.

Overall, the attributes that warrant inscription of the Waterfront area on the World Heritage List will not be threatened. The magnitude of the impact on the area's OUV is expected to be negligible and is not likely to occur (Table 6-10). The overall impact is rated **negligible**.

Table 6-10: Significance of impact of the project on cultural heritage and UOV of the area

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Cultural heritage values / Universal Outstanding Values (Built infrastructures of the project may pose a threat to the Universal Outstanding Values of the waterfront area)	Construction and operations	Negligible		

6.3.7 Community Health, Safety and Security

Construction Phase

The following aspects of health, safety and security may pose a risk to the community living, working, and visiting the site (Table 6-11):

Influx of Workers. The project does not specify the number of influx workers. These workers can bring diseases due to their social behavior. An increased incidence of COVID-19 can pose a threat to anyone working/residing in the study site. The risk of spreading COVID-19 to other areas in Suriname can increase, if symptomless COVID-19 infected temporary workers from other areas visit the project site and fail to comply with the hygiene measures.

Parking Safety. During construction, cars will be parked at alternative places and this may pose a safety risk to people walking to- and from the parking areas (especially at night). Also, the safety of cars may decrease when parking in alternative parking spaces. No permanent security is present near the Waterfront, and irregular surveillance is executed by the Police, making people and cars more vulnerable to safety violations than before construction.

Standing Water. Standing water can be a significant health concern for both workers and the surrounding community. If left unmanaged, standing water can create a breeding ground for mosquitoes and other insects, which can lead to spreading disease. Additionally, standing water can lead to slip- and fall accidents, which may result in injury to workers and legal liability for the construction company.

Community Rights. The Waterfront is considered a business place for indigenous and tribal people selling products. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) recognizes the fundamental rights of indigenous peoples⁵⁴. Recognizing the rights of indigenous people will minimize the failure to properly engage them in project activities. Indigenous women crafters are identified as vulnerable and have a risk to be affected by the proposed relocation during construction due to loss of location, loss of customer base, additional financial costs and limited information-sharing (see section 5.2.11). The (non-indigenous) food vendors face the same risk but have more human, social, and financial assets to mitigate risks.

Table 6-11: Overview of potential risks associated with communicable diseases in the area

Current System/Proposed Practice	Identified Risk
Influx of temporary workers during construction	Failure to observe the onsite MOHANA measures and pre-entrance screening for COVID-19 may increase the incidence of COVID-19.
	Risk of bad behavior might become a challenge to safety and security
Standing water due to construction activities	Risk for incidence of vector-borne diseases, as it becomes a breeding place for mosquitos
Food hygiene practice by local vendors during operations	Risk for incidence of food borne illnesses, and rodents.
No permanent security at the site	Safety risk for people walking in area and car safety, when parking in alternative parking spaces
Homeless people who have found a temporary or permanent residence at the site	Associated risk of vandalism might become a challenge to safety and security
Respect and protect the rights of these indigenous peoples during the construction and operations phase.	Minimizing failure to properly engage indigenous vendors, especially indigenous- and tribal peoples.
Indigenous women crafters are vulnerable stakeholders during construction due to temporary economic displacement or loss of business location, loss of customer base, additional financial costs and limited information-sharing	Minimize the combined impact on indigenous women crafters by providing assistance during relocation to address their needs of security and economic stability

⁵⁴ Including the right to free, prior and informed consent (Article 18-19), self-determination in social, economic and cultural development (Article 3-5), right to life and security (Article 7-10) explaining the right to life, freedom, peace and security, and freedom from forced removal.

The negative effect is expected to be felt in part of the study area, during the construction phase (Table 6-12). The overall effect is considered **moderate**. Considering the recommended management measures, the safety concerns are minimized, and the residual effect of the potential impacts related to community health and safety then becomes **minor**.

Table 6-12: Significance of impact of the project on community health, safety and security in the area during construction

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Community health, safety and security (Potential risk for vector-borne diseases due to standing water, increased risk for Covid-19 infection of workers, and security and safety at the project site and surrounding parking lots, and recognition of community rights)	Construction	Moderate	<ul style="list-style-type: none"> ▪ Communicable disease: Ensure project workers are subject to health screening (including COVID-19 rapid test at site entrance) to minimize risks of transmitting communicable diseases ▪ Communicable disease: Create Health and Safety Plan including training requirements to raise awareness about disease prevention, including COVID-19 ▪ Communicable disease: Establish a direct link with authorities to understand communicable disease status of wider area ▪ Communicable disease: Provide easy access to nearby medical facilities, control programs and doctors 	Minor

			<ul style="list-style-type: none"> ▪ Communicable disease: Develop a comprehensive plan for managing water runoff; including strategies for capturing, diverting, and treating water runoff before it accumulates ▪ Safety and Security: Develop a detailed safety plan on how to guarantee security of persons and buildings, including security measures such as fencing, lighting, and availability of security personnel ▪ Safety and Security: Create proper training and safety protocols for workers ▪ Safety and Security: Create clear communication with the surrounding community about potential safety risks ▪ Safety and Security: Create appropriate signage and safety features for alternative parking spaces ▪ Safety and Security: Have security personnel available to accompany residents and business owners/staff/visitors from parking lot to project site ▪ Community Rights: Implement the public consultation plan on how to 	
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			<p>meaningful consultation and engagement with affected vendors throughout all phases of a project</p> <ul style="list-style-type: none"> ▪ Community Rights: Recognize and respect indigenous people rights to free, prior, and informed consultation, and provide them with the resources and support they need to participate effectively. ▪ Community rights: Provide assistance to indigenous women crafters as part of the implementation of the Livelihood Restoration Plan, including but not limited to: i) contracts to ensure a vending place after relocation, ii) timely information and clear instructions about the planned relocation to diminish emotional distress, iii) a compensation package to cover additional costs associated with the move, iv) choosing a relocation space to minimize losing clients (also to keep paying employees), v) develop and implement a specific grievance redress mechanism for 	
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			indigenous women crafters, vi) adhere to specific stakeholder engagement guidelines for indigenous peoples	
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Operations Phase

Food Hygiene. In the operations phase, local vendors have to comply with food hygiene standards and regularly remove cooking grease to maintain clean and safe food preparation spaces. Grease buildup can attract pests which may contaminate food and spread disease.

Homeless Peoples. As mentioned in section 5.2.8, the Waterfront is being plagued by homeless people who have found a temporary or permanent residence at the site. In absence of local law enforcement, the homeless people engage in littering, soliciting money, vandalizing goods and sometimes even attacking vendors and visitors, amongst others.

Community Rights. Recognize the rights of indigenous people in the operations phase of the project.

A negative effect is expected to be felt in part of the study area. The overall effect is considered **minor**. Implementing the recommended management measures would keep disease spread localized and the homeless people away from the premises. Community rights should be respected by implementing the public consultation plan. The impact then becomes **negligible** (Table 6-13).

Table 6-13: Significance of impact of the project on community health, safety and security in the area during operations

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Community health, safety and security (Potential risk for food-borne diseases due to standing water, increased risk for pest infestation and recognition of community rights)	Operations	Minor	<ul style="list-style-type: none"> Food vendors should receive training in food hygiene, cleaning, and safe removal of cooking grease The Ministry of health (Environmental Inspection Department) should conduct regular 	Negligible

			inspections to ensure a safer, healthier environment for everyone involved <ul style="list-style-type: none"> ▪ Place permanent security at the Waterfront (surveillance) and collaborate with local Police ▪ Community Rights: Implement the public consultation plan on how to meaningful consultation and engagement with affected vendors throughout all phases of a project ▪ Community Rights: Recognize and respect indigenous people rights to free, prior, and informed consultation, and provide them with the resources and support they need to participate effectively. 	
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6.3.8 Road Traffic and Safety

The Waterfront Redevelopment Project is located along a major connection street, the Waterfront road, serving as the main route into the Paramaribo inner city for the north. This road is a busy connecting road, on which vehicles and other motorized traffic are allowed relatively high speeds of 40 km/h. Normally vehicles have higher speeds than allowed a phenomenon that is normal practice because the local Police sporadically enforces traffic laws. The traffic fatality rate is relatively high in Suriname. Table 6-14 gives an overview of potential risks associated with traffic and traffic related accidents.

Table 6-14: Overview of potential risks associated with traffic and traffic related accidents

Current System/Proposed Practice	Identified Risk
The Central Bank from Suriname is located at the Waterfront, a busy road connecting Paramaribo north, the Paramaribo inner city, and Paramaribo south.	Obstruction of emergency transport and special transport (bank)
Business and residents are mostly using the parking spaces located on their own parcel and some along the Waterfront road	Limited availability of parking places at /around the project site during construction and operations
Houses and other building structures are situated along the Waterfront road: houses have direct access to the road	Increase in the amount of traffic will increase the likelihood of accidents to occur, especially because of current lack of speed monitoring on the Waterfront road

Construction Phase

The proposed construction activities will increase the use of (heavy) vehicles bringing equipment and large volumes of material to the project site. The proposed construction activities will block the passage through this road, and therefore obstruct health emergency transport and special transport (bank) during construction, and limited access to residences during construction, lack of available parking places at /around the project site during construction and operations.

In addition to this, construction will increase the use of (heavy) vehicles for earth movement, and supply/discharge of materials. Also, parking of construction-related vehicles will be occurring in-and around the project site. The potential impact of construction-related traffic on emergency transport and designated transport (to residences) is short-term. The effect is expected to expand to connecting roads in part of the study area. The impact can be overall categorized as **major** (Table 6-15).

Furthermore, it is also expected that traffic congestion and delays will lead to road users or general public inconveniences and complaints.

Managing the risk of traffic-related accidents and injuries should include the adoption of a traffic management- and an emergency plan. These measures should ensure safety on the roads, alternative routes, bypassing the project site and alternative parking within 100 m radius of the project site. The emergency plan should cover the unobstructed access for emergencies - and special transport using clear signage and barriers to prevent unauthorized access to the site and ensuring that construction equipment and materials are stored in designated areas. Reducing the magnitude of traffic and traffic-related accidents will reduce the impact to **minor**.

Table 6-15: Significance of construction on road traffic and safety in the construction phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Road traffic and safety (Potential risk for health emergency - and special transport (bank), and risk to access residences and parking)	Construction	High	<ul style="list-style-type: none"> Prevent traffic congestion on the roads near/on the project site and shift heavy traffic outside rush hours Collaborate with authorities to improve signage, visibility and overall safety of roads Dedicate persons to warn road users about changing conditions with signs Have first aid services on site in case of injuries Coordinate with the nearest emergency room (Academisch Hospital) to provide services in case of accidents on site, and with helicopter ambulance services Develop and implement a Health and Safety Plan and Emergency Response Plan; this plan should include unobstructed access/passage of emergency transport in coordination with local authorities and emergency services. Develop and implement a Traffic Management Plan. 	Minor

			<p>This plan should include: i) detailed traffic impact analysis to identify potential project impacts on traffic flow and safety, especially emergency transport, ii) communication strategy with local stakeholders, iii) accommodate special bank transport, to ensure that delivery routes are optimized and coordinated with construction activities, iv) ensure alternative temporary parking spaces within 100 m radius of the Waterfront road, v) locations for loading/unloading of materials, vi) directions for heavy vehicle transport, vii) keep one roadway open for special traffic (residents, bank, emergency) as often as possible during construction, viii) create a different entrance for residents and business owners to the Waterfront during construction (not the same entrance as construction workers).</p>	
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Operations Phase

In the operations phase, the Waterkant road will separate slow traffic via a designated bicycle path. Three plateaus will be constructed to lower vehicle speeds and improve pedestrian safety. Trees affecting pavement and hindering the movement of pedestrians and bicyclists will be removed, improving the overall safety of the area. Parking spots will still be limitedly available in/around the project site.

The overall impact can be categorized as **moderate**. Reducing the of traffic and traffic-related accidents should include the adoption of safety measures on the roads, which will reduce the impact to **minor** (Table 6-16).

Table 6-16: Significance of construction on road traffic and safety in the operations phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Road traffic and safety (Potential risk of limited parking places, road infrastructure and safety at /around the project site)	Operations	Moderate	<ul style="list-style-type: none"> Collaborate with authorities to improve signage, visibility and overall safety of roads Develop and implement a Health and Safety Plan Develop and implement educational campaigns to educate drivers and pedestrians about safe driving and walking practices 	Minor

6.3.9 Quality of Life: Noise

During both the construction and operational phases of the Waterfront area, noise will be experienced. Not all activities are expected to generate the same level of noise. Yet, noise can become a nuisance especially because residents living across the street from the Waterfront have experienced noise nuisance before and some have filed complaints to local police and the District Commissioner.

Construction Phase

Noise-generating sources associated with the construction of the Waterfront area will include the movement of construction vehicles, excavation- and plate compactor equipment. These machineries may cause excessive noise for people residing and working at the Waterfront. Noise is also expected to be a nuisance for the educational institute across the street. The magnitude of the potential impact of noise is rated as medium and is expected to be felt temporarily in part of the Waterfront area. The overall impact effect is expected to be a **moderate** effect. The implementation of the recommended mitigation measures would reduce the probability of the impact to medium, resulting in an overall **minor** residual effect (Table 6-17).

Table 6-17: Significance of impact of noise in the construction phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Noise during construction (Noise associated with movement of construction vehicles, excavation and plate compactor machines can become a nuisance to local residents, government offices, educational institutes and other offices.)	Construction	Moderate	<ul style="list-style-type: none"> Reduce heavy project traffic routing through the area wherever possible, e.g., supply heavy machinery and materials (such as sand/gravel) by boat transport Prevent using high noise-generating equipment during nighttime and on weekends. Disseminate a pamphlet or WhatsApp / email to surrounding residents, institutions and offices to inform them about times/dates of high noise levels If complaints regarding noise are received from residents, consider installing partial screening around the noisiest 	Minor

			activities and/or mufflers on noisy equipment	
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Operations Phase

When the Waterfront area becomes operational, noise (during both day and night) may result from vehicular traffic, from music played by food vendor stalls and from cars parked in the area. Not all operational activities will generate the same level of noise. The negative effect is expected to have a low magnitude and is surely to be felt by residents and businesses in part of the study area. The overall effect is assessed as **moderate**. With mitigation measures the probability of noise impacts can be reduced to medium so that the residual effect can become **minor** (Table 6-18).

Table 6-18: Significance of impact of noise in the operations phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Noise during operations (Noises associated with vehicular traffic and music played by food vendor stall and from cars parked in the area can become a nuisance to local residents living across the street)	Operations	Moderate	<ul style="list-style-type: none"> Develop and implement noise-related rules and etiquette for the Waterfront area to minimize noise nuisance for residents across the street during nighttime 	Minor

6.3.10 Quality of Life: Dust Emissions

During the construction phase of the project, dust emissions generated from paving activities and resuspension of dust from equipment and vehicle movement in- and around the construction site may become a nuisance for local residents. However, the risk of causing nuisance to local residents is expected to be low since the predominant wind direction is northeast during the year. The magnitude of the effect is categorized as low and occurs in part of the study area. The overall impact is expected to be **minor** (Table 6-19). The

recommended mitigation measures will lower the likelihood of the effect to occur, making the overall residual effect **negligible**.

Table 6-19: Significance of impact of dust emission in the construction phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Dust emission during construction (Dust emissions from paving activities can become a nuisance for local residents living near the port)	Construction	Minor	<ul style="list-style-type: none"> Suppress dust as much possible by using water sprinklers or water tank trucks; especially during dry season 	Negligible

6.3.11 Quality of Life: Vibration

Vibrations associated with the construction of the project may come from earth-moving activities and increased heavy material transport. This may cause damage to building structures for local residents near the vicinity of the project site. These vibrations are expected to be below 1.00 mm/s and are not likely to cause nuisance for residents. Vibrations above the aforementioned value are likely to cause nuisance for nearby residents. Based on qualitative assumptions, the magnitude of vibration is considered to be negligible, and the effect is not likely to happen. The overall effect is expected to be negligible (Table 6-20).

Table 6-20 Significance of impact of vibrations in the construction phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Vibrations during construction (Vibrations from construction activities and increased heavy material transport on road network can cause nuisance for local residents)	Construction	Negligible		
Recommendations				
Timely inform the residents and other users about potential nuisance from vibration during construction activities				

6.3.12 Quality of Life: Flooding

The environmental baseline data shows that there is a high risk of river flooding which may affect the local residents along the Waterfront. Water can intrude into the parcels of residents and provide temporary nuisance in accessing and leaving the premises. The excessive water can also lead to damage to property, especially if it remains standing for a long time period (2 days or more). In addition, there is also a high risk of pluvial flooding (excessive rainfall) and heavy winds which can have similar effects of flooding and damage to property. The improvement of the sewage system, as planned by the redevelopment project, will lower the risk for temporary flooding in the area.

The magnitude of the flooding impact is medium and is expected to affect the residence along the Waterfront for the short-term, resulting in a **moderate** impact. With the implementation of the proposed mitigation measures, the probability of social disruption from flooding will become low, reducing the impact to **minor** (Table 6-21).

Table 6-21: Significance of impact of flooding in the construction and operations phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Flooding (River flooding and heavy precipitation/winds may cause social disruption to the life of residents along the Waterfront, especially at the junction of the Mr. J.C. de Mirandastraat and the Waterfront.)	Construction and Operations	Moderate	<ul style="list-style-type: none"> Minimize social disruption and increase preparedness by preparing local residents for flood-like events in rainy seasons through information sharing In case flooding occurs, assess and monitor repairable damage and social disruption to local residents and their properties (even in case there is no disaster identified and the emergency response plan is not activated) 	Minor

6.3.13 Quality of Life: Visual Impacts

The new Waterfront area is expected to make significant visual changes to the landscape because it will beautify the area. These visual changes are considered to have a positive social impact, contributing to a positive experience for visitors in general. The magnitude is therefore considered medium in the long term. The overall impact will be **high** (Table 6-22).

Table 6-22: Significance of impact on landscape changes during the construction and operations phase

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Visual impacts (Landscape alterations from improved aesthetics of the	Operations	High	<ul style="list-style-type: none"> Develop and implement a detailed management plan for the Waterfront area with clear 	Moderate

Waterfront area during operations)			<p>description of responsibilities and allocated budgets for daily cleaning and weekly gardening to uphold the area's attractiveness</p> <ul style="list-style-type: none"> ▪ Select the location and color of bulk storage facilities with consideration of lowering visual impacts 	
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6.4 Cumulative Impacts

Cumulative impacts are defined by looking beyond the geographical boundaries of the environmental and social impacts of the project and considering the area of influence of the project together with other developments occurring in the area. Impacts identified from the project are not considered as significant as a single impact but may require mitigation when considered as a cumulative impact.

As described in section 5.2, there are several businesses, governmental offices, and residential houses in the direct vicinity of the project area. At the moment, there are no other development projects going on in the direct vicinity of the project site. The MONAC project (see 5.2.9 b) is not expected to be executed in the near future as some critical demands (e.g., resettlement of the business in the area) from the project proponent/financier need to be carried out first by the government. In addition, no major events are planned to be organized in the period that Waterfront project is in execution. However, in case a project or major event will be carried out during the execution period of the Waterfront Project, the potential cumulated risk or impacts will be assessed, and the ESIA and ESMMP will be updated.

6.4.1 Quality of Life

During construction, the residents living and working at the project site may experience a combination of different impacts synchronously. Nuisance from excessive noise and/or vibration from construction activities may significantly reduce the quality of life or hinder residents, government offices, educational institutions and businesses. These stakeholders may also experience hindrance from the lack of access to their parcels and/or the lack of parking spaces available in the area.

In addition, the local residents' safe environment is being altered. The presence of construction workers may pose a safety risk. Changes in the safety level can also result from walking longer distances on the street to reach their home or business destination as they have to park further away.

The cumulative impact is expected to have a medium magnitude during the construction phase. The overall impact significance is expected to be **moderate**. With implementation of the proposed mitigation measure, the probability of traffic accidents is expected to become **negligible** (Table 6-23).

Table 6-23: Significance of cumulative impact on impact of quality of life

Impact	Project Phase	Pre-mitigation impact significance	Mitigation measures	Residual impact significance
Quality of life (cumulative) (A significant amount of nuisances combined may pose a risk to the quality of life of local residents, business, educational institutions)	Construction	Moderate	<ul style="list-style-type: none"> Contractor should plan activities in close collaboration with the local residents, government offices, businesses and educational institution Timely inform local residents, government offices, businesses and educational institution about what type of nuisance to expect and its duration 	Negligible

6.5 Residual Impacts

Residual impacts refer to those environmental effects predicted to remain after the application of implementation of mitigation measures. This section provides an overview of the negative residual impacts associated with the redevelopment of the Waterfront in Table 6-24.

Table 6-24: Residual impacts of the Waterfront Redevelopment Project

Impact	Phase		Residual Impact
	Construction	Operations	
Impact of Climate Change-River flooding (with and without sea level rise)	X	X	Moderate
Impact of Climate Change-Pluvial Flooding	X	X	Minor
Impact of Climate Change-Risk of erosion of the riverbank	X	X	Minor

Impact	Phase		Residual Impact
	Construction	Operations	
Impact on Climate Change		X	Minor
Air pollution	X		Minor
		X	Minor
Community Health, Safety and Security	X		Minor
Road Traffic and Safety	X		Minor
		X	Minor
Quality of Life: Noise	X		Minor
		X	Minor
Quality of Life: Flooding	X		Minor
		X	Minor

7 Environmental and Social Management and Monitoring Plan

An Environmental and Social Management and Monitoring Plan (ESMMP) addresses the environmental impacts during the construction and operational phases of a project. It outlines the key environmental management and social safeguards that will be initiated by the project proponent to manage the project's key environmental and social impacts. It also lays out the monitoring requirements for ensuring limited effect on the biophysical and social environment. The purpose of the ESMMP is to:

- encourage good management practices through planning and commitment to environmental safeguarding and management
- provide practical environmental and social guidelines that will assist in minimizing the potential environmental impact of activities
- aid in minimizing disturbance to the environment (physical, biological and ecological, socioeconomic, cultural, and archaeological)
- combat all forms of pollution through monitoring air, noise, land, water, waste and natural resources
- prevent land degradation
- comply and adhere to all applicable laws, regulations, standards and guidelines of Suriname for the protection of the environment as well as the IDB/ESG policies and other international conventions mentioned in Chapter 2.
- adopt best practicable waste management for all types of waste (liquid and solid), during project activities, with the objective to prevention, minimization, recycling, treatment or disposal of wastes
- describe all monitoring procedures required to identify impacts on the environment and social aspects
- reduce environmental and social risk and provide better Health, Safety and Environment (HSE).

The ESMMP for the Waterfront Redevelopment project includes impacts directly related to the i) construction and ii) operational phases of the project and is presented in the Tables 7-1 - 7-3. It has been developed to outline the measures that are to be implemented in order to minimize adverse environmental and social impacts and serves as a guide for the contractor and the workforce on their roles and responsibilities concerning environmental management on site and outlines the potential environmental impacts and their mitigation measures, roles, responsibilities, and timescales.

The ESMMP has been designed according to the project description in section 5.1.2 which was submitted by the client. Any other activity beyond the scope of this project description should be included in this ESMMP in a further stage of project development.

7.1 Description of the Proposed Mitigation Measures and Monitoring Measures (ESMMP)

In this section, the proposed mitigation and monitoring measures are presented for the Design, Construction and Operations Phase.

Table 7-1: Environmental and Social Management and Monitoring Plan for the Design Phase

Design Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
D*.1	Authorizations	Ensure that all required licenses and permits have been obtained before the start of construction		Keep record of all permits, licenses and authorizations	Required permits, licenses and authorizations on file	Before construction commences

Note: * "D" stands for Design Phase

Table 7-2: Environmental and Social Management and Monitoring Plan Throughout the Construction Phase

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
CE.1	Staff awareness	Conduct health, safety and environmental awareness training for all site staff.	Contractor	Weekly completion of monitoring checklist	Record of training attendees	Throughout construction
		Ensure copies of this ESMMP are available at the site office.				
CE.2	Impact of Climate Change (river flooding with and without sea level rise)	Promote mangrove growth along the river bank between Fort Zeelandia and the Centrale Markt and protect the existing mangrove plants to combat river overflow	PURP/Expert	Assessment of a greenery/ tree maintenance plan	Record of mangrove growth	Throughout construction
		Consider (green) measures for river bank stabilization and prevention of river flooding as much as possible for long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Centrale markt and protect the existing mangrove plants, to prevent erosion and river overflow	PURP/Expert	Monthly inspection of vegetation		
		Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection	PURP/Expert	Erosion assessment	Completed pilot project	
		Monitoring of water level at the river to measure the highest and lowest water level during springtide (twice a month).	Contractor/ Ministry of Public Works	Every two weeks	River water level record	
		Regular maintenance and inspection of river bank protection	Contractor/ Ministry of Public Works	Monthly visual inspection	Record of inspection and maintenance register	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices.	Contractor/ Ministry of Public Works	Monthly inspection	Number of inspections	
		Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials)	PURP/Contractor		Number of flood resistant building structures	
		Implement the emergency response plan.	PURP/Contractor			
CE.3	Impact of Climate Change (pluvial flooding)	Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices.	Contractor/ Ministry of Public Works	Monthly inspection	Number of inspections	Throughout construction
		Improve the existing drainage infrastructure and establish new sustainable measures against pluvial flooding, among others by catching excessive storm water and temporary storing in water reservoirs identified in the surrounding area, to reduce the risk of pluvial flooding	Contractor/Ministry of Public Works	Assessment of water reservoirs	Capacity of water storage reservoirs	
		Include strong roof construction of buildings, resistant to heavy winds during storms in the building codes.	PURP/Contractor/ Ministry of Public Works	Visual inspections	Compliance with building codes	
		Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials)	PURP/Contractor	Visual inspections	Number of flood resistant building structures	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Implement the emergency response plan.	PURP/Contractor			
CE.4	Impact of Climate Change (risk of erosion of the riverbank)	Promote mangrove growth along the river bank between Fort Zeelandia and the Centrale Markt and protect the existing mangrove plants to combat river overflow	PURP/Expert	Assessment of a greenery/ tree maintenance plan Monthly inspection of vegetation	Record of mangrove growth	Throughout construction
		Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection	PURP/Expert	Erosion assessment	Completed pilot project	
		Consider (green) measures for river bank stabilization and prevention of river flooding as much as possible for long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Centrale markt and protect the existing mangrove plants, to prevent erosion and river overflow	PURP/Expert	Assessment of a greenery/ tree maintenance plan Monthly inspection of vegetation	Record of mangrove growth	
		Monitor water level at the river and measure the highest water level during springtide (twice a month). In case an increasing trend of river water level is detected, implement measures to protect the Waterfront.	Contractor/ Ministry of Public Works	Every two weeks	River water level record	
		Regular maintenance and inspection of river bank protection	Contractor/Ministry of Public Works	Monthly visual inspection	Record of inspection and maintenance register	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
CE.5	Impact on Climate Change	Maintain all construction equipment in accordance with manufacturer's specifications. Ensure regular maintenance of equipment and vehicles.	Contractor	Weekly inspections of equipment/vehicles	Record of equipment maintenance	Throughout construction
		Avoid unnecessary idling of construction equipment or delivery trucks when not in use. Equipment / machines used intermittently should be shut down between work periods.		Quarterly inspection of trees	Record of existing and removed trees	
		Remove only the old and unsafe trees and replace/ plant at least one new tree for every tree removed.		Monthly inspection of lighting performance	Record of installed renewable energy sources	
		Consider installing renewable energy sources such as solar panels to power lighting.	Waterfront Management Council			Throughout operations
CE.6	Impact on Groundwater	Ensure leaks and spills of contaminants are contained and removed immediately	Contractor	Visual Inspections	Preventive maintenance record	Throughout construction
		In the event that a drilling activity will take place, all necessary guidelines should be considered and the relevant institutes (SWM) should be contacted.		Weekly inspections of equipment	Record of drilling activity	
		Procedures for transport, storage, handling and spill response for fuels must be in place and implemented			Record of visible leaks/spills	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Maintain project area and surrounding always clean (good housekeeping)		Weekly inspection of timely and proper disposal of waste		
CE.8	Impact on Flora and Fauna	Implement a waste management plan to prevent soil and surface water contamination.	Contractor	Weekly site inspection of proper waste handling/collection	Record of planted and removed tree species	Throughout construction
		Trees that are selected should be able to withstand extreme weather (strong winds) and should be regularly inspected on safety aspects		Monthly site inspections		
		Remove only the old trees and trees that hinder or affect human safety.				
		Composting of all removed trees and plant material.				
		Plant at least one new tree for every tree removed.				
		Maintain records of incidents with fauna and flora on land and in water			Weekly inspections along the riverside	Number of dead aquatic species
CE.9	Air Pollution	Use robust dust control programs to suppress dust as needed in all unpaved/ unbound areas (e.g., use of water trucks with sprays) especially during dry periods.	Contractor	Daily visual assessment of dust control measures	Dust suppression measures in place Record of water quantity used for dust suppression	Throughout construction
		No burning of any waste at construction sites.				

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site.		Weekly Site inspections of equipment use	Number of registered complaints Number of dust related grievance resolved within time frame	
		Cover work vehicles transporting granular & stone materials to prevent materials being spread around and off the site.		Quarterly inspection of trees		
		Minimize drop heights of materials when conducting on or off-loading of soils, granular and stone materials				
		Avoid unnecessary idling of construction equipment or delivery trucks when not in use.				
		Maintain all construction equipment in accordance with manufacturer's specifications.				
		Remove only poor-quality trees and maintain existing trees to contribute to air quality.		Record of existing and removed trees	Throughout construction and operations	
CE.10	Noise and Vibration	Maintain all construction equipment in accordance with manufacturer's specifications.	Contractor	Weekly inspections of equipment	Noise measurement records	Throughout construction
		Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable.		Comply to work-hour schedule	Record of work-hour schedules	
		Schedule construction, modification, and rehabilitation work to minimize direct activity on the road during peak periods of traffic (if so relevant).				

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		<p>Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies).</p> <p>Avoid <i>unnecessary idling</i> of construction equipment or delivery trucks when not in use. Especially if near direct work areas or residents.</p> <p>In the event that noise related complaints are received short term (24-hour) ambient noise measurements should be conducted as part of investigating the complaints.</p>		Planned noise measurements after receipt of complaints	<p>Record of installed broadband spectrum backup alarms</p> <p>Number of noise-related grievance resolved within time frame</p>	
CE.11	Pollution of Surface Water	<p>Maintain good housekeeping of materials and equipment at the project area with specific care not to spill any rubbish, garbage, debris, oils or other contaminants into the Suriname River or in the project area.</p> <p>Implement the waste management plan and health, safety and environment plan.</p> <p>Use spill prevention measures such as drip trays, to capture spills during refueling of construction equipment and handling of potential pollutants.</p>	Contractor	<p>Visual inspections of good housekeeping</p> <p>Visual inspections along the riverside</p> <p>Weekly site inspection of proper waste handling/collection</p>	<p>Record of housekeeping</p> <p>Number of spills /leaks recorded</p>	Throughout construction

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Run-off water from areas with potential of oil contamination should be directed into an interceptor where oil can be separated from water		Weekly inspections of equipment Monthly assessment of training records	Status of drainage system Record of trained employees	
		Collect and dispose of all used water discharged from temporary toilets, sanitary appliances and washing facilities at the construction site via the temporary sanitary facilities if any. No used water shall be discharged into drains, soil and surrounding environment.				
		Undertake regular maintenance of construction vehicles and machinery to identify and repair minor leaks.				
		Ensure all employees are trained in the use of spill prevention measures				
CE.12	Solid and liquid waste	Develop and deploy waste management plan	Contractor	Weekly waste records Weekly site inspection of waste collection and disposal areas on site Daily visual inspection of construction area (litter)	Frequency of waste collection Number of sufficient waste bins/waste skips (recycling)	Throughout construction
		Reuse demolished materials (e.g. for the construction of the temporary facilities for workers)				
		Composting of vegetation and trees residues				
		Place separate waste collectors/bins for different types of waste at the project site				

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Ensure that waste is disposed of regularly to prevent waste accumulation			Presence of litter	
		Promote waste segregation on site and sign agreements with specialized waste handlers for recycling/reuse and disposal of certain waste types			Record of agreements with waste handlers	
		Ensure that waste is handled and disposed of adequately by authorized waste handlers.				
CS.1	Grievance Redress Mechanism	Establish an effective grievance mechanism to record and respond to complaints in a timely manner	PURP	Weekly assessment of grievances	<ul style="list-style-type: none"> - Number and types of grievances received/registered - Number of grievances received from vulnerable groups - Percentage of grievances resolved within time frame - Percentage of recurring complaints 	Throughout construction
CS.2	Stakeholder Engagement	Ensure effective participation of stakeholders during project meetings and engagements	PURP	On occasion when stakeholder meetings occur	<ul style="list-style-type: none"> - Public consultation plan developed and implemented - Percentage of invited participants show up in meetings - Percentage of women/men actively engage in meetings 	Throughout construction
CS.3	Archeology and Cultural Heritage	Implement a Chance Finds Procedures to adequately handle archeological findings with the Archeological Department (in abeyance of all relevant heritage and monument laws / guidelines)	Contractor	On occasion with archeological finds	Chance find procedure developed and implemented	Throughout construction

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Provide training and detailed information sessions for project workers on how to handle archeological findings during construction/excavation		Assessment of training records before construction starts	- Percentage of workers that pass the training requirements	
		Have a representative of the Archeological Department on site during excavation works, or someone dedicated to monitor for archaeological findings that has been trained on what type of remains could be found, this will be organized 2 weeks before excavation works start		On occasion with archeological finds Identification of high risk areas or activities and having a dedicated archaeologist or cultural heritage specialist present then	- Record of archeological staff entering/deentering construction site *gate security)	
		Minimize use of excavation and heavy equipment as much as possible on site		Site inspections	- Equipment records	
CS.4	Occupational Health and Safety	General: Contractors/subcontractors/staff are hired based on the existing national labor rights policies	Contractor	Monthly assessment of employment records	- Number of overwork hours per staff member	Throughout construction
		General: Post posters explaining workers' rights on strategic locations on site		Monthly visual observations of facilities	Presence of posters	
		General: Prepare and implement a Health and Safety Plan including stipulations on workers awareness		Monthly assessment of safety records	- Health and Safety Plan developed and implemented	
		General: Keep number of workers that are exposed to harsh conditions or, are likely to become exposed, to a minimum			- Number of accidents related to occupational health and safety	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		General: Workers use of PPE			- Number of hospitalizations and deaths related to occupational health and safety	
		General: Workers should follow and pass OHS orientation training consisting basic hazard awareness, safe work practices, emergency procedures and evacuations, and use of PPE		Monthly assessment of training records	- Percentage of workers that pass the training requirements	
		General: Placement of chemical toilets throughout the construction phase, based on a ratio of one (1) toilet for 15-25 persons		Weekly visual assessment of ablution facilities	- Number of staff per ablution facility - Status of the ablution facilities	
		General: Regularly service and properly maintain construction offices and support facilities, including ablutions.		Site inspections	Status of construction offices and support facilities, including ablutions	
		Physical hazard: Implement right of way, traffic patterns and speed limits to ensure safe traffic at the project site		Monthly assessment of safety records	- Number of accidents related to occupational health and safety - Number of hospitalizations and deaths related to occupational health and safety	
		Physical hazard: Selection of tools and workstations that reduce force requirements and holding times				
		Physical hazard: Implement administrative controls into work processes, such as job rotation and rest or stretch breaks				

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Chemical hazard: Develop a fire prevention plan (as part of Emergency Response Plan) for welding/hot work and other fire hazards				
		Chemical hazard: Identify (potential) hazards with labeling and marking according to international standards (International Chemical Safety Cards, Material Safety Data Sheets) in easily understandable format				
		Chemical hazard: Require license and work permits for hazards-prone tasks		Monthly assessment of employment records	- Number of working staff without license or permits for working in hazard-prone areas	
		Chemical hazard: Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE		Monthly assessment of training records	- Percentage of workers that pass the training requirements	
CS.5	Community Health, Safety and Security	Communicable disease: Ensure project workers are subject to health screening (including COVID-19 rapid test at site entrance) to minimize risks of transmitting communicable diseases	Contractor	Daily assessment of health records	- Number of persons screened for disease - Number of persons sick with disease	Throughout construction
		Communicable disease: Develop and implement Health and Safety Plan including training requirements to raise awareness with special attention to incoming expat workers, about disease prevention (COVID-19, HIV/AIDS and other sexually transmitted infections)				
		Communicable disease: Establish a direct link with authorities to understand communicable disease status of wider area				

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Communicable disease: Provide easy access to nearby medical facilities, control programs and doctors				
		Communicable disease: Develop a comprehensive plan for managing water runoff; including strategies for capturing, diverting, and treating water runoff before it accumulates				
		Safety and Security: Develop a detailed safety plan on how to guarantee security of persons and buildings, including security measures such as fencing, lighting, and availability of security personnel		Weekly incidence assessment on security and crime	- Number of incidents violating safety protocols - Number of crime incidents reported on the project site and in surrounding neighborhood	
		Safety and Security: Create proper training and safety protocols for workers				
		Safety and Security: Create clear communication with the surrounding community about potential safety risks				
		Safety and Security: Create appropriate signage and safety features for alternative parking spaces				
		Safety and Security: Have security personnel available to accompany residents and business owners/staff/visitors from parking lot to project site		- Weekly assessment security incidents and data	- Number of related incidents - Number of security personnel available for escort of residents and business owners/staff/visitors	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
CS.6	Road traffic and safety	Prevent traffic congestion on the roads near/on the project site and shift heavy traffic outside rush hours	Contractor	Weekly assessment of road traffic records for on-site and off-site traffic	<ul style="list-style-type: none"> - Number of on-site road accidents - Number of public road accidents related to construction of Waterfront - Number of persons seeking healthcare as a result of road traffic accidents 	Throughout construction
		Collaborate with authorities to improve signage, visibility and overall safety of roads				
		Dedicate persons to warn road users about changing conditions with signs				
		Have first aid services on site in case of injuries				
		Coordinate with the nearest emergency room (Academic Hospital) to provide services in case of accidents on site, and with helicopter ambulance services				
		Develop and implement Health and Safety Plan and Emergency Response Plan; this plan should include unobstructed access/passage of emergency transport in coordination with local authorities and emergency services.	PURP	Monthly assessment of safety records	Health and Safety Plan developed and implemented	
		Develop and implement a Traffic Management Plan. This plan should include: i) detailed traffic impact analysis to identify potential project impacts on traffic flow and safety, especially emergency transport, ii) communication strategy with local stakeholders, iii) accommodate special bank transport, to ensure that delivery routes are		Monthly assessment of road traffic records for on-site and off-site traffic	Traffic Management Plan developed and implemented	

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
		optimized and coordinated with construction activities, iv) ensure alternative temporary parking spaces within 100 m radius of the Waterfront road, v) locations for loading/unloading of materials, vi) directions for heavy vehicle transport, vii) have roadway open for special traffic (residents, bank, emergency) as often as possible during construction, viii) create a different entrance for residents and business owners to the Waterfront during construction (not the same entrance as construction workers).				
CS.7	Economic Displacement: Loss of Employment : Livelihood and Income	A Livelihood Restoration Plan has been prepared to manage and mitigate adverse impacts on identified PAPs. Implementation of guidelines, principles and grievance redress as set out in the Livelihood Restoration Plan. Provide assistance to indigenous women crafters as part of the implementation of the Livelihood Restoration Plan, including but not limited to: i) contracts to ensure a vending place after relocation, ii) timely information and clear instructions about the planned relocation to diminish emotional distress, iii) a compensation package to cover additional costs associated with the move, iv) choosing a relocation space to minimize losing clients (also to keep paying employees), v) develop and implement a specific grievance redress mechanism for all PAP and stakeholders including indigenous women crafters, vi) adhere to specific stakeholder engagement guidelines for indigenous peoples	PURP	Monthly assessment of livelihood restoration monitoring framework	Livelihood Restoration Plan developed and implemented	Throughout construction
		Monitoring and evaluation of livelihood restoration as set out in the Livelihood Restoration Plan				

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
CS.8	Quality of Life: Noise	Reduce heavy project traffic routing through residential areas wherever possible, e.g., supply heavy machinery and materials (such as sand/gravel) by boat transport	Contractor	Weekly assessment of grievances (see CS.1)	See CS.1	
		Limit the hours and days of operation for specific pieces of equipment or operations, especially mobile sources operating in closest proximity to community areas, e.g., no use of heavy noise generating equipment and activities on weekend days and/ or after 4pm				
		Disseminate a pamphlet to surrounding communities to inform them about times/dates of high noise levels		Weekly assessment of stakeholder engagement	Percentage of stakeholders informed beforehand	
		If complaints regarding noise are received from residents, consider installing partial screening around the noisiest activities and/or mufflers on noisy equipment.		Weekly assessment of noise-management measures taken	Number of additional noise-reducing measures taken e.g., partial screening and/or mufflers	
CS.9	Quality of Life: Dust emission	Suppress dust as much as possible by using water sprinklers or water tank trucks, especially during dry season.	Contractor	Daily visual assessment of dust control measures	Dust suppression measures in place	Throughout construction
CS.10	Quality of Life: Vibration	Timely inform the residents and other users about potential nuisance from vibration during construction activities	Contractor	On occasion assess information dissemination to residents	Number of times residents who are informed in a timely manner	Throughout construction

Construction Phase Measures						
No.	Aspect	Mitigation Measures	Responsible Entity	Monitoring Methods	Performance Indicators	Implementation Time Frame
CS.11	Quality of Life: Flooding	Minimize social disruption and increase preparedness by preparing local residents for flood-like events in rainy seasons through information sharing	Contractor	Monthly assessment of stakeholder engagement (See CS.2)	Percentage of stakeholders informed beforehand (See CS.2)	Throughout construction
		Minimize social disruption and increase preparedness by preparing local residents for flood-like events in rainy seasons through information sharing		Damage reporting when needed	Number of properties damaged and amount of damage caused by flooding event relate to Waterfront	
CS.12	Quality of Life (cumulative impact)	Contractor should plan activities in close collaboration with the local residents, government offices, businesses and educational institution	Contractor	Weekly assessment of grievances	<ul style="list-style-type: none"> - Number of grievances received/registered - Number of grievances received from vulnerable groups - Percentage of grievances resolved within time frame - Percentage of recurring complaints 	Throughout construction
		Timely inform local residents, government offices, businesses and educational institution about what type of nuisance to expect and its duration				

Note: “CE” stands for Construction Phase: Environmental Aspect Management / “CS” stands for Construction Phase: Social Aspect Management

Table 7-3: Environmental and Social Management and Monitoring Plan Throughout the Operational Phase

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
OE.1	Maintenance of Waterfront area	Ensure that housekeeping is good, i.e.: - the Waterfront must be kept clean at all times. - All public areas and goods are kept orderly - All waste and litter are cleaned up immediately	Waterfront Management Council	Regular visual inspections	Compliance with relevant legal and other requirements	Throughout operations
	Disaster/hazard prevention	Implement emergency response plan	Waterfront Management Council	Monthly assessment of disaster/hazards records	Record of disasters/incidents	Throughout operations
OE.2	Impact of Climate Change (river flooding with and without sea level rise)	Promote mangrove growth along the river bank between Fort Zeelandia and the Centrale Markt and protect the existing mangrove plants to combat river overflow	Waterfront Management Council/ Expert	Assessment of a greenery/ tree maintenance plan	Record of mangrove growth	Throughout operations
		Consider (green) measures for river bank stabilization and prevention of river flooding as much as possible to long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Centrale markt and protect the existing mangrove plants, to prevent erosion and river overflow	Waterfront Management Council/ Contractor	Monthly inspection of vegetation		
		Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to	Waterfront Management Council/ Expert	Erosion assessment	Completed pilot project	

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		stabilize the riverbank using natural riverbank protection				
		Monitoring of water level at the river to measure the highest and lowest water level during springtide (twice a month).	Waterfront Management Council/ Ministry of Public Works	Every two weeks	River water level record	
		Regular maintenance and inspection of river bank protection	Waterfront Management Council/ Ministry of Public Works	Monthly visual inspection	Record of inspection and maintenance register	
		Ensure the drainage system and sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices.	Waterfront Management Council/ Ministry of Public Works	Monthly inspection	Number of inspections	
		Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials)	Waterfront Management Council		Number of flood resistant building structures	
		Implement the emergency response plan.	Waterfront Management Council			
		Consider flood insurance to protect current properties at the Waterfront from potential damage.	Waterfront Management Council		Number of properties insured	
OE.3	Impact of Climate Change	Ensure the drainage system and sluices and pumping facilities are in good	Waterfront Management	Monthly inspection	Number of inspections	Throughout operations

Operational Phase Measures

No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
	(pluvial flooding)	condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices.	Council/Ministry of Public Works			
		Improve the existing drainage infrastructure and establish new sustainable measures against pluvial flooding, among others by catching excessive storm water and temporary storing in water reservoirs identified in the surrounding area, to reduce the risk of pluvial flooding	Waterfront Management Council/Ministry of Public Works	Assessment of water reservoirs	Capacity of water storage reservoirs	
		Include strong roof construction of buildings, resistant to heavy winds during storms in the building codes.	Ministry of Public Works	Visual inspections	Compliance with building codes	
		Promote flood-resistant buildings (elevated electrical systems, usage of water-resistant materials)	Waterfront Management Council	Visual inspections	Number of flood resistant building structures	
		Implement the emergency response plan.	Waterfront Management Council			
		Consider flood insurance to protect current properties at the Waterfront from potential damage.	Waterfront Management Council		Number of properties insured	
OE.4	Impact of Climate Change (risk of erosion of the riverbank)	Promote mangrove growth along the river bank between Fort Zeelandia and the Centrale Markt and protect the	Waterfront Management Council/ Expert	Assessment of a greenery/ tree maintenance plan	Record of mangrove growth	Throughout operations

Operational Phase Measures

No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		existing mangrove plants to combat river overflow		Monthly inspection of vegetation		
		Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection	Waterfront Management Council/ Expert	Erosion assessment	Completed pilot project	
		Consider (green) measures for river bank stabilization and prevention of river flooding as much as possible for long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Centrale markt and protect the existing mangrove plants, to prevent erosion and river overflow	Waterfront Management Council/ Expert	Assessment of a greenery/ tree maintenance plan Monthly inspection of vegetation	Record of mangrove growth	
		Monitor water level at the river and measure the highest water level during springtide (twice a month). In case an increasing trend of river water level is detected, implement measures to protect the Waterfront.	Waterfront Management Council/Ministry of Public Works	Every two weeks	River water level record	
		Regular maintenance and inspection of river bank protection	Waterfront Management Council/Ministry of Public Works	Monthly visual inspection	Record of inspection and maintenance register	
OE.5	Impact on Climate Change	To reduce CO2 emission release from equipment use, all equipment must be in good working condition. An effective	Contractor/	Assessment of preventive maintenance	Preventive maintenance program	

Operational Phase Measures

No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		preventive maintenance program will contribute to lower CO2 emissions released by equipment and vehicles.	Waterfront Management Council	program and fossil fuel consumption	Record of fossil fuel consumption	Throughout Operations
		Avoid unnecessary idling of maintenance equipment/ machines when not in use.		Visual Inspections		
OE.6	Impact on Climate Change Landscape Greenery	Develop and implement an effective maintenance plan for landscaping greenery vegetation and trees.	Contractor/ Waterfront Management Council	Assessment of maintenance plan for landscaping		Throughout Operations
		Use water-efficient irrigation systems such as drip irrigation.			Record of water consumption for irrigation	
		Implement sustainable landscaping practices such as composting, mulching, and using organic fertilizers.				
		Maintain the existing natural vegetation along the river intact.		Quarterly inspection of trees	Record of planted and removed trees	
		Avoid unnecessary idling of maintenance equipment/ machines when not in use.				
		Maintain regular preventive maintenance of equipment/ machines.		Inspections of equipment/vehicles	Record of equipment maintenance	
		Consider using renewable energy sources such as solar panels to power lighting.		Monthly inspection of lighting performance	Record of installed renewable energy sources	
OE.7	Impact on Groundwater	Ensure leaks and spills of contaminants are contained and removed immediately		Visual Inspections	Preventive maintenance record	

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		<p>In the event that a drilling activity will take place, all necessary guidelines should be considered and the relevant institutes (SWM) should be contacted.</p> <p>Procedures for transport, storage, handling, and spill response for fuels must be in place and implemented</p> <p>Maintain project area and surrounding always clean (good housekeeping)</p>	Waterfront Management Council	<p>Weekly inspections of equipment</p> <p>Weekly inspection of timely and proper disposal of waste</p>	<p>Record of drilling activity</p> <p>Record of visible leaks/spills</p>	Throughout Operations
OE.8	Impact on Flora and Fauna	Regularly inspect trees on tree health and human safety aspects	Contractor/ Waterfront Management Council	Assessment of a greenery/ tree maintenance plan	Record of trees removed and their health	Throughout Operations
		Select plant/ tree species that require minimal maintenance		Monthly inspection of vegetation	Record of new tree species planted	
		Develop and implement a greenery/ tree maintenance plan				
		Maintain records of incidents with fauna and flora on land and in water		Weekly inspection along the riverside	Number animals found harmed or death	
OE.9	Air pollution	Maintain existing trees along the roadside to improve air quality (help to capture dust particles from passing traffic)	Contractor/ Waterfront Management Council	Weekly Site inspections of equipment use	Dust suppression measures in place	

Operational Phase Measures

No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Plant new trees in areas where poor quality trees have been removed.		Assessment of a greenery/ tree maintenance plan		
		Regular maintenance/ sweeping of pavement to reduce dust blowing		Daily site inspection of dust measure	Number of registered complaints	Throughout Operations
		Cover open areas or unpaved areas with grass or other durable plants.				
		Limit the intensity of traffic passing by along the Waterkant e.g. by prohibiting large trucks and containers.			Number of large trucks/ containers passing registered	
		Avoid unnecessary idling of equipment/ machines during maintenance activities when not in use.				
OE.10	Noise nuisance	Noisy activities such as music played by cars parked along the Waterfront as well music from food stands and other commercial activities should be prohibited during night hours.	Contractor/ Waterfront Management Council	Randomly noise checks	Noise measurement records Number of noise level exceedance	Throughout Operations
		Notify any nearby receptors in advance of possible noise nuisance resulting from commercial activities/ street parties.				
		Consider installing partial screening around the noisiest activities during commercial activities / street parties.				

Operational Phase Measures

No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		<p>Review equipment and methods to be employed during maintenance works (trimming of trees, washing of building and other structures) to ensure the quietest technology used.</p> <p>Avoid unnecessary idling of construction equipment or delivery trucks when not in use. Especially if near direct work areas or residents.</p> <p>In the event that noise related complaints are received short term (24-hour) ambient noise measurements should be conducted as part of investigating the complaints.</p>		<p>Planned noise measurements after receipt of complaints</p>	<p>Number of complaints</p> <p>Noise monitoring report</p>	
OE.11	Pollution of Surface water	<p>Require installation of a grease separator at food stands/ restaurants.</p> <p>Implement the waste management plan</p> <p>Maintain good housekeeping to prevent waste dumping/ littering entering into the river.</p> <p>Clean any spill or leaks from moored ships immediately.</p>	Waterfront Management Council	<p>Monthly inspection of grease separator</p> <p>Visual inspections of good housekeeping Visual inspections along the riverside Weekly site inspection of proper waste handling/collection</p> <p>Daily visual inspections along riverside</p>	<p>Record of housekeeping</p> <p>Number of spills /leaks recorded</p>	Throughout Operations

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
				Quarterly inspection of drainage system	Status of drainage system	
		Ensure that drainage system of the Waterfront food stands is not directly connected to the general drainage system of the area that discharges into the Suriname River				
OE.12	Solid and liquid waste	Develop and deploy waste management plan	Contractor/ Waterfront Management Council	Weekly waste records	Frequency of waste collection	Throughout Operations
		Ensure that waste is disposed of regularly to prevent waste accumulation; timely emptying of waste bins		Weekly site inspection of waste bins	Number of sufficient waste bins/waste skips (recycling)	
		Promote waste segregation on site and sign agreements with specialized waste handlers for recycling/reuse and disposal of certain waste types		Daily visual inspection of litter in the Waterfront area	Presence of litter	
		Promote waste reduction by having an adequate purchasing policy for vendors			Record of agreements with waste handlers	
		Ensure that all waste is handled and disposed of adequately by authorized waste handlers.				
OS.1	Grievance Redress Mechanism	Establish an effective grievance mechanism to record and respond to complaints in a timely manner	Waterfront Management Council	Monthly assessment of grievances	<ul style="list-style-type: none"> - Number of grievances received/registered - Number of grievances received from vulnerable groups - Percentage of grievances resolved within time frame - Percentage of recurring complaints 	Throughout operations

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
OS.2	Stakeholder Engagement	Ensure effective participation of stakeholders during project meetings and engagements	Waterfront Management Council	On occasion when stakeholder meetings occur	<ul style="list-style-type: none"> - Public consultation plan developed and implemented - Percentage of invited participants show up in meetings - Percentage of women/men actively engage in meetings 	Throughout operations
OS.3	Occupational Health and Safety	General: Contractors/subcontractors/staff are hired based on the existing national labor rights policies	Waterfront Management Council	Monthly assessment of employment records	Number of overwork hours per staff member	Throughout operations
		General: Post posters explaining workers' rights on strategic locations on site		Monthly visual observations of facilities	Presence of posters	
		General: Prepare and implement a Health and Safety Plan including stipulations on workers awareness		Monthly assessment of safety records	<ul style="list-style-type: none"> - Number of accidents related to occupational health and safety - Number of hospitalizations and deaths related to occupational health and safety - Standard Operating Procedures on use of PPE and other safety measures in place and implemented 	
		General: Workers use of PPE				
		General: Workers should follow and pass OHS orientation training consisting basic hazard awareness, safe work practices, emergency procedures and evacuations.		Monthly assessment of training records	Percentage of workers that pass the training requirements	
		Physical hazard: Implement administrative controls into work processes, such as job rotation and rest or stretch breaks		Monthly assessment of safety records	<ul style="list-style-type: none"> - Number of accidents related to occupational health and safety - Number of hospitalizations and deaths related to occupational health and safety 	

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
		Chemical hazard: Develop a fire prevention plan (as part of Emergency Response Plan) for welding/hot work and other fire hazards				
OS.4	Community Health, Safety and Security	Food vendors should receive training in food hygiene, cleaning, and safe removal of cooking grease	Waterfront Management Council	Quarterly assessment of training records	Percentage of workers that pass the training requirements	Throughout operations
		The Ministry of health (Environmental Inspection Department) should conduct regular inspections to ensure a safer, healthier environment for everyone involved		Monthly assessment of food hygiene records	- Number vendors who violated the food hygiene standards during inspection	
		Place permanent security at the Waterfront (surveillance) and collaborate with local Police ⁵⁵		Monthly assessment of security incidence records	- Number of security breaches and related incidents at Waterfront	
		Develop and implement the public consultation plan on how to meaningful consultation and engagement with affected vendors throughout all phases of a project		On occasion when stakeholder meetings occur	Public consultation plan developed and implemented	
		Recognize and respect indigenous people rights to free, prior, and informed consent, and provide them with the resources and support they need to participate effectively		Monthly assessment of capacity building and engagement activities for indigenous peoples	- Number of capacity building activities for indigenous people - Percentage of indigenous people participation in project activities	

⁵⁵ As a preventive measure during construction, the project site where works are being carried out will be secured. There will be security of the contractor especially after working hours, Sundays and holidays. Unauthorized people are not allowed to enter the secured areas.

Operational Phase Measures

No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
OS.5	Road Traffic and Safety	Collaborate with authorities to improve signage, visibility and overall safety of roads	Waterfront Management Council	Monthly assessment of road traffic records	- Number of road traffic accidents - Health and Safety Plan developed and implemented	Throughout operations
		Develop and implement a Health and Safety plan				
		Develop and implement educational campaigns to educate drivers and pedestrians about safe driving and walking practices				
OS.6	Employment: Livelihood and Income	Develop and implement a detailed management plan for the Waterfront area with clear description of responsibilities and allocated budgets for daily cleaning and weekly gardening to uphold the area's attractiveness. All registered PAP vendors will be relocated back to the newly redeveloped Waterfront.	Waterfront Management Council	Monthly monitoring of Waterfront Management Plan	- Waterfront Management Plan developed and implemented	Throughout operations
		Implement security measures at the Waterfront area to ensure safety for visitors and business owners		Monthly monitoring of presence of vendors	Presence of vendors	
		Work with institutions (e.g., Police, District Commissioner) for managing/controlling homeless people presence in the area		Monthly assessment of safety records	- Number of safety violations/incidents with homeless people	

Operational Phase Measures						
No.	Aspect	Mitigation Measures	Responsible	Monitoring Methods	Performance Indicators	Implementation Time Frame
OS.7	Quality of Life: Noise	Develop and implement noise-related rules and etiquette for the Waterfront area to minimize noise nuisance for residents across the street during nighttime	Waterfront Management Council	Monthly assessment of grievances (see OS.1)	See OS.1	Throughout operations
OS.8	Quality of Life: Flooding	Minimize social disruption and increase preparedness by preparing local residents for flood-like events in rainy seasons through information sharing	Waterfront Management Council	Monthly assessment of stakeholder engagement (See OS.2)	Percentage of stakeholders informed beforehand (See OS.2)	Throughout operations
		Minimize social disruption and increase preparedness by preparing local residents for flood-like events in rainy seasons through information sharing		Damage reporting when needed	Number of properties damaged and amount of damage caused by flooding event relate to the Waterfront	
OS.9	Quality of Life Visual Impacts	Develop and implement a detailed management plan for the Waterfront area with clear description of responsibilities and allocated budgets for daily cleaning and weekly gardening to uphold the area's attractiveness	Waterfront Management Council	Monthly monitoring of Waterfront Management Plan	- Waterfront Management Plan developed and implemented	
		Select the location and color of bulk storage facilities with consideration of lowering visual impacts		Site inspection	Number of storage facilities that stand out in the landscape scenery	

Note: "OE" stands for Operational Phase: Environmental Management / "OS" stands for Operational Phase: Social Aspect Management

7.2 Health, Safety and Environment Plan

The Health, Safety and Environment Plan (HSE) gives an overview of the measures to provide maximum safety of personnel and property of the Waterfront Redevelopment Project, and to avoid any adverse impact on the environment.

The HSE plan is attached as **Appendix E** to this report.

7.3 Waste Management Plan

The Waste Management Plan (WMP) describes the principles, procedures and management of the waste generated or accepted by the Waterfront. The Waste Management Plan outlines measures to manage and mitigate waste generation and resource consumption during all project phases and activities that will take place. It is designed to support an ecological based management approach underpinned by adaptive management principles.

The WMP plan is attached as **Appendix F** to this report.

7.4 Emergency Response Plan

The Emergency Response Plan (ERP) aims to be an “all hazards plan” providing the information and rules for response to the range of emergencies that may affect the Waterfront operations, employees, visitors, stakeholders, port assets and infrastructure and to ensure that each process is applied to emergency planning which includes prevention, preparedness, and response, communication, and recovery strategies.

The ERP is attached as **Appendix G** to this report.

8 Public Consultation Plan

This Public Consultation Plan (PCP) aims to describe the strategy and program for engaging with the stakeholders as per the IDB requirement B.6 of OP-703. The purpose of this plan is to ensure the timely provision of relevant and understandable project information and encourage the public to provide meaningful input into the decision-making process for better project outcomes. Stakeholders will do this by providing their feedback on the Environmental and Social Impact Assessment (ESIA) and Environmental Social Management and Monitoring Plan (ESMMP) in the planning phase, and information exchanges during the construction and operations phases of the project.

During the construction phase the PIU will be responsible for the implementation of this plan and the Grievance Redress Mechanism. Once construction is completed the PIU will hand over the plan and the GRM to the government responsible for its implementation during the operation stage of the project.

8.1 Identification of Stakeholders

Stakeholder engagement aims to involve people who may be directly or indirectly affected by the project or those that can directly or indirectly influence the project. Stakeholders were identified using the categorization of their interest in the project and their level of influence over the project (Table 8-1).

Table 8-1: List of stakeholders for the redevelopment project Waterfront

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
Government				
Ministry of Education, Science, and Culture (OWC)	Department of Culture	Overall supervision over the project, manager Fort Zeelandia, improvement of cultural heritage	High	Decision-making
Ministry of Public Works (OW)	Public Green Department	Public green establishment	High	Decision-making
	Traffic Department	Planned traffic rerouting	High	Decision-making
	Civil Engineering Department	Planned reconstruction activities	High	Decision-making

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
	Building Department	Building codes and guidelines	High	Decision-making
Ministry of Spatial Planning and Environment (ROM)	Spatial Planning Department		High	Decision-making
Ministry of Regional Development and Sport (ROS)	District Commissioner for Paramaribo North-East	Improvement of area/ approval of cultural activities on site	High	Decision-making
	District Council Paramaribo		Low	Consultation
Ministry of Justice and Police (JUSPOL), Police Corps (KPS)	Centrum Police Chief	Maintain law and order at the site	Low	Consultation
	Neighborhood manager Centrum	Maintain law and order at the site	Low	Consultation
	Traffic department	Regulation of traffic	High	Decision-making
		Resident Mr. J.C. Mirandastraat	Medium	Consultation
Management Instituut GLIS		Legal status parcels	Low	Consultation
Ministry of Internal Affairs	Department of Religious Matters	Support religious activities at the site (independence square)	Low	Consultation
Ministry of Transport, Communication and Tourism (TCT)	Department of Tourism	Promote tourism	Low	Consultation
Project Implementers and Consultants				
Project Implementation Unit (PIU) PURP		Overall coordination of the project	High	Decision-making

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
Inter-American Development Bank (IDB)		Financing institution	High	Decision-making
Suriname Built Heritage Foundation (SGES)		Overall support to project on behalf the of Government	High	Decision-making
		Resident Fort Zeelandia	Medium	Consultation
ILACO NV.		Consultant design Waterfront	Low	Consultation
Regulatory Agencies				
National Institute for Environment and Development in Suriname	ESIA approval/Environmental regulations	Approval environmental permit	High	Decision-making
Nationale Unesco Commissie Suriname		Regulations	Low	Consultation
Nationale Monumenten Commissie Suriname		Regulations	Low	Consultation
Road Authority Suriname		Regulations	Low	Consultation
SWM		Regulations	Low	Consultation
Telesur		Regulations	Low	Consultation
EBS		Regulations	Low	Consultation
Non-Government and Civil Society Organizations				
Beheersraad Waterkant		Improvement for tourism	High	Decision-making

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
Rotary	Paramaribo Residence	Waaggebouw PPP	Low	Consultation
Stadsherstel NV.		Improvement city	Low	Consultation
Suriname Hospitality and Tourism Association (SHATA)		Tourism Waterfront and surrounding area	Low	Consultation
United Tour Guides Suriname (UTGS)		Tourism Waterfront and surrounding area	Low	Consultation
Stg. Uitgangscentrum Paramaribo (SUPS)		Tourism Waterfront and surrounding area	Low	Consultation
Vereniging van Surinaamse Touroperators (VESTOR)		Tourism Waterfront and surrounding area	Low	Consultation
Suriname Handicraft and Craft Association (SUHANAS)		Tourism Waterfront and surrounding area	Low	Consultation
Tropenbos Suriname		Green Paramaribo	Low	Consultation
Foundation Suriname Museum		Fort Zeelandia Museum	Low	Consultation
Private Sector ⁵⁶				
Association of Business in Suriname (VSB)	Umbrella organization	Interest of businesses	Low	Consultation
Small and Medium Sized Business (AKMOS)	Umbrella organization	Interest of businesses	Low	Consultation
Mr. Conrad Issa	Entrepreneur	Other activities in the area	Low	Consultation

⁵⁶ Some of these businesses are directly impacted by the project and the LRP was developed to address and mitigate these impacts.

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
Mr. Ed Hoozeboom	Entrepreneur	Other activities in the area	Low	Consultation
Local Residents/Businesses				
De West		Mr. J.C. de Mirandastraat	Medium	Consultation
No 2.		Mr. J.C. de Mirandastraat	Medium	Consultation
Tradeblox		Mr. J.C. de Mirandastraat	Medium	Consultation
De Gadri		Food vendor Fort Zeelandia area	Medium	Consultation
Suralco/hoekhuis		Waterkant 2	Medium	Consultation
Le Petit Maison		Waterkant 4	Medium	Consultation
VSH Apartments		Waterkant 6-8	Medium	Consultation
Food stand: Bar Amtasa		Food vendor Waterkant	High	Consultation
Food stand: Bar Uncle Ray		Food vendor Waterkant	High	Consultation
Food stand: restaurants (8)		Food vendor Waterkant	High	Consultation
Owner 1 Langs pleintje		Driehoeksplein	Medium	Consultation
Owner 2 langs pleintje		Driehoeksplein	Medium	Consultation
Owner 3 langs pleintje		Driehoeksplein	Medium	Consultation
Apache		Kromme Elleboogstraat	Medium	Consultation

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
No 3.		Kromme Elleboogstraat	Medium	Consultation
Parking lot owner 1		Kromme Elleboogstraat	Medium	Consultation
Gebouw naast Stg. Gebouwd erfgoed Fort Zeelandia		Fort Zeelandia area	Medium	Consultation
Gebouw 2 naast Stg. Gebouwd erfgoed Fort Zeelandia		Fort Zeelandia area	Medium	Consultation
Storage area		Kromme Elleboogstraat	Medium	Consultation
Abandoned house		Kromme Elleboogstraat	Medium	Consultation
FHR		Lim A Postraat 8-10	Medium	Consultation
Unknown next to FHR		Mr. J.C.de Mirandastraat	Medium	Consultation
Unknown next to CBS		Mr. J.C. de Mirandastraat	Medium	Consultation
De Waag		Waterkant	Medium	Consultation
Craft Market (13)		Craft vendors Waterkant	High	Consultation
Standhouders Waterkant (Belangen Organisatie Waterkant)		Representation Vendors Waterkant	High	Consultation
Findlay		Resident Waterkant 10	Medium	Consultation
Sardjoe		Vacant- owner Waterkant 12	Medium	Consultation
Central Bank of Suriname (CBS)		Resident Waterkant 18-26	Medium	Consultation

Stakeholder	Details	Potential Interest	Level of Influence	Anticipated Level of Participation
Social Affairs (SZ)		Resident Waterkant 30-32	Medium	Consultation
Rekenkamer		Resident Waterkant 28	Medium	Consultation
Academy for Higher Arts and Culture Education (AHKCO)		Resident Waterkant 14	Medium	Consultation
National Assemblée Suriname		Resident Fort Zeelandia area	Medium	Consultation
SMS Pier		Waterkant	Medium	Consultation
Riverside		Waterkant	Medium	Consultation
Broki		Waterkant	Medium	Consultation
Nola Hatterman Art Academy		Fort Zeelandia	Medium	Consultation

Vulnerable Stakeholders

The indigenous women crafters and the homeless people are vulnerable stakeholders in the project based on several aspects as described in Table 8-2. Therefore, a Livelihood Restoration Plan (LRP) has been prepared separately to guide the project in engaging vulnerable stakeholders. The LRP is included in **Appendix K**.

Table 8-2: Vulnerability indicators of Indigenous Women Crafters and Homeless Peoples

Dimension	Vulnerability Indicator	Explanation
Indigenous Women Crafters		

Dimension	Vulnerability Indicator	Explanation
Human Capital	Educational level	Indigenous people have the highest percentages of people with low (western) education levels compared to other ethnicities living in Suriname.
Social Capital	Socio-economic status	The women crafters are small players in the tourism scheme, unless they partner up with larger companies. Their socioeconomic status belongs to the bottom half of society
	Social safety net	Small women vendors often don't have a sufficient social safety net. There are limited means for them to ask for help when something goes wrong in business. Support is often given by others in the family or community.
	Level of public participation	The indigenous women crafters have limited participation in the national and local decision-making processes e.g., consultation for activities that may affect them.
Financial Capital	Access to financial capital	Indigenous women crafters have no permit for selling goods or other licenses, difficult to get bank loans for setting up or expanding their business.
Homeless people		
Social Capital	Social safety net	Homeless people often lack a social safety net and/or are deliberately removed from their family/friends setting usually because of their behavior. Support organizations help them by providing food, shower and, clothing
Financial Capital	Access to financial capital	Homeless people often lack monies to get them out of the deplorable situation of lacking basic human needs such as food/water, shelter, clothing
Physical Capital	Shelter	Homeless people lack permanent shelter and sleep at the Waterfront on benches and other structures

If during the construction phase the presence of homeless people in the project area is identified, appropriate mitigation measures will be implemented to provide support to these vulnerable people, e.g., coordination with existing homeless programs.

8.2 Procedures for Stakeholder Engagement

Stakeholder engagement includes any process to directly engage stakeholders and give full consideration to their input in the implementation of the Waterkant redevelopment project. Stakeholders include a wide range of groups from the Government, private sector, academia, residents and NGOs, each with different views and concerns.

8.2.1 Objective

The overall objective of stakeholder engagement for the proposed project is to ensure the effective inclusion of groups and individuals that have a stake or interest in the project. The plan presented here provides a strategy for the engagement of stakeholders. Besides this overall goal, there are several secondary objectives discussed below:

- **Transparency.** When stakeholders know what's going to happen in their vicinity, they will have more trust in the project. It is important to provide adequate information to the stakeholders and catch grievances as early as possible.
- **Accountability.** The project unfolds in rural areas and therefore it should hold the project responsible for agreements made in the project planning and execution phases.
- **Conflict resolution.** Disputes between the project and residents have emerged and resolving these would benefit from using skills and tools for conflict resolution e.g., negotiation and mediation.

8.2.2 Guiding Principles

Well-designed stakeholder engagement adheres to several guiding principles, which derive from the Inter-American Development Bank (IDB)⁵⁷. The IDB defines meaningful stakeholder consultation as a “two-way dialogue of engagement, rather than a one-way dissemination of information, a process rather than a few single events and it involves people in affected communities and other relevant stakeholders”. Meaningful stakeholder consultation is embedded in the human rights principles which are outlined in international agreements signed by Suriname. The IDB approach represents a rights-based approach to development, recognizing the principles of 1) equality, 2) non-discrimination, 3) participation, 4) transparency, and 5) accountability (Table 8-3).

⁵⁷ Meaningful Stakeholder Consultation. 2017. IDB: Series on environmental and social risk and opportunity

Table 8-3: IDB guidelines for stakeholder engagement

Guiding principles	IDB Stakeholder Engagement
Stakeholder identification	<ul style="list-style-type: none"> - Identify the priority issues: environmental and social risks/opportunities/concerns - Identify stakeholder categories - Stakeholder analysis disaggregated by gender and vulnerable groups
Information disclosure	<ul style="list-style-type: none"> - Information disclosure to relevant groups available in appropriate locations, languages and formats - Stakeholders should have sufficient time to review and discuss information among themselves before being asked to participate in consultation events
Stakeholder consultation	<ul style="list-style-type: none"> - Prepare a consultation plan taking into account local institutional mechanisms and decision-making processes - Consultation process attuned to include all groups and stakeholders - Measures to protect people from retaliation
Grievance management	<ul style="list-style-type: none"> - Develop a grievance redress mechanism (GRM) and integrate it into the projects' Environmental and Social Management System - GRM system should have mandate and authority to address and resolve concerns - Integrate stakeholders in the design of the GRM - GRM should be easily accessible
Stakeholder involvement in project monitoring	<ul style="list-style-type: none"> - Baseline data collection to make a comparison between "before and after" project intervention - Consultation of stakeholders on the relevance and validity of data, proposed action plans, management structures and institutional arrangements - Provisions for adaptive mechanisms e.g., participatory monitoring
Reporting to stakeholders	<ul style="list-style-type: none"> - Convey that stakeholder contributions will inform project decision-making - Keep and share records of consultation events
Management functions	<ul style="list-style-type: none"> - Integrate stakeholder engagement into the management structure - Provide evidence that stakeholders' views have been considered in project decisions - Provide evidence and mechanisms that stakeholder inputs have contributed to mitigation i.e., avoiding, minimizing, or compensating for adverse impacts

Following these guidelines, the principles for stakeholder engagement in this project are the following:

Principle 1: Respect for diverse socio-cultural characteristics of stakeholders. The proposed project can have a potential effect on indigenous craft women, who are identified as a vulnerable group. The project will develop specific methods for engagement to ensure the effective inclusion of this group.

Principle 2: Consider gender aspects. Men and women have different customary roles in the household. The project will consider these differences in its implementation.

Principle 3: Ensure transparency and effective communication. Stakeholders should get sufficient information to know what to expect. It is extremely important to inform them through adequate channels, on time and in a format they easily understand.

Principle 4: Ensure sufficient space for the inclusion of views. Every stakeholder should be able to include their views in the project when they think this is necessary. Specific provisions will be made to facilitate the diverse groups.

Principle 5: Recognize vulnerable stakeholders. Stakeholders who exist in a disadvantageous situation in terms of lifestyle, financial means, education, and health status will be engaged using special methods and techniques.

Principle 6: Provide an opportunity for grievance and feedback redress. The project will create an opportunity for stakeholders to voice their feedback and grievances in an easily accessible format.

Principle 7: Consider stakeholder fatigue and stress. Project stakeholders have already been included in previous studies, which were conducted during the period 2016-2022. Currently, stakeholders are tired of consultations. Food and craft vendors experience stress about the foreseen relocation during the construction phase⁵⁸.

8.3 Approach and Activities

8.3.1 Approach

Stakeholder engagement is specifically designed for the Waterkant redevelopment project as it currently stands. Stakeholder engagement will be founded on three strategies:

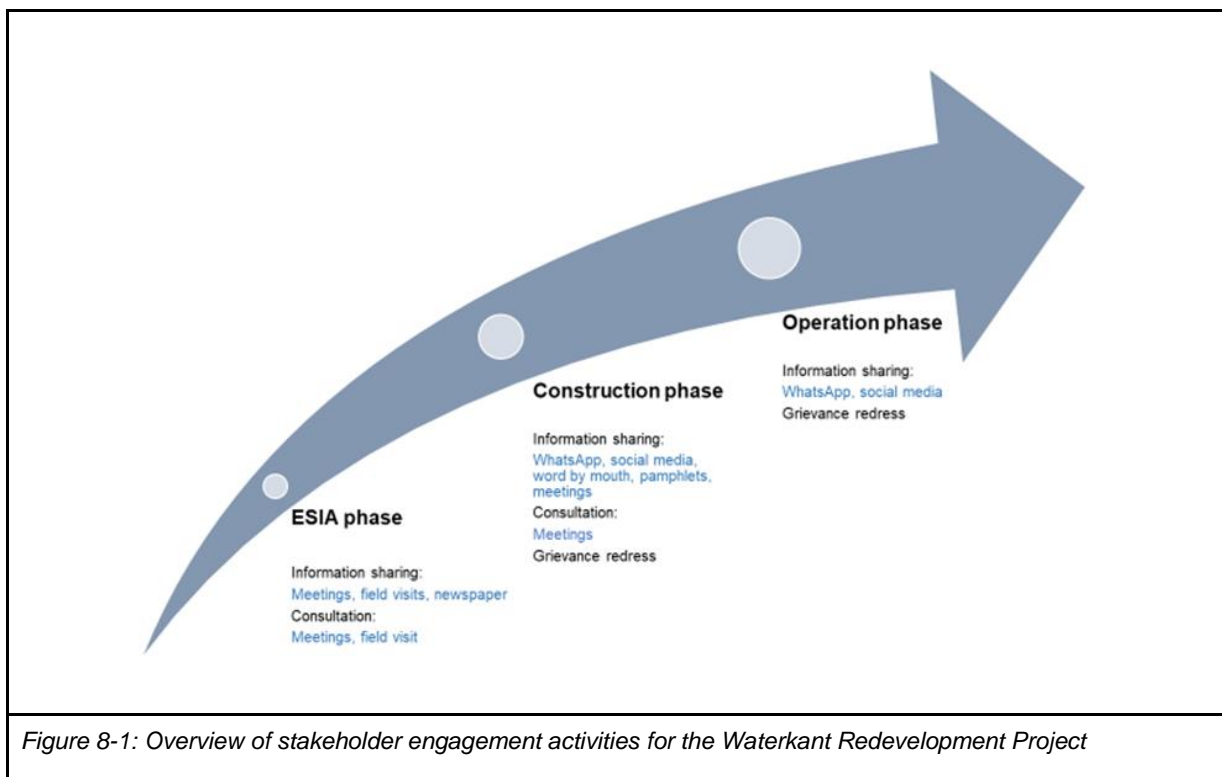
1. Keep the stakeholder engagement activities targeted and as short as possible. This is necessary because of the current stakeholder fatigue.

⁵⁸ Personal communication District Commissioner Paramaribo North East Mr. R. Bhola, November 2022

2. Control the narrative by providing sufficient information about the project and prevent stakeholders from speculating or making assumptions.
3. Have an open door policy to capture any grievances and other problems as early as possible during the ESIA process. The ESIA team will have an office near the project site and have a provisional grievance redress mechanism before the construction phase commences.

Stakeholders will be engaged in the Waterkant redevelopment project based on three participation levels (Figure 8-1):

1. **Information sharing.** The project will receive information focused only on practical aspects of the ESIA rather than plans and other non-practical matters, given the stakeholder fatigue. This action implies one-way information transfer: from the project to residents, vendors, private sector, civil society and governmental decision-makers. These groups will have an opportunity to engage by asking for clarification on the proposed plans during the ESIA process.
2. **Consultation.** This means that the project offers an option for stakeholders to provide input. Consultation action implies two-way information transfer: the project will offer options and listens to the feedback given on these options by stakeholders before construction starts.
3. **Feedback/grievance redress.** Stakeholders will have an opportunity to submit feedback and grievances during the project construction and operations phase.



8.3.2 Activities

The proposed activities to sensitize and involve stakeholders are presented for the construction and operation phase of the proposed project.

ESIA Phase

During the ESIA phase, the following activities are planned:

- **Information sharing.** The project proponent followed the ESIA process and informed the previously identified stakeholders through the i) Scoping meeting (**Appendix M**) and ii) announcement of the project in the local newspaper (posted on October 18, 2022, in De Ware Tijd).
- **Consultation.** Consultation meetings aim to discuss the project in more detail once the stakeholders are sufficiently informed about it e.g. final design, parking situation, relocation of craft- and food vendors.
Stakeholders were allowed to provide input in the project plans through the i) Scoping meeting, ii) meetings with key stakeholders (**Appendix M**), iii) field survey, iv) stakeholder meeting to present ESIA findings (**Appendix M**). It will be important to have continued engagement with the stakeholders during construction.
- **Grievance uptake channel.** Stakeholders can visit the office near the project area/make an appointment to discuss potential grievances about the study. This provides a grievance uptake channel near the project site. Other grievances will be directed towards the District Commissariat Paramaribo North-East.

Construction Phase

During the construction phase, the following activities are planned:

- **Information sharing.** The project proponent will inform stakeholders regularly about the project's progress and what to expect in the next phase. Information will be shared through i) WhatsApp groups, ii) social media (Facebook), iii) word by mouth with facilitators, and iv) disseminating pamphlets in key places such as the office of the District Commissioner Paramaribo North-East, vendors and their representatives, and other permanent stakeholders in the neighborhood (e.g., restaurants, parking lots).
- **Consultation.** The project proponent will provide information and gather input from stakeholders through i) face-to-face meetings in collaboration with the District Commissioner before the project commences. These meetings aim to explain the planned construction activities in detail and solicit input from stakeholders, 2) meetings with stakeholders about livelihood restoration that will be removed from the premises during construction.
- **Formal grievance redress.** Stakeholders can submit grievances near the project area at several locations (see Section 8.5).

Operations Phase

During the operations phase, the following activities are planned:

- **Information sharing.** The project proponent will inform stakeholders through i) WhatsApp groups, ii) social media (Facebook).
- **Formal grievance redress.** Stakeholders can submit grievances near the project area at several locations (see Section 8.5).

A total overview of the stakeholder engagement activities for the Redevelopment Waterfront project is shown in Table 8-4.

Table 8-4: Overview of Stakeholder Engagement Activities for the Waterkant Redevelopment project

Engagement Method	Baseline situation	Goal	Target Group(s)	Frequency
ESIA Phase				
Information sharing				
Scoping Meeting	Target groups are well informed about the plans and are waiting on execution	To provide information from the project to the stakeholders (one-way)	Identified stakeholders: - Government - Project implementers and consultants - Regulatory agencies - Non-Government and Civil Society Organizations - Private Sector - Residents (including vendors)	Once
Newspaper announcement			General public	Once
Consultation				
Scoping Meeting	Target groups are well informed about the plans and are waiting on execution	To solicit input from stakeholders on project plans	Identified stakeholders: All	Once
Meetings with key stakeholders	- Target groups give input for ESIA - PURP and stakeholders should reach			Multiple times as deemed necessary

Engagement Method	Baseline situation	Goal	Target Group(s)	Frequency
	consensus on final design (meeting is recommended)			
Field survey	Stakeholders provided information for baseline and other aspects of ESIA		Identified stakeholders: Residents (including vendors), businesses and organizations within the project area	Once
Meetings on livelihood restoration	Stakeholders reviewed livelihood restoration plan and provided input		Identified stakeholders: crafters and food vendors	Once
Meeting on ESIA findings	Stakeholders will be informed about project plans and ESIA in the final presentation	To solicit input from stakeholders on the findings of the ESIA study	Identified stakeholders: All	Once
Grievance uptake channel see Section 8.5)	Open door policy with on-site office	To capture grievances at an early stage, promote transparency	Identified stakeholders: All	For 4 months during the ESIA study
Construction Phase				
Information sharing				
WhatsApp - local groups	WhatsApp groups active for surrounding residents at the project site	To provide information from the project to the stakeholders regularly (one-way)	Identified stakeholders: - Residents	Every 2 weeks
Social media	Approximately half of the Suriname population uses Facebook (54.5% in 2017). PURP has an active Facebook page with 5.4k followers		Identified stakeholders: - All	Every 2 weeks

Engagement Method	Baseline situation	Goal	Target Group(s)	Frequency
Word by mouth	Representatives act as facilitators for specific target groups		Identified stakeholders: - All	Every two weeks Actively give information to facilitators to control the narrative
Pamphlets	The literacy rate is assumed high (>95%)		Identified stakeholders: All	Quarterly Pamphlets send to groups in hard copy or by email
Face-to-face meetings before the project starts	Stakeholders will be informed about the changes during construction incl. displacement		Identified stakeholders: All	Once
	Stakeholders that should move before construction starts about finalizing the livelihood restoration plan	To provide information about the alternatives to livelihood once construction begins and stakeholders will have to leave their business location	Identified stakeholders: Crafters and food vendors	Once
	Stakeholders that should move before construction starts about relocation/compensation contract negotiations		Identified stakeholders: Crafters and food vendors	Once
Formal grievance redress (see Section 8.5)				
Operation Phase				
Information sharing				
WhatsApp - local groups	Idem Construction Phase	To provide information from the project to the stakeholders when needed (one-way)	Identified stakeholders: - Residents	Quarterly
Social media			Identified stakeholders: - All	Quarterly

Engagement Method	Baseline situation	Goal	Target Group(s)	Frequency
Formal grievance redress (SeeSection 8.5)				

8.4 Grievance Redress Mechanism

During the early formulation of this ESIA, for the construction and operations phases, stakeholders will have an opportunity to raise grievances with the project proponent through a Grievance Redress Mechanism (GRM) and seek redress when they perceive a negative impact from the project activities.

The GRM) allows for the project proponents to gather complaints at an early stage before they become major problems if left unmanaged.

8.4.1 Situational Analysis

Currently, stakeholders have the following ways to submit grievances:

The District Commissariat Paramaribo - Citizen Information Department. Uptake of complaints occurs through:

- Facebook page/messenger: Paramaribo Noord-Oost BIC
- Central telephone number District Commissariat: 473546
- Whatsapp number
- Physical desk of the Citizen Information Department (BIC) at the ressort offices (Blauwgrond, Rainville, and Munder) and the main DC office at the Combéweg. Grievances from ressort offices are brought to the central office for processing.

The complainant can submit the grievance at the office, after which DC officials will research the situation in the field and prefer to have a face-to-face conversation to find a solution.

The grievances registered to date have to do with hindrances related to: i) public green spaces, ii) waste management, iii) containers placed on streets, iv) excessive noise. Recurring complaints include those related to placing containers on the streets and noise.

After the complaint is registered, there is no formal grievance redress procedure. The DC makes a *final judgment* on the grievance based on the law. In case it needs the inclusion of other Government departments, the DC will transfer the request to departments such as:

- District Commissariat: complaints about permits
- Ministry of Public Works: Department of Public Green Spaces (OG) for complaints about public green spaces
- Ministry of Public Health: Environmental Health Department (MCD) for complaints about food and health.
- Ministry of Justice of Police: Corps Police Suriname (KPS) for noise hindrance along the Waterfront before the closure of food vendors.

Follow-up on the complaints deferred occurs incidentally.

8.4.2 Potential Grievances in the Project

An overview of potential feedback and grievances related to the Waterfront Redevelopment Project is shown in Table 8-5.

Table 8-5: Overview of potential feedback and grievances related to the Redevelopment Waterfront project

Category	Impact	Potential for Grievance	Potential Clients to the GRM
Biophysical and Social Environment	Noise	Excessive noise	All stakeholders
	Dust release	Excessive exhaust and dust release	
	Flooding	Excessive water due to landscape changes	
	Solid waste	Nuisance from solid waste such as odors, pests etc.	
	Road traffic	Increase in construction traffic leading to traffic congestion on the road.	All stakeholders
		Loss of parking spaces in the area	
	Change aesthetics	Loss of visual aspects of the historic area	All stakeholders
	Business activity	Increased business activity	

Category	Impact	Potential for Grievance	Potential Clients to the GRM
		Increased costs with livelihood restoration	Craft and food vendors, businesses
		Loss of business space	
		Loss of clients	
	Tourism	Increase of visitors/recreational activity	Craft and food vendors, businesses
	Leisure space	Loss of leisure space during construction	Visitors
Engagement/ participation	Limited/no voice	Poor inclusion of stakeholders in project activities that may impact them	All stakeholders
Livelihood Restoration	Economic displacement/ compensation	Novel sales accommodation leads to economic loss	Craft and food vendors
		Compensation for economic impact is insufficient	

8.4.3 Design Principles

Suriname relies on a practice to include the views of stakeholders voluntarily when policies are made, or new initiatives are developed. Specific laws on public participation are lacking, besides small provisions in existing sectoral legislation. Citizens of Suriname often experience a top-down approach from the Government and the private sector. Considering this general practice, the GRM was designed based on the following principles:

- **Existing Structures and Procedures.** The GRM was designed by building on the existing structures and procedures of NIMOS and the guidelines of the IDB on meaningful stakeholder participation.
- **Accessibility and Availability.** Information about the existence and functioning of the GRM needs to be made readily available to all stakeholders. Stakeholders should also be able to access the project proponent informally to discuss grievances before they become official complaints.
- **Documentation.** The GRM needs to have a suitable system for ensuring the maintenance of written records at all relevant stages. Good quality documentation minimizes risks of grievances being raised again and of subsequent complaints about its resolution.

- **Culturally Appropriateness.** In Suriname, submitting individual grievances is not common practice. People would rather build coalitions and express their voices through local media (newspapers, Facebook etc.). Therefore, grievances have to be collected as early as possible by the active gathering of information from stakeholders.
- **Human Rights.** The GRM has to respect the rights of indigenous peoples according to the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP) and other relevant treaties in terms of provisions on language, representation, and accessibility to the project.

8.4.4 Structure of the GRM

This section presents the structure of the GRM during i) the ESIA process and ii) the construction and operational phase of the proposed project.

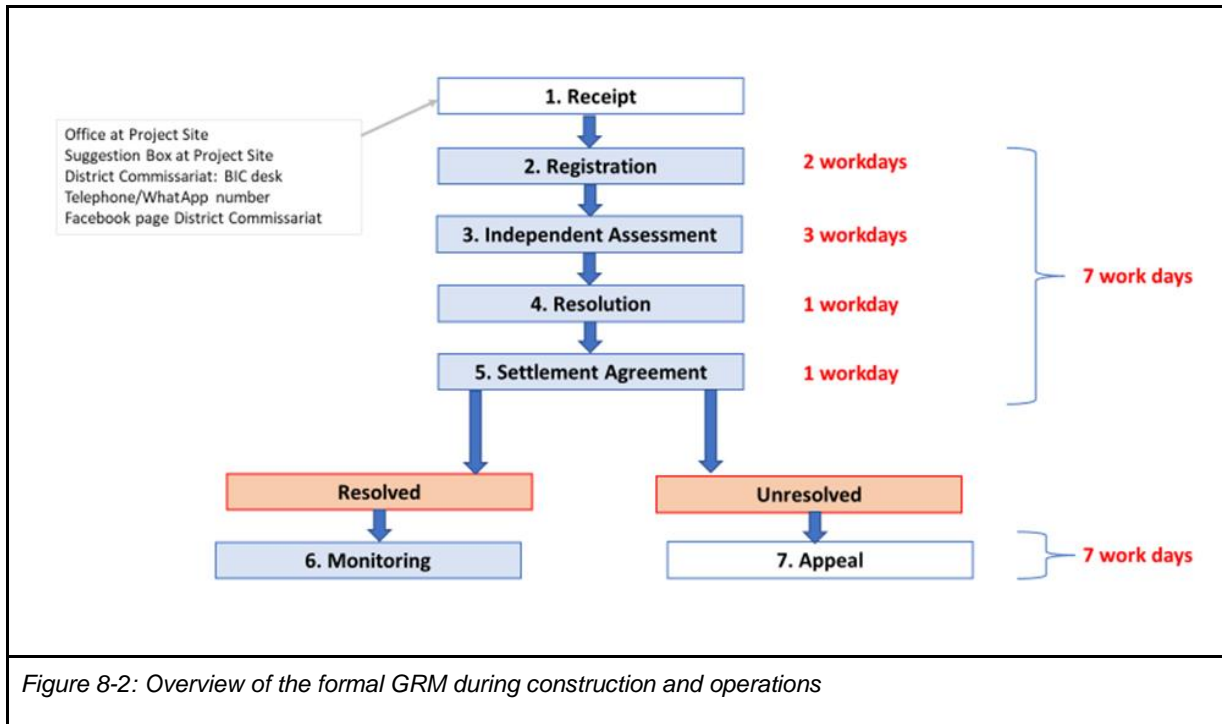
a. During the ESIA process

In anticipation of the GRM which will be fully operational during the construction phase, an **uptake modality** was implemented during the ESIA study. The channel was implemented via an on-site project office and functions besides the existing grievance mechanism operating under the District Commissariat. The extra uptake channel captured grievances early in the context of existing stakeholder fatigue.

The provisional GRM was operationalized through an on-site office with an open-door policy. Stakeholders could submit a grievance about the i) study methodology and process, ii) other matters related to the project. Grievances about the ESIA study was handled by the team's conflict resolution specialist who assessed interests and propose non-binding win-win solutions. All other project-related grievances were registered (Step 1 in the grievance procedure) and the complainants were sent to the District Commissariat for officially registering the complaint and following the existing grievance procedure.

b. During Construction and Operational Phase

The **GRM**, starting in the construction phase, is designed to provide an option for grievance redress to stakeholders through a formal procedure. The GRM envisages seeking a solution by using a structured and time-bound process for improving communication between parties and finding creative ways to seek solutions. The GRM will be operational during the construction phase and one year into the operations phase. Stakeholders will be informed about the GRM before construction starts in Q2 of 2024.



The following procedure of 7 workdays is proposed for the GRM mechanism.

1. **Receipt.** Grievances are received from stakeholders who believe have been harmed or have been affected by the project activities (also called complainants). Filing a grievance is free.

Grievances can be submitted by identified complainants or anonymous. The latter is important in a small society like Suriname and the case of gender-based violence. Anonymous grievances will be handled similarly to grievances from identified complainants, with the exception that the complainant cannot be contacted for giving or receiving information during the grievance redress process.

- In-person at the office on the project site
- Suggestion box at the office on the project site. The suggestion box will be opened weekly. Facebook page/messenger: Paramaribo Noord-Oost BIC
- Central telephone number District Commissariat: 473546
- Physical desk of the Citizen Information Department (BIC) at the ressort offices (Blauwgrond, Rainville, and Munder) and the main DC office at the Combéweg. Grievances from ressort offices are brought weekly to the central office for processing.

2. **Registration.** Each grievance will then be collected and submitted to the PURP's community officer (CO), as the main point of contact for handling grievances. The CO will reach out to the complainant to gather information to register the grievance.

The grievance will be registered by the CO after the complainant submits the following information on a specifically designed grievance form: i) name and contact information of the complainant and copy of ID card, ii) date of the grievance, iii) nature of the grievance (including damage report and pictures), iv) the number of persons involved, v) effect on complainant's activities, vi) type of proof and witnesses, vii) potential solutions.

Output: Completed grievance form

Duration: 2 workdays.

2. **Independent Assessment.** When the grievance is submitted, the CO will require documentation from the field to conduct an independent assessment. This requires field trips and interactions with persons at the location of the grievance. In case needed, the project proponent can appoint independent experts on the issue. These experts are carefully selected from different entities, such as Government, residents, interest/support groups, NGOs, and the private sector, as long as they have no stake in the outcome of the dispute. Independent experts are required to sign a confidentiality agreement.

Outcome: Independent Assessment

Duration: 3 workdays.

3. **Resolution.** The CO sets forth a resolution based on the outcome of the independent assessment. A resolution is a proposal for a process in which the complainant and other (affected) party come together, mutually discuss the approach to reaching a proposed resolution and mold it into an acceptable process for both parties.

Outcome: Resolution

Duration: 1 workday.

4. **Settlement Agreement.** The CO formulates a response in a specifically designed settlement agreement format which consists of i) the complaint and issues that are taken into consideration in the response, ii) the view of each party about the issues, iii) the rationale for the decision, iv) the decision/resolution. The CO presents the response to the complainant, and they will reach a settlement agreement

Outcome: Settlement agreement

Duration: 1 workday.

5. **Monitoring.** The CO and complainant both have responsibility for complying with the agreement reached in the GRM.

The CO will track the implementation of the settlement agreement using a monitoring system (see Section 5.3). The monitoring system can be a simple database from which

information can be analyzed to recognize grievance patterns, identify causes of grievance and evaluate how effectively grievances are handled.

6. **Appeal.** In case no acceptable resolution is found, the complainant can submit an appeal to the District Commissioner with a transcript to a special grievance commission consisting of i) the Ministry of Public Works responsible for building construction and the ii) environmental authority NIMOS (to become the National Environmental Authority - NMA). These 3 institutes will then provide a decision on the matter within 7 workdays.

Output: Appeal

Duration: 7 workdays

The Ministry of Education, Culture and Science/PURP can use this proposed grievance redress mechanism to write an internal procedure (SOP) for receiving grievances from stakeholders. The Grievance Mechanism Procedure of PURP can be found in **Appendix L**

8.5 Operationalization

8.5.1 Institutional Structure

Stakeholder engagement should be handled by PURP's community officer (CO) who should work closely with a designated person in the Beheersraad Waterkant. The Beheersraad Waterkant includes the following members: i) District Commissioner Paramaribo North-East, ii) Director Ministry of Tourism, Communication and Transport (TCT), iii) Representative of the stakeholders, and 2 other members. The division of tasks related to stakeholder engagement and grievance redress is as follows (Table 8-6):

Table 8-6: Overview of tasks of responsible officers for stakeholder engagement and grievance redress

Task	Community Liaison Specialist PURP	Designated Person Beheersraad Waterkant
Act as a point of contact for stakeholder engagement and grievance redress	X	X
Check in with key stakeholders regularly, especially craft women (vulnerable stakeholders)	X	X
Prepare meetings with stakeholders incl. logistics, cultural appropriateness, invitation	X	

Task	Community Liaison Specialist PURP	Designated Person Beheersraad Waterkant
Facilitate stakeholder engagement meetings	X	
Document all stakeholder engagement activities e.g., meetings reports	X	X
Oversee the grievance redress mechanism e.g., uptake, processing and monitoring of grievances	X	
Collaborate with local authorities and others for community outreach activities about the project	X	X
Train other staff from DC, Beheersraad Waterkant, and stakeholders on relevant aspects of stakeholder engagement and grievance redress.	X	
Prepare information-sharing pamphlets etc.	X	X

8.5.2 Action Plan

The action plan for the implementation of stakeholder engagement and grievance redress activities for the Redevelopment Waterfront is presented in Table 8-7.

Table 8-7: An action plan for stakeholder engagement

Activity	Participation level	2022	2023				2024				2025			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Design/Scoping Phase														
Newspaper announcement	- Information sharing	X												
Meeting with key stakeholders	- Consultation	X	X											
Scoping Meeting	- Information sharing - Consultation		X											
Field survey	- Consultation		X											

Activity	Participation level	2022	2023				2024				2025			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Meeting on ESIA findings	- Information sharing - Consultation			X										
Construction Phase														
Face-to-face meetings with stakeholders before the project starts	- Information sharing - Consultation							X						
Outreach through WhatsApp, social media (every two weeks)	- Information sharing							X	X	X	X	X		
Outreach through pamphlets (every two weeks)	- Information sharing					X	X	X	X	X	X	X		
Word by mouth through facilitators (every 2 weeks)	- Information sharing					X	X	X						

Activity	Participation level	2022	2023				2024				2025			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Grievance redress (incidental)	- Information sharing - Grievance redress							X		X training	X	X		
Operations Phase														
Outreach WhatsApp, social media (quarterly)	- Information sharing												X	X
Grievance redress (incidental)	- Grievance redress												X	X

8.5.3 Monitoring and Evaluation

This section presents a monitoring and evaluation framework for stakeholder engagement and grievance redress. The following aspects will be monitored during the process that starts in the ESIA phase and runs throughout the operational phase:

- Stakeholder participation during the stakeholder meetings
- Social media performance by tracking the number of likes and positive and negative comments on Facebook and Instagram.
- Grievance redress from stakeholders will be tracked.

Indicators for monitoring stakeholder engagement and grievance redress are presented in Table 8-8.

Table 8-8: Monitoring framework stakeholder engagement and grievance redress

Output	Indicator	Baseline	Target	Methods/ Sources of information	Frequency of data collection
Participation	Percentage of invited participants who show up in meetings	Dependent on meeting	>50%	Meeting reports	On occasion
	Percentage of women/men actively engage in meetings	0	>20%	Meeting reports	On occasion
Social media	Percentage of negative responses on posts posted on social media	0	<20%	Facebook page Instagram page	Monthly
Grievance redress	Number of complaints registered	N/A	<10	Grievance database	Monthly
	Number of grievances registered by vulnerable communities (local craftswomen)	N/A	<10	Grievance database	Monthly
	Percentage of grievances resolved with a satisfactory outcome	N/A	100%	User survey	Monthly

Output	Indicator	Baseline	Target	Methods/ Sources of information	Frequency of data collection
	Percentage of recurring complaints	N/A	<20%	Grievance database	Monthly

Evaluation of stakeholder engagement and grievance redress will occur every month. PURP (CO) will prepare a summary report. This report should be part of the regular project-level operations. The recommendations and lessons learned will be included in the next round of project activities.

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10 APPENDICES

The following Appendices are presented in separate documents and are an integral part of the ESIA study.

- A. Socio-Economic Study**
- B. Noise Impact Assessment**
- C. Air Quality Baseline Report**
- D. Water Quality Baseline Report**
- E. Health, Safety and Environment Plan**
- F. Waste Management Plan**
- G. Emergency Response Plan**
- H. Risk Disaster Report**
- I. Civil Construction Report**
- J. Chance Find Procedure**
- K. Livelihood Restauration Plan**
- L. Grievance Mechanism Procedure**

The following appendices are an integral part of this report:

- M. Public Consultation Meetings**
- M. Tree Inventory Study Area**

APPENDIX L: Public Consultation Meetings

a. Scoping Meeting

Scoping Meeting	ESIA for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure	
Date	10 January 2023	
Location	Riverside / Broki	
Time	7.00 PM - 10.00 PM	
Number of Participants	65	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Resident	Mr. R. Heikerk	Vendor	He is disappointed about the starting date of the construction activities. It is taking too long.	None

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>Answer POF (Ms. G. Smith): Our study runs until June/July and after that, the entire execution of the work lies with PURP whom I will ask now to explain it to you.</p> <p>Answer PURP (Mr. A. Moredjo): We are following international guidelines and rules and this process takes time.</p> <p>Answer POF (Ms. N. del Prado): In addition, the PURP project relies on a loan from the IDB and we must comply with the requirements of the IDB. In the meantime, we also have the Environmental Framework Act, which states that when a certain activity takes place, an environmental impact analysis must first be carried out.</p>	
Government	Ms. I. Meulenberg	Archeological Service	I want to know how deep the digging activities will occur?	Follow-up meeting planned with Archeological service for 17 January 2023
			<p>Answer PURP (Mr. S. Menig): Digging will occur at a maximum depth of 1 meter, and 2 meters deep for wells. There are still adjustments to be made in the drainage plan, so the definitive result will be shared with the stakeholders in the near future.</p>	
Government	Mr. C. Burleson	Corps Police Suriname (KPS) - Traffic department	There were discussions before about changing the road network in the Waterfront design: from a two-lane to a one-lane road. We would like to know the definitive road plan because there were concerns about this from the traffic department. Changing from two lanes to one lane will NOT work. The most important person in our department is the 'chef verkeer' and he is not informed about this.	None. Follow-up by PURP on the final design

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>Answer from ILACO (Mr. R. Patandin): We have taken all objections/concerns from the stakeholders into consideration. The two lanes will remain in the definitive plan, which was communicated with the KPS. Also, the plan includes emergency lanes for ambulances etc.</p> <p>Mr. C. Burleson (KPS traffic department): If possible, maybe later or today we can get an explanation/overview of the final design.</p> <p>Answer PURP (Mr. A. Moredjo): the final design can be sent to you via the PIU.</p>	
Resident	Mr. Z. Omzigtig	Riverside	<p>The members of the Waterkant Board (Beheersraad Waterkant) are incapable (fraudulent and not communicating with us stakeholders). I propose a new board with members who are actually directly involved with everyday life and activities at the Waterkant, such as persons from KPS or the Central Bank of Suriname. Communication and cooperation with this new board should be a priority. Also, I propose a better variety of foods and drinks be sold at the Waterfront site. Currently, every food stand is selling the same goods. Some variation is desirable. I also want to ask you to look at the problem with homeless people.</p>	Information will be gathered on this topic during the socio-economic field survey

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>Answer POF (Ms. G. Smith): We want all stakeholders to work together towards a better balance, cooperation, and execution of duties in the near future for this project.</p> <p>Answer PURP (Mr. A. Moredjo): Involving the vendors has happened before, and we have always involved the stakeholders during the design. The Waterfront site's design has considered all the food stands.</p> <p>Mr. Z. Omzigtig (Riverside): I understand that, but the stakeholder representative of the vendors is influenced by the Waterkant Board.</p> <p>Addition from Mr. R. Boeddha (Beheersraad Waterkant/Ministry of Transport, Communication, and Tourism): I want to stress that there will be new board members in the Beheersraad Waterkant and this is the advice from the Ministry of TCT itself. From the Min of TCT's perspective, we want the best possible way to manage the Waterfront area.</p>	
Resident	Ms. Emanuelson	Head of the craft market organization	I want to know where the crafters will be temporarily placed during construction? If we need to move then we want to know where and for how long. We all have families to feed and this is our income so we want certainty in this matter.	Information will be gathered and this topic discussed during the socio-economic field survey
			<p>Answer POF (Ms. G. Smith): There are options that we want to discuss with you one on one, such as compensation without moving to another area, moving to another area with compensation etc. This is why it is important that you give us input on how the temporary location should look like and what will work for you. You are a vulnerable group, even more so because you are an indigenous person.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Resident	Mr. M. Satimin	Central Bank of Suriname	<p>Where will our customers and employees be able to park during the construction and operational phase of this project? We are concerned about this, because we can't send our employees on leave for 12 months (construction phase).</p> <p>Answer POF (Ms. N. del Prado): These are matters that will be taken into account during the study. Our field survey will also be carried out at the Central Bank. At the moment we do not have a definitive answer to this but we do want to look at this issue together with you. We would like to have your input on the solution.</p> <p>Answer PURP (Mr. A. Moredjo): For the design, a lot of consultations were held. The problem of parking spaces was also mentioned during these consultations. Possible solutions had already been discussed at the time. Of course, there is now a final design that can be shared. Mr. Patandin if I am wrong you can always correct me.</p> <p>Answer from ILACO (Mr. R. Patandin): A separate specific study on parking in the area was executed and submitted for review.</p> <p>Mr. M. Satimin (Central Bank of Suriname): We would really like to see this study. Also, we have never seen the final design of the Waterfront area. If we have technical questions about the design that the social team may not be able to answer, where and to whom can we speak about this? Will there be a technical team present at the interviews to answer our questions?</p> <p>Answer PURP (Mr. A. Moredjo): We can make arrangements for you to visit the PURP office to discuss your technical questions.</p>	None. Follow-up by PURP on the traffic study

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Resident	Mr. O. Smith	Board Stichting Waaggebouw	I am unaware of the purpose of the undefined green area in the final design. What is this area exactly? This area borders the Waagbuilding so we would like to know what will happen right next to us. Will the wall be removed? What will the transition from the Waag building to the Waterfront area look like?	None
			<p>Answer PURP (Mr. S. Menig): We will send clarification to you by email.</p> <p>Answer from ILACO (Mr. R. Patandin): The green area is just fictional, because it does not belong to the rehabilitation area of the Waterfront. We have never included SMS pier in the design. The area you need to look at is different from the area you design.</p> <p>Mr. Oliver Smith (Board Stichting Waaggebouw): I want to make a comment to PURP, the connection with SMS pier could also be important to consider. The walking route from the city to the Waterfront is the Keizerstraat, and that would make a nice passage.</p> <p>Answer from ILACO (Mr. R. Patandin): Two conversations were held with the SMS pier and during these, the wall has also been discussed. Access via the back of the SMS pier has also been discussed. We have made the provision that if SMS pier says yes, we want to participate, then the space has been created to provide that connection.</p>	
Resident	Mr. R. Heikerk	Vendor	This relates more to the construction of the vending unit. At the moment the vending units are completely open, so you are obliged to stay there 24 hours a day. Will the new exhibition units be built with a roller shutter?	Information will be communicated with vendors during the socio-

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			Answer POF (Ms. N. del Prado): Thank you for this, we will take it into account.	economic field survey
Resident	Ms. W. Arupa	Craft vendor	When will we be moving to a new area? We want certainty about the exact time period of our removal from the Waterfront area to a new place.	Information will be gathered and this topic discussed during the socio-economic field survey
			Answer POF (Ms. G. Smith): The construction will take about 12 months and there are options that we first need to discuss and finalize with you before moving you to another place. Ms. W. Arupa (Crafter): Is it an option to move us to the SMS pier? It's currently not being used for anything. Answer POF (Ms. G. Smith): This is a great idea and we would love more of your input on this. I also want to point out that you can see this social impact study as a protection for you.	
Resident	Ms. J. Rozenhout	SMS Pier	There is a plan to use and upgrade the SMS pier as a port facility in the near future. The plan is to get certified in order to accommodate international ships. But for this port security certificate, it is a requirement to have a safe and enclosed area. This is why the wall cannot be removed, it has an important function for us as a port facility. But we do, however, want to cooperate with your team to see for possibilities that the SMS pier can be used temporarily for the project.	Follow-up meeting planned for 17 January 2023
			Answer POF (Ms. N. del Prado): We will include this in the study and will certainly pay you a visit.	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Private Sector	Mr. M. Schaap	AKMOS	Is there a larger, more holistic plan for managing all tourist areas in the inner city? Also, I would suggest looking at the safety and parking in this project.	None
			Answer PURP (Mr. A. Moredjo): I invite you to discuss this further with us.	
Resident	Mr. F. Arupa	Craft vendor	In the final design, I don't see any provisions for security in the Waterfront area. This is a priority for us. Also, I see difficulty when it comes to moving us as crafters from our current place. First, we are concerned about a new place: it has to be near this area or in any case in the direct vicinity of walking tourists. Secondly, the reality in Suriname is that once we are moved, we are concerned that it will be permanent and not temporary as promised. We don't have trust in the process.	Information will be gathered and this topic discussed during the socio-economic field survey
			Answer (POF) Ms. G. Smith: Thank you, we'll include this information in the study. It surely is about having trust in the process.	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Regulatory Agencies	Mr. R. Hindori	Telesur - design network	<p>I see that the study is more focused on the human and environmental factors and their impacts. But I think the whole project will also have an impact on the utilities. Has anyone looked into this?</p> <p>We would like to be involved in the final design of the project because we are concerned about the impact on the residents and businesses. We never saw the final design and this comes as a surprise to us.</p> <p>Answer POF (Ms. N. del Prado): The final design will also be shared with you through the PIU.</p> <p>Answer from ILACO (Mr. R. Patandin): The final design has taken into account all utilities.</p>	None.
Residents	Ms. C. Lie Wah Hing	VSH Apartments	<p>We would really like to see the final design of the area, because we have never seen any final drawing and cannot assess what we can expect. We are concerned about parking and utilities for our customers. Also, is there a possibility of doing something about the small curve in the road in front of the DNA? Many accidents have occurred during nightly hours because people drive too fast coming out of the turn. Is there a solution to this?</p> <p>Also, we are concerned about noise nuisance during construction.</p> <p>Is there a solution for homeless people? We are currently experiencing nuisance from them.</p> <p>Answer POF (Ms. N. del Prado): I want to inform you that the study will be done based on the design provided by PURP. As I understand not everyone has had access to the final design and that will need to be addressed.</p>	None. Follow-up by PURP on the final design

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Non-Government and Civil Society Organizations	Ms. D. Oberg	Tropenbos Suriname	I was wondering if all of the historical trees will be removed from the Waterfront area in this project? Will they be replaced? And what type of trees will be planted in the new design?	Specifications about trees updated
			Answer PURP (Mr. A. Moredjo): A large part of the almond trees will remain but 1 will have to be removed (near the gentle curve) for safety reasons. We are not yet clear about what type of trees exactly will be planted and we are in the process of making a final list.	
Government	Mr. C. Burleson	Corps Police Suriname (KPS) - Traffic department	When was the final design presentation held?	None
			Answer from ILACO (Mr. R. Patandin): last year around April (second quarter).	
Residents	Ms. C. Lie Wah Hing	VSH Apartments	Do you think it is possible to hold a session with, among others, the local residents, and companies in the area for a presentation of the final design?	Update stakeholder engagement plan
			Answer PURP (Mr. A. Moredjo): We will discuss this within the PIU. We are open if you want to discuss something. Answer POF (Ms. G. Smith): She advises PURP to hold a session for a clear presentation of the final design to the stakeholders.	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Residents	Mr. B. Kisoensingh	Central Bank of Suriname - Safety Department	Do you think the safety of the Central Bank may become at risk in this project? Have you implemented any safety measures? It should not become a burden for the Bank.	Follow-up appointment with Central Bank of Suriname
			Answer POF (Ms. G. Smith): We will certainly include this in the study.	
Government	Ms. M. Ritfeld	Ministry of Justice and Police	I would like to advise you to send the final design to all stakeholders explaining all the details. There is no consensus on the final plan and it is important to have support from everyone in order to have success with this project.	Update stakeholder engagement plan

	Participant	Affiliation		Participant	Affiliation
1	Joyce Koffi-Rozenhout	NV. SMS	34	Armand Moredjo	PIU-PURP
2	Ravi Patandin	NV. Ilaco	35	Armand Amatali	POF
3	Zawadi Omzigtig	Riverside	36	Martha Irokromo	IRO
4	Arvin Omzigtig	Riverside	37	Krishu Angoelal	Ministry of Public Works
5	Kajol Jainath	Ministry Tourism	38	Nicole Pieters	Central Bank of Suriname

	Participant	Affiliation		Participant	Affiliation
6	Stephen Fokké	SGES	39	Melvin Satimin	Central Bank of Suriname
7	Satifa Menig	PIU-PURP	40	Vanessa Goedschalk	Fernandes
8	Hanna van Petten	Stg. Surinaams Museum	41	Jerry Koornaar	Sunecon
9	Masdee Habibur	Stg. Surinaams Museum	42	Ruth Austerlitz	Telesur
10	Giovanni Simons	NV. SMS	43	Rajin Hindori	Telesur
11	Rabin Boeddha	Ministry Tourism	44	Kenneth Verdies	Telesur
12	Marian Sabajo	Craftmarket	45	Christiaan Burleson	Corps Police – Traffic
13	Maureen Nahar	Craftmarket	46	Reguillo Tirtojoso	Corps Police – Traffic
14	Roxane Rozenblad	Craftmarket	47	Baal Kisoensingh	Central Bank of Suriname
15	Ramon Kadirbaks	Ministry Environment	48	Renisha Ramkhelawan	SWM – Planning and Research
16	Patricia Djoe	Craftmarket	49	Ryan Lewis	District Council
17	Mildred Waarheid	Craftmarket	50	Marcia Sjobin	Craftmarket
18	Martha Sabajo	Craftmarket	51	Martijn Schaap	AKMOS

	Participant	Affiliation		Participant	Affiliation
19	Charita Lie Wah Hing	VSH	52	Björn Welzijn	NV. Ilaco
20	Clifton Kuik	VSH	53	Amar Nakchedi	NV. Ilaco
21	Frank van Doorn	Waterkant Beheersraad	54	Edo Doorzon	Broki
22	Robby Heikerk	Food stand	55	Kathleen Toby	Craftmarket
23	Louise Heikeirk	Food stand	56	Denise Muler	MI-GLIS
24	Marita Ritfeld	Ministry Justice and Police	57	Lloyd Playfair	Road Authority
25	Faith Pinas	Waterkant Beheersraad	58	Davita Obergh	Tropenbos Suriname
26	Orkin Crawford	Telesur	59	Oliver Smith	Stg. Waaggebouw
27	Mohammad Abdoelbasier	Waterkant Beheersraad	60	Ismael Damys	MI-GLIS
28	Pamela Karwafodi	Craftmarket	61	Isle Pradong	Craftmarket
29	Wilma Arupa	Craftmarket	62	Bryan Simons	Craftmarket
30	Jo-ann Woodruff	Craftmarket	63	Errol Venoaks	Waterkant beheersraad
31	Virangni Soekhoe	SWM	64	Irene Meulenberg	Archeological Dpt

	Participant	Affiliation		Participant	Affiliation
32	Carawan Bell	District Council	65	Theo Wimpel	Uncle Ray
33	Ferdinand Arupa	Craftmarket			

b. Meetings with Key-Stakeholders

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Project Implementors and Consultants	Mr. Armand Moredjo	Paramaribo Urban Rehabilitation Program (PURP)	Project Implementation Unit	17 November 2022	PURP Office, Wagenwegstraat 64 boven	<ul style="list-style-type: none"> - Information about how POF deliverable -Scoping Report - will be included into the bidding document - Supervision of construction activities will be conducted by Ilaco NV. - Timeline is extremely important for building process to start in July 2023 	Timeline for deliverables will be strictly followed
Project Implementors and Consultants	Ms. Natasha Deul	Paramaribo Urban Rehabilitation Program (PURP)	Project Implementation Unit	17 November 2022	PURP Office, Wagenwegstraat 64 boven	<ul style="list-style-type: none"> - Introduction of POF with Beheersraad Waterkant - Method of consultation to ensure independency for consultant after introduction by DC and Mr. van Doorn (standholders representative) 	Stakeholder consultations will commence with support of Beheersraad Waterkant after Scoping Report is approved by NIMOS
Government	Mr. Rabin Boedha	Ministry of Transport, Communication and Tourism	Director, Beheersraad Waterkant	17 November 2022	PURP Office, Wagenwegstraat 64 boven	<ul style="list-style-type: none"> - Waterkant Beheersraad has existed for more than 20 years, however, articles of incorporation (statuten) have never been submitted for approval. - Goal is to have order and peace at the Waterfront - New management was recently 	Information about the Waterkant Beheersraad will be considered for the report on

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Government	Mr. Sohaib Asad	Ministry of Regional Development and Sport	Cabinet District Commissioner Paramaribo North-East, Beheersraad Waterkant	17 November 2022	PURP Office, Wagenwegstraat 64 boven	<p>established (jan. 2022) and started with registration at Chamber of Commerce (KKF)</p> <ul style="list-style-type: none"> - Formally meets once per month - Recently implemented project where 50 homeless people were removed and placed in Wanica hospital - Highlighted the importance of the two concept Tourism Acts. 	improving the Waterkant Beheersraad

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Government	Mr. Rabin Boedhha	Ministry of Transport, Communication and Tourism	Director	21 November 2022	District Commissariat Paramaribo North-East, Grote Combe weg 3	<ul style="list-style-type: none"> - The Tourism Act has not yet been approved. On November 22, 2022, the Tourism Act and the Suriname Tourism Authority draft Act will be discussed within the DNA. A proposal has come from the DC to include tourism police in the tourism legislation (this is not explicitly included in the law submitted) . - The current vendors (11) having a business in the 12 units, have a provisional permit that is valid for 6 months. The DC has not renewed the permit because of the uncertainty of when exactly the redevelopment of the Waterkant will take place. As prescribed by rules, the vendor who currently occupies two units will have the availability of only one unit after the redevelopment. - There is not yet an alternative location in the picture for when the exhibitors will temporarily be removed. - The DC wondered how these people should be compensated. - The Indigenous women who are now on location are also required to have a permit, but a tolerated policy is applied. - With regard to the permits that must be granted for the redevelopment of the Waterkant: Ministry of Public Works when it comes to infrastructure, the DC grants the Nuisance Act permit and permits for public entertainment and food/beverage outlets. 	The insights of the DC will be incorporated in stakeholder engagement plan (as part of the Scoping Report) and the livelihood restoration plan

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<ul style="list-style-type: none"> - There is no fixed procedure with regard to the complaints handling system. According to the organizational chart, the Citizen Information Center (BIC) department is the service department. This department hears complaints and issues permits. The complaint can be passed on by telephone or physically to the department, which will forward it to the relevant authority if it doesn't fall under the DC's jurisprudence. - Noise nuisance is a recurring complaint from the families living by the Waterkant. - Challenges for the Management Board of the Waterkant to perform their work adequately are vagrants, crime, safety, drugs and dependence on other institutions. Regarding the vagrants, they are looking at Wanica hospital and Andre Kamperveen stadium as option keep them away from the Waterfront. <p>Contact persons for food and craft vendors: Mrs. Leysner and Mr. Van doorn.</p>	

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Government	Mr. Ricardo Bhola	Ministry of Regional Development and Sport	District Commissioner Paramaribo North-East, Beheersraad Waterkant	21 November 2022	District Commissariat Paramaribo North-East, Grote Combe weg 3	<p>-Has executed clean-up activities at waterkant site: tree cutting, removal of homeless people, renewed lever, leveled the pavement, removed large objects from the area (e.g. statues). He keeps renewing the vendors permits for 6 months until its clear where and when they have to be removed from the area. He has handled complaints from residents about noise from the Waterkant area. He proposes a tourist police on site (such as in Santo Domingo) to oversee the safety and code of conducts . of the Waterkant area. He proposed to train people from his department to work as tourist police. He wants an overarching board for managing public spaces throughout the city (with a clear business plan) instead of separate organizations which take up too many people and too difficult to plan meetings.</p> <p>-He does the communication with vendors on site, does site visits</p>	
Government	Mr. Sohaib Asad	Ministry of Regional Development and Sport	Cabinet District Commissioner Paramaribo North-East	21 November 2022	District Commissariat Paramaribo North-East, Grote Combe weg 3		
Residents	Mr. Frank van Doorn	Standholders Waterkant	Representative	21 November 2022	District Commissariat Paramaribo North-East, Grote Combe weg 3		

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Government	Mr. Stephen Fokke	Suriname Built Heritage Foundation (SGES)	Director	1 December 2022	SGES Office Paramaribo, Zeelandiaweg 7	<ul style="list-style-type: none"> - The Min of Public Works has a special building commission that handles building licenses in heritage areas (core area) as well as in the two bufferzones (Combe area and Nassylaan area). -The building design will be examined against the special building requirements (architecture, form and shape, scale and size, height, dimensions). The SGES has an architect in this commission for direct communication. The SGES was the initiator for drafting the special building requirements. By law, the Min of OWC is ultimately responsible for all heritage sites and monuments in Suriname. -The SGES has no official legal status, but is unofficially responsible as site management authority. They are unofficially responsible for overseeing compliance with WH convention operational guidelines. However they have no power to take action when laws are violated, for this they depend on local authorities such as the police department. - The SGES is not mentioned in the monument law. The monument law itself is sufficient, the problem is with the abidance: despite violations there is no action from the police. - The design of the waterfront area is 	The insights of SGES will be incorporated in the ESIA. Follow up with PURP to know if the design is final or not.

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>not yet final; some changes will occur in the design based on the ICOMOS feedback (for more information ask Ms. Natasha Deul). The feedback had to do with paving patterns.</p> <p>Reconstructing or copying of the original WH object/building is not permitted when it has already been demolished because this will affect its authenticity.</p> <ul style="list-style-type: none"> - The authenticity of the Waterfront area: the almond trees (there is uncertainty about their origin and whether they may be removed or not). <p>Impacts of the project: increased traffic, traffic jams. The project has also a positive impact on the area because it becomes almost abandoned after working hours. however the driving speed of people when coming out of the curve may be dangerous for foot-traffic.</p> <ul style="list-style-type: none"> - The impact of the project on the Outstanding Universal Value (OUV) of the Waterfront will be negligible: This project is a rehabilitation of the existing infrastructure; no drastic changes will be made that will hamper or affect the view of the river. The OUV of this area: the view on the river, the trees, the historic buildings across the street, the history of the area as old harbor, the location of the area in the core heritage area. The area is traditionally (culturally) the center for activity 	

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>especially during holidays, with this project it can increase the value and quality of the inner city as a whole: it connects to other tourist areas such as Fort Zeelandia and the Torarica area. The "Marine trap" is momentarily in a deplorable state and even dangerous. Cruises (mi gudu) do not departure from here anymore.</p>	

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Government	Ms. Salina Hassan	Ministry of Public Works, Public Green Department		5 December 2022	Office Public Green Department, Johannes Mungrastraat	<p>-The dept. has no plan in place to regularly maintain trees, vegetation in public areas incl. Waterkant area. They operate on request. Before 2010 they would regularly conduct inspections of trees. In addition, the dept. lacks the necessary equipment and material.</p> <p>- In accordance with the law, the Ministry of Public Works (the State) is responsible for the maintenance of green areas. This has been laid down in the State Order Departments Task Description.</p> <p>Currently the dept. endeavors to establish cooperation with the Dutch partners [tree experts] and work towards structural maintenance and inspection of trees.</p> <p>- Some of the trees in the study area include amandelbomen, obe palm, mahony tree, neem tree, mango tree, flamboyant. A more specific inventory will be conducted and shared with POF.</p> <p>- Almost all of the trees have existed in the area for a long time ago.</p> <p>- The dept. does not really have a policy or guideline for the planting of trees and plants. So far, mainly ornamental plants have been planted in public spaces. However, Mr Angoelal strongly recommends that the trees <amandelbomen and others> should not be removed in the new design. These trees have been there</p>	The information provided by the Public Green Department will be further discussed with PURP in terms of capacity building for management and monitoring of the site

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>for a long time and are characteristic of the Waterkant area. They prefer to keep them and if they were to be removed they should be replaced with the same plant species.</p> <p>- In the new design, the surface area around the current trees should be carefully considered and kept free. There must also be consultation with EBS, SWM with regard to the installed underground cables or pipelines.</p>	

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	Mr. Krish Angoelal	Ministry of Public Works, Public Green Department		5 December 2022	Office Public Green Department, Johannes Mungrastraat	- The Dept. has two schedules regarding waste management & collection in the inner city. 1) Litter and leaves on the street is collected (raking) by a team, twice per day (morning and evening), and 2) Emptying of waste bins occurs daily. In case of special public events, the DC asks the Ministry to cooperate with cleaning, normally this occurs the next day. After the event. Normally, rules for waste management are included in the permit issued by the DC.	
	Ms. Sakia Chote	Ministry of Public Works, Public Green Department		5 December 2022	Office Public Green Department, Johannes Mungrastraat		
Government	Ms. Irene Meulenberg	Ministry of Education, Science and Culture	Archeological Department	21 December 2022	Office Directorate Culture, Grote Combeweg 23	-The Dept. believes (for 100%) to find archeological remains in the study site based on research and experience. It is imperative archeological research should be conducted before construction work starts. Information is necessary about how deep in the ground excavation will take place	The meeting notes have been shared with PURP for further decisions
						-Archeological research starts with archeological historical desk research, after which actual excavations should occur. The latter may include creating pits and/or removal and sieving of dirt	
						-The procedure when archeological finds are present is written in the Monumentenwet, which prescribes to inform the District Commissioner and the Ministry of Education, Science and Culture. Important to note is that the Archeological dept. should be informed immediately after the finding.	

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>-Experience with finding during the construction of the Parliament Building and Sociale Zaken building have led the Archeological dept to change course. Two options were discussed. Option 1: Conduct an archeological study before construction starts (most favorable for the preservation of cultural heritage). Option 2: Stop the work during construction when there are findings, and let the archeological team work solely on-site, and after they are finished, continue the work. Option 2 includes i) training of construction personnel before construction starts which the Archeological dept. is willing to conduct, and ii) develop robust change finds procedure</p> <p>-The Dept. also will provide information on literature and resources necessary for the ESIA</p>	

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Mr. Humphrey Omzigtig	Riverside/food stand	7 January 2023	7 January 2023	Riverside, Waterkant	<p>-Mr. Omzichtig was one of the first representatives of local vendors on the board of the Waterfront Management Council (WBR). He explained that each of the standholders and restaurants pays a fee to the Waterfront management, and that this should be used for general management (such as permanent security guard). However, this is not happening.</p> <p>- The power balance within the WBR has been discussed since 2013. It is believed there are too many high-level Government officials on board and that the local vendors are not well represented. An official request signed by local vendors was sent in 2013 but has not been addressed (this was shared with the team).</p> <p>-A few months ago, a long-term local vendor selling Javanese food was suddenly replaced by an Indian man which set a bad tone with the vendors. According to Mr. Omzichtig, a bribe has been paid to the DC.</p> <p>- The "beschikking" of the beheersraad Waterkant was shared showing how the WBR functions under the Government hierarchy.</p> <p>- Regulations are available for the local vendors and this will be shared.</p>	The insights of Mr. Omzigtig will be included in the socio-economic field survey

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Mr. Robin Skeffers	Food selling container	14 January 2023	14 January 2023	Waterkant	<p>-Mr. Scheppers has a license to sell food and drinks from his container (behind the restrooms). Mr. Scheppers was relocated before from the bus terminal in relationship with efforts to beautify the city. The DC has told him to move and find a new place (under the bridge or in Leonsberg) because he will not be accommodated in the new setting. He has a license for 3 years that started on 24 June 2019. The license is in his wife's name and has been shared with the team.</p> <p>- Mr. Scheppers also explained that many of the food stalls are not open regularly, usually more at the weekend.</p> <p>- Mr. Scheppers explained that the owner of the uncle ray shop sleeps in the restaurant (room behind the counter) and then washes in the restroom.</p>	The insights of Mr. Scheppers will be included in the socio-economic field survey

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Ms. Koffi Rozenhout (Director), Mr. Giovanni Simons (Operations Manager), Ms. Morsen (Financial Manager)	Suriname Shipping Company (SMS)	Director	17 January 2023	SMS office, Waterkant	<ul style="list-style-type: none"> -The SMS pier will be dedicated to tourism and recreation. There are 7 units downstairs for crafters and upstairs units are designated for horeca. - Other functional spaces are: an area for parties, a mini museum and a tourism information point - The area has deteriorated since 2017, yet, there are new plans to renovate the shipping dock - The new shipping dock will be renovated in concrete and steel and this project is now being prepared in collaboration with the Maritime Authority Suriname (MAS). The main idea is to provide a temporary dock for ships that are unable to dock in Nieuwe Haven due to the tide. - The SMS dock will become ISPS (International Standard for Port Security) certified, which requires fencing the area and having no in-out traffic of people. - The ultimate plan is for the area to become a cruise terminal. - The SMS chooses shipping above tourism. - The SMS is unaware of plans to create a 5m opening in the fence with the Waterkant. This would go against the plans of the SMS - The SMS has enough space to house the crafters in case they need shelter 	The insights will be included in the baseline description

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						during the construction of the Waterfront	
Project Implementors and Consultants	Mr. Armand Moredjo	Paramaribo Urban Rehabilitation Program (PURP)	Project Implementation Unit	17 January 2023	PURP Office, Wagenwegstraat 64 boven	- Remarkable changes in the final drawings have been made: the SMS pier and waterfront are “connected” by removing a 5-metre-wide piece from the wall. This will take place approximately in the middle of the wall near/behind the craft market. The reason for this is the integration of the SMS with the waterfront project	The drawings are available and will be shared with the stakeholders. Parking during construction will be

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>-The road at the flag square will be canceled and will no longer be a street</p> <p>- Three crossings will be raised see drawing: at the slight bend - DNA building, in front of CBvS and in front of Waaggebouw). Will act as a plateau (threshold-like effect)</p> <p>-Parking for central bank personnel will take place in the Mirandastraat (light green colored areas on the drawing). Only crafters/exhibitors will be allowed to park along the waterfront. There is NO plan for parking during the construction phase: this should resolve itself over time. Please note that the exhibitors will no longer have the possibility to park behind their stables, but along the street (also applies for loading and unloading of goods).</p> <p>-Regarding the homeless people problem, there is a study going on by a consultant on the homeless . Based on the results of this study, solution models will be examined.</p> <p>- PURP previously had a meeting with the archaeological service: it has been decided to carry out the chance find procedure under the supervision of the archaeological service, because Ms. Meulenberg has indicated that they do not have the manpower to start and carry out the research now.</p>	discussed during the interviews

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>- There is a request from PURP to meet with the team twice weekly, either via zoom, about our progress and issues in the field.</p> <p>- After a long discussion we received the final drawings, which can be shared with the stakeholders</p>	
Residents	Mr.Wimpel, also known as uncle R.	Food stand, toilet unit		21 January 2023	Waterkant	Mr. Wimpel, now 70 years old, and now under dialysis, has been active at the waterfront since he was 26 years old of Age. Since COVID and the start of Waka pasi, sales have reduced tremendously, which was the reason why he had to terminate the work relationships with all his employees. Mr Wimpel uses one of the units to sleep in and the other one to sell products. Among other reasons, he sleeps there because of the high price of gasoline to go to his home and back, without certainty that he will sell anything for that day. Uncle R has a permit to set up a tent next to the government premises (expansion of the kitchen and set up a platform for hosting parties).	This situation will be further explored and included in the LRP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Mr. Bryan, Ms. C. Aroepa	Craftmarket		14th January 2023	Waterkant	-She would feel more secure with a signed contract from both the crafters and the PURP/DC stating that all crafters shall be placed back at the waterkant after construction. She feels that without any proof that the crafters are vulnerable. She also requests that the crafters are not separately placed after construction because being placed together as a group has economic benefits for them as well as they feel safer together since they are women (ms. Aroepa). A website with the final designs and explanation would work really well for me (mr. Bryan). My previous experience with relocation has left a trauma: when the time came for the crafters to move back to their spot, her name was not on the list and she could not find a spot. Suddenly there was a new list with other names and she was left to find somewhere else (ms. C. Aroepa)	This situation will be further explored and included in the LRP

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Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Mrs. Maureen Nahar, Chung Kee's foodstand	Foodstand		20th January 2023	Waterkant	She has some requests/ideas: the foodstand is currently too small and a 5x5 meter per foodstand would work better. She prefers table seating around the foodstand so that her customers can order and sit in close proximity. Currently everyone working at the Waterkant makes use of the public toilet and it costs SRD10 each time. This is costly and also long lines during public holidays which makes it difficult to run back and forth. A separate toilet for the foodstand owners would work better for them. What will happen to our "dievenijzer" around our foodstand? we will spend money on this and we expect that this will either be put back or replaced by the construction company.	This information is sent to PURP for further handling of final design
Regulatory Agencies	Telesur	Telecommunication company		24 January 2023	PURP Office, Wagenwegstraat 64 boven	-Purp indicated that the height/depth was not indicated in the data supplied by telesur at the time. According to Telesur, that was the case. There was some confusion in the conversation.	This information will be considered in the ESIA and ESMMP
						- Telesur indicates that experience has shown that the depth is more often than initially because layers are added during asphaltting of which they are often unaware. For example, recently experienced that their cables were 1.90 m deep.	
						- Purp: In the drainage plan the new pipes vary in diameter from 15-20cm and depth from 50cm -1.5m	

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>The tender includes that the contractor must contact Telesur and other utility companies. The aim is to sign the contract contractor in July.</p> <p>- Current cabling is copper and about 50-60 years old. In the event of damage, it will no longer be possible to install copper, but fiberglass.</p> <p>- Purp has asked how this can be prevented as much as possible. Telesur says through test trenches / manually and not with machines.</p> <p>- Telesur has proposed laying their cables immediately during the construction phase. This is not included in the budget of telesur, possibly. only in 5 years. Purp has indicated that there is no budget for, among other things, replacing utilities or possibly. in case of damage within the project and proposes to send a formal letter to Dept. Culture.</p> <p>- Telesur asks that all utility companies sit together and discuss the approach, just like with van het Hogerhuysproject.</p> <p>Agreed to:</p> <p>- Telesur send letter to Afd. Culture Minus education concerns further approach/ possibly. budget</p> <p>- Purp sends drainage plan/sewerage to Telesur so that it can be checked whether Telesur is above/below</p> <p>- Telesur will contact SWM and EBS itself</p>	

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Regulatory agencies	Telesur : Mr. Hindori and Ms. Madhan	Telecommunication company		26th January 2023	Telesur Headoffice Nieuwe Haven	<p>-The network users in the area are divided into two main groups: individuals and businesses. In case of complaints or outages with the telecommunication network, individuals can call the main helpdesk but businesses (big clients) contact a special designated account manager in case of outages. -There are a number of vulnerable clients such as the Central Bank, lawyer offices, government offices etc. dependent on the network. In case of damage to the cables this will cause a lot of trouble for them. - Telesur has the capacity to designate a project manager for this project who can work in close collaboration with the construction team. -There is a request from Telesur concerning the construction phase: to place piping for future cables (by telesur) once the construction starts. - The safe city camera system is dependent on the telesur network. in case of construction activities the cameras may malfunction. This must be communicated to the DNV or responsible government organization. A safe city camera is currently placed on the roadside from the waterkant across vlaggenplein (nearby the monument).</p>	This information is sent to PURP for further handling of final design, and will be considered in the ESIA and ESMMP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Mr. Patrick Healy	Resident		27th January 2023	VSH	VSH Have 7 apartments, that they are renting, of which 3 are currently occupied. in addition to this, they are also renting a building on the corner of the kromme elleboog str and oude hofstr. for VSH and especially Patrick Healy who lives at the waterfront, parking is the most important issue, Purp has to look at it. Patrick suggests PURP to create the possibility for them to reach their home through the Lim a po straat	This information was included in the ESIA
Residents	Mr.Sewnath	Foodstand		27th January 2023	Waterkant	Mr.Sewnath has been active in this area for 1.5 years now. He proposes PURP make changes to the currently proposed design of the food stands in such a way that stakeholders can host their clients, and play their music without disturbing each other.	This information was included in the ESIA

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Business	Mr. Satimin and team	Central Bank of Suriname		27th January 2023	Waterkant	CBvS' biggest concern is with regard to security during the construction phase. The bank needs to be accessible to armored cash transport vehicles and certain personnel at all times. There are also customers who take out cash money and who cannot walk too far distances to their parked cars because of safety. The other bank personnel, however, will be able to park further distances. The bank receives 20ft and 40ft containers that need to load/unload. The 40ft containers are only able to unload/load at the main entrance, because of their size. The 20ft containers can come in through the second entrance around the corner if necessary. -In case of electricity or telecommunication error during construction phase the Bank has a generator as back-up, but telecommunication is very important and cannot fall out. Telesur needs to have a plan for how to provide them in case this happens. -At present the area in front of the Bank has flooding problems during rainfall. They hope this will be solved with the new sewage system. -The Bank receives a client peak at the end of the month (when people receive their salary) and when land decisions ("grondbeschikkingen") are issued. Peak hours of traffic during the day (mon-fri) are between 14.30 and 15.00.	This information was included in the LRP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Business	Mr. Heikerk	Foodstand Brasil 2000		27th January 2023	Waterkant	<p>Mr. Heikerk has the following concerns:- how will the foodstands lock? through rolling shutters or other? -he wants to know if the foodstands will have the possibility to place modern heated/cooled display cabinets with 110 AND 220V? these display cabinets are placed on the ground and not on an elevated counter (which is the case at present). This way, it's more hygienic and people will be able to sell baked goods as well. 220V is a must in each foodstand. -The seating area in the final design will cause many conflicts among foodstand owners. because the seating area will be placed at the last foodstand only, the last foodstand will be favored by customers. Also, who will be responsible for maintaining and cleaning the seating area? It's better to place seating areas around each foodstand so it's fairer and each foodstand cleans and maintains their own seating area. -With regard to garbage collection: there are currently no set days/times for garbage collection and often this garbage container is full. -In case of compensation: will my personnel also be compensated? Will my items in the foodstand be stored for me in case of compensation?</p>	The questions were submitted to PURP. Answers were provided to stakeholders during the meetings about the LRP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Regulatory agencies	Ms. Soekhoe	Suriname Waterleiding Maatschappij (SWM)		27th January 2023	SWM headoffice WK Plein	The current water piping at the waterfront consist of asbestos piping. These need to be replaced by new piping by a DTA expert in a safe manner. The area receives water from two pumping stations : Blauwgrond and WK plein. In case of excavation deeper than 2 meters, the SWM must be contacted, this may cause damage to piping.	This information was included in the ESIA
Residents	Mr. Clifton Kuik	VSH United		3 February 2023	POF Uptake for Feedback and Grievance Mechanism	VSH United proposed a solution for the parking situation during the construction phase. 4 options were presented which required construction activities. The residents from the Waterfront are worried about their clients and safety when parking further away	This information was included in the ESIA
Residents	Stephen Fokke	Suriname Built Heritage Foundation (SGES)	Director	8 February 2023	POF Uptake for Feedback and Grievance Mechanism	The proposed parking solution of VSH was discussed with Stephen Fokke to assess the impact on cultural heritage. Mr. Fokke gave some advice to POF	This information was included in the ESIA
Residents	Food Vendors			21 February 2023	POF project office at SMS pier	<p>Project affected persons (PAPs) were informed about the project impacts on them, and the proposed livelihood restoration plan: eligibility and information disclosure and engagement</p> <p>PAPs were asked to give first input on preliminary livelihood restoration plan (LRP) and had the following concerns:</p>	This information was included in the LRP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						<p>The issue of uneven power within the Waterkant Beheersraad (WBR), especially the little power food vendors currently possess, was raised</p> <p>Food vendors are concerned about having to pay rent during relocation or compensation. This issue was raised because they were charged rent during the COVID epidemic while they were restricted to sell food at the Waterkant location</p> <p>Food vendors like to engage together with the crafters during negotiations about the relocation or compensation</p> <p>The period to prepare for relocation/compensation should be longer. The food vendors suggested 60 days</p> <p>One food vendor wanted to know what the average business income is</p> <p>The DC terminated all lease agreements pending the redevelopment of the Waterfront and this was officially communicated with the vendors. Only two people have lease agreements and one application is pending. Because of this, food vendors' license can't be verified and this eligibility criteria should be lifted</p> <p>Two vendors have more than one food stand. And there is one vendor with a container. These vendors asked how this will be handled and the amount of space they are eligible for in the new location</p>	

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						The food vendors suggest having a financial injection for re-starting their businesses after relocation/compensation	
Residents	Kanhai Law Firm			22 February 2023	POF Uptake for Feedback and Grievance Mechanism	Kanhai Law Firm wants to be removed from the stakeholder list for the ESIA. POF sent a letter to them confirm this removal.	This information was included in the ESIA
Residents	Crafters			22 February 2023	POF project office at SMS pier	PAPs were informed about the project impacts on them, and the proposed livelihood restoration plan: eligibility and information disclosure and engagement	This information was included in the LRP
						PAPs were asked to give first input on preliminary livelihood restoration plan (LRP) and had the following concerns:	
						The DC is very difficult to work with. We have been trying numerous ways to get in touch with him and get things done. How will relocation and/or compensation work when working with him is so difficult?	
						The duration of the relocation should be clearly stated in the contract	
						Crafter should have space to come back to after they have relocated (recurring concern)	
						Compensation should be brought to a stable value (U\$)	

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
						In case of compensation, how sure is it to get compensation? We are still waiting on compensation from the Covid period	
Residents	Ms. Maureen Nahar	Foodstand		16 March 2023	POF Uptake for Feedback and Grievance Mechanism	Ms. Nahar wanted to go and see the units for relocation at the SMS pier. POF informed Ms. Nahar that a decision about relocation has not been made yet, and that this decision lies with PURP/Government. She also wanted to know if there are additional units available in the new setting at the Waterfront	This information was submitted to PURP
Residents	Mr. Heikerk	Foodstand		20 March 2023	POF Uptake for Feedback and Grievance Mechanism	Mr. Heikerk has two licenses: one in his own name and one in his daughters name. One license is currently operational. Because the daughter cannot engage in the vending business, she wants to transfer the license to a third party. The District Commissioner has informed MR. Heikerk to get a letter from PURP. After requesting PURP who denied such a letter, Mr. Heikerk contacted POF to request the letter. POF informed Mr. Heikerk that they are the consultants and not giving out licenses, which is a Government tasks.	This information was submitted to PURP
Residents	Ms. Sabajo-Emanuelsson	Representative of crafters		21 March 2023	POF Uptake for Feedback and Grievance Mechanism	Ms. Sabajo requested to have the relocation planned for after July 1st, 2023 making it possible for the crafters to sell during the keti-koti holiday. This request was transferred to PURP.	This information was submitted to PURP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Mr. Giovanni Simons	SMS Pier		21 March 2023	POF Uptake for Feedback and Grievance Mechanism	Mr. Simons want to talk with PURP to make a business arrangement for the venue related to the relocation of PAPs. Also because there are other people interested in renting this area. POF explained they are the consultant and that the decisions will be made by PURP/Government	This information was submitted to PURP
Project Implementors and Consultants	Mr. Armand Moredjo and team	Paramaribo Urban Rehabilitation Program (PURP)	Project Implementation Unit	22 March 2023	Zoom meeting	PURP explained that the tender for the Waterfront will be open for the next 6 weeks and that the team is now preparing to close the area and relocating the existing vendors. POF generally explained the livelihood restoration plan including the budget. POF will submit the LRP early by 23 March 2023 for PURP to review. A follow up appointment will be made after review.	None
Residents	Mr. Clifton Kuik	VSH United		23 March 2023	POF Uptake for Feedback and Grievance Mechanism	Mr. Kuik asked for the answer to the parking proposal he submitted. POF explained that the proposal was rejected because there are 2 monumental buildings that they propose to remove which is prohibited. POF also explained that a traffic plan will be proposed in the ESIA, however, this is not part of the assignment.	This information was submitted to PURP
						Mr. Kuik also inquired about the exact date of the start of construction. POF conveyed that the exact date is unknown, yet the announcement for tender would be seen in the next weeks in the newspaper	This information was submitted to PURP

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Unknown				28 March 2023	POF Uptake for Feedback and Grievance Mechanism	An unknown person submitted an idea for the Old Flag Triangle to construct a fountain. A picture was also included	This information was submitted to PURP
Residents	Mr. Giovanni Simons	SMS Pier		29 March 2023	POF Uptake for Feedback and Grievance Mechanism	Mr. Simons informed POF that they will have a meeting with a client today about renting the SMS pier. He wanted to know what the status was. POF explained that the decision lies with PURP and they will again contact PURP about this urgent issue. A Whatsapp message was sent to Mr. Armand Moredjo (PURP) to stress the urgency of the matter	This information was submitted to PURP
Residents	Ms. Findlay			29 March 2023	POF Uptake for Feedback and Grievance Mechanism	Ms. Findlay inquired when she would learn about the impacts. POF informed here that we are still busy with the impact assessment and this will be presented on May 16th 2023. She will follow up with a request for a meeting	This information was submitted to PURP
Residents	Mr. Doorzon	Broki		19 April 2023	POF Uptake for Feedback and Grievance Mechanism	Mr. Doorzon want to maintain the mangroves in front of his terrain, also as a tourist attraction. He is also open to planting more mangroves in the area	Included in the ESIA

STAKEHOLDER CONSULTATION MATRIX							
Stakeholder Group	Stakeholder Name	Affiliation		Date of Consultation	Location	Main Discussion Points	Consideration in the ESIA
Residents	Ms. Findlay			19 April 2023	POF Uptake for Feedback and Grievance Mechanism	Ms. Findlay wanted to look at the project plans (pictures) and discuss some concerns, including: - late night parties are loud and also facilitated by food vendors and crafters around national holidays/festivities, - Bestuursraad Waterkant isn't functional and can't resolve ongoing problems, - parking situation in the new plan: will there be small poles to prevent people from parking freely?, - the placebos will become a shelter for homeless people, - loud Hindustani music coming from Hindustani vendor. Ms. Findlay has several videos showing the noise nuisance and parking situation along the Waterfront. She will send these movies and POF will send them to DC and PURP. Ms. Findlay has spoken with the Minister Jubitana about the issues at the Waterfront. POF also advised submitting grievances about hinder at NIMOS.	Included in the ESIA

c. Meeting Presentation ESIA

ESIA Meeting	ESIA for the Redevelopment of the Waterfont and Improvement of Mobility Infrastructure	
Date	16 May 2023	
Location	Broki	
Time	19.00-21.00h	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Government	Mr. C. Burleson	Corps Police Suriname (KPS) - Traffic department	<p>I represent a part of KPS and ask if possible that I get a depiction of the road, because that is what it is all about for me. I have seen that presumably instead of 2 plateaus one has moved to only 1. And also, the traffic drop/island that would come on the corner of Keizerstraat and Waterfront; it has also been removed. Is that correct?</p> <p>And have measures already been taken if people actually start in August? Because we haven't noticed any of this yet.</p> <p>The last speaker also spoke about partial closure. Are we talking about partial closure now or are we (as in the past) talking about complete closing off starting in August?</p> <p>Answer PURP (Ms. N. Deul): To start with the last question; we have not planned to close off anything. So, there is no closure at all for now (the next 5 or 6 months).</p> <p>The design has been drawn up with the approval of KPS and the Ministry of Public Works. All suggestions have been included from KPS. But we will check what you indicate again.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			I think Mr. Patandin is here. He knows what I'm talking about. There were first 2 plateaus. Did I see 1 instead of 2?	
			Answer from ILACO (Mr. R. Patandin):	
			That's right.	
			And that traffic drop/island is still there; Because that was a suggestion from us.	
			Answer from ILACO (Mr. R. Patandin): Yes it's still there.	
			Answer PURP (Ms. N. Deul): In short, nothing has changed from the last agreements with KPS.	
			There's a debate about that, but I've already said I'll leave it that way. So, you're saying there won't be closure of access?	
			Answer PURP (Ms. N. Deul): Not at first.	
			Because, as I see it now, we are going to have to act more quickly. I don't think KPS is aware of this that the activities will begin on August 1.	
			Answer PURP (Ms. N. Deul): Yes we will take it and make a follow-up appointment. Perhaps it is also worth mentioning that when it says that the contract starts on 1 August, it does not mean that the "actual" work will start then. There is a mobilization period, the stakeholders are informed again, KPS gets a schedule from us again. There are still at least 2 months before the "actual" work will start.	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			Then I might have an addition; if PURP contacts KPS, you might also contact the Traffic Department. Because that's the discussion we had last time. There is constant talk of KPS being notified, but we at Traffic know nothing. If Traffic doesn't know, you've talked to the wrong people.	
Resident	Mr. Z. Omzigtig	Riverside	<p>Good evening, I am an entrepreneur at the Waterfront. I want to talk about the vagrant problem, how that will be dealt with. I have been to different countries and the area where tourists come must be protected. Vagrants are not allowed to come there and be a burden; This is not good for the tourists. We need to see how we are going to go about this.</p> <p>The staff of the Waterfront must also be trained. How do you deal with customers, the service, etc. I miss that in the whole thing. Please note that people need to be trained in this.</p> <p>Monitoring. How will that be filled in? It's important.</p> <p>Finally, for the management of the Waterfront, I am not in favor of the old management board restoring its function in the new setting. It never worked. The composition of the management board should consist of several organizations; for what it is now does not suffice; Sorry.</p> <p>Answer POF (Ms. G. Smith): Let me start with one important thing that we did not say; and that is that a plan has also been made for improving the management of the Waterfront. In the plan that has been made, a number of things are included, including training. The training courses are also included in the relocation situation. We have made a recommendation to train people in food safety the treatment of customers and other business skills. As for the vagrant problem, PURP could answer this, but all I can say about it is that; when the Waterfront is upgraded we need to make sure there will need to be more surveillance. Of course, you can also say that a fence should be placed around it, but that is not</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>so nice to see. PURP may have more information on this. That is not directly an answer to the question about surveillance, but the intention is that there must be constant surveillance otherwise we will have the vagrants again. This is one of the things that we have definitely taken into account.</p> <p>Answer PURP (Ms. N. Deul): In addition, I would like to add that with regard to the management council, there has been an agreement with the Waterfront management council that they will provide or have training provided during the moving process. Of course, all recommendations are included in the training plan to the entrepreneurs who are employed there. And we will also have discussions with the entrepreneurs during the process at the new location; to find out with them where improvements are needed. With regard to security, I would like to indicate that the contractor is responsible for the security of that area. The entire area where work will be carried out; will be secured including the new place where the entrepreneurs will work.</p> <p>I am not completely satisfied with your answer. More are added every day, how are you going to handle that? The exit and access roads must be protected, so that there is no easy entry and exit. The vagrants problem needs to be handled differently. They say you can't violate their rights, but they are violating my rights.</p> <p>Answer PURP (Ms. N. Deul): You are absolutely right.</p> <p>Madam I'll tell you something; I've been sitting there for I don't know how long; the management board has destroyed the whole thing. I have a proposal that there should be a different kind of management board. Someone from the Central Bank, someone from the police, someone from social affairs and representatives (2 or 3) of the crafters must sit on such a management board. You cannot have just 1 representative who has little or no say. There isn't even an annual report. How is all that possible? I don't want</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			the old board anymore. Let's move to a new form with people who do want to work.	
			<p>Answer PURP (Ms. N. Deul): There are some conditions that have been specified as being "things to be met" when commissioning the newly renovated Waterfront. These are all the things that will be addressed. We are going to look at the composition and the roles/functions.</p> <p>With regard to the vagrant problem; We have taken a two-part approach. The government has started informing the people who deliver food to do so outside the city. If that really happens, we don't know because we can't control it. We started ourselves. We conducted a census to find out who is at the Waterfront and at the World Heritage site. Why do they do that and what can we do with it? We will continue with another study in which we will select places and prepare the facilities ourselves so that when the Waterfront is completed; that will be different. You don't have tourists if there are vagrants.</p>	
			It is a very nice project and I hope it will be implemented.	
Resident	Mr. M. Satimin	Central Bank of Suriname	<p>My compliments it is a very nice project. The question I want to ask is one I ask over and over again. But before I start with that; this is the first phase and I understand there will be a second phase? And so when will the parking aspect be addressed. What happens in the first phase of work and after that? There is a parking problem. I saw somewhere that a study was done that indicated that there are 285 people working in the area.</p> <p>Answer from the audience: It is living and working.</p> <p>The Central Bank already employs 440 people. So, let alone the other companies involved. We are then on high numbers. And in the execution of the work which will soon begin; what about the parking aspect?</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			Furthermore, we had already asked this question that had to do with the safety aspect. We haven't had an answer to that question yet.	
			Answer PURP (Ms. N. Deul): With regard to the parking; most stakeholders along the Waterfront have not indicated that they would like a changed situation. We understand from the Central Bank; that said again; the same approach as with Traffic KPS we will apply here. In which we write again and ask to sit down with everyone, because we understood from the Central Bank that the parking is okay and not necessarily along the Waterfront.	
			Then we must first properly verify this information. The person you spoke to has not spoken to me.	
			Answer POF (Ms. N. del Prado): That of the parking will be addressed by PURP.	
			<p>Answer POF (Ms. G. Smith): The parking situation is a problem at the moment anyway; perhaps not for the Central Bank because it parks on its premises at Kromme Elleboog street and SMS. We cannot solve the parking problem that is already happening with this project. What is good to indicate is that during construction an alternative must be sought in order to be able to park. This will probably not be for the Bank but for other people if there is a situation where you lose parking spaces. As a result, you will have to create new parking spaces. This is 1 of the things that we indicated in the environmental study, where we went indicated that there must be a traffic management plan. And this will not only have to do with parking but with several things.</p> <p>Mr. Z. Omzigtig: Here on the other side there is plenty of space.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>Answer POF (Ms. G. Smith): Yes, but that's another problem; We checked that. That site is a private property that is not available. That's all I can tell.</p> <p>Mr. Z. Omzigtig: But that won't solve the problem either. On weekends there are 30 to 40 buses here. I have no parking space. There needs to be a lot of organization in the parking situation.</p> <p>Answer POF (Ms. G. Smith): I understand your problem and as it has been said before there is already a parking problem in the whole area. We will not be able to solve all the problems with the redevelopment of the Waterfront.</p>	
Resident	Mr. C. Kuik	VSH	<p>I have a question regarding the parking study that has been done. Can you explain more about this?</p> <p>Answer PURP (Ms. N. Deul): What type of explanation do you want?</p> <p>How will we (stakeholders at the Waterfront) be able to enter our premises during the implementation when it is closed off? I also want to know where we will be able to park while the work is being carried out.</p> <p>Answer PURP (Ms. N. Deul): At this time, there is no talk of closing off. And there is no mention of a changed situation for the parking. But I do understand that once the contract is signed with the contractor; we will go through the contractor's schedule. At that point, we will sit down again with all stakeholders in the area to go through the planning and see who is affected and where.</p>	
Resident	Food vendor		Good day, entrepreneur at the Waterfront. I haven't heard or the decision where we should move to and when. I hear something	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>about August and it will soon be August. We also have to make our preparations if we have to move. It shouldn't come last minute.</p> <p>Answer PURP (Ms. N. Deul): There was a slide in the part I presented; where I showed a timeline. There you can see that we will have 1 on 1 conversations with all entrepreneurs and crafters at the end of May. At that time, you will be told which spot will be allocated to the people who want to sell and for how long. There will be no costs involved. So, the negotiations are still going on for the new place.</p>	
	Ms. D. Madhan	Telesur	<p>The fact is that there is a cable from us there; and if heavy equipment will be used; the cable is very sensitive to vibrations. Customers are also connected to that cable. So, if that cable gets a kink, these customers will drop out and one of our customers is the Central Bank.</p> <p>Have the vibrations been taken into account and has a plan been drawn up if the cable gets a kink? who and how do you deal with the customers if this happens?</p> <p>Answer from ILACO (Mr. R. Patandin): Thank you. Just in general; we don't go there to just dig and pretend there's nothing there. We know there is drinking water there, EBS and Telesur. Just as we make agreements each time with the KPS, we will also do this in advance with the utility companies. Beforehand we will sit and talk. We got the locations once. Incidentally, Telesur was always absent from the meetings we held. Anyway, we got data; we're going to talk about it; there will be no digging. Space will be made around the footpath zone where the cables and pipes will run. Again, we're going to work on both sides of the road. So, in principle, we will look at both sides at what needs to be shifted or moved.</p> <p>With regard to the vibrations, I thought it had already been stated that there is no vibration in principle. There is no drilling in the sense of driving stakes into the ground or anything like that. Of</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>course, there is compaction, an asphalt roller is put over it; but those are normal vibrations that also occur. So, all pipes and cables can in principle take this into account.</p> <p>I do want to comment on the road closure. Of course, we know that if work needs to be done or asphalt needs to be laid, it is not possible that we do not close off anything. You're going to have to close off; this will only be very short. We're going to talk to the contractor to see if it can be done overnight or maybe in a long weekend. It's not like there will be a permanent a road closure. So there too we work in sections, so that traffic will be temporarily diverted when the asphaltting work takes place. We are going to do minimal things on the current asphalt road. It only concerns a number of intersections where there are wells and sewers; where we will make adjustments. Because they need to be replaced. For the rest, it is working on the sides and helping the access for the people who live or work there as much as possible. And that will be done together with the contractor. It's not like everything will be closed off.</p> <p>Finally parking. The picture is not there but the "parking spaces" (they aren't actually) are currently not there. There is just parking along the road. People park across and along one behind the other. That part between the Flag Square and Mirandastraat; where people park; that thing goes away. It's not safe, there's a curve there. We need to create a safe traffic situation so that people can drive there. So that piece goes away. So again; it will no longer be possible to park in that part between the Flag Square and Mirandastraat. We will not touch the rest of the parking spaces. Yes, temporarily because we have to work, but when everything is finished, the parking options will return there. I heard something about parking from the Central Bank; only that piece will no longer be there. And for the rest, work is only done on the site where the crafter tents are now. That's the main part of the job. And here the contractor will have to work with safety fences.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>People are not allowed to just come there while the contractor is working.</p>	
			<p>I want to make one more comment; you said that Telesur is not present.</p> <p>Answer from ILACO (Mr. R. Patandin): Not always</p> <p>Our last meeting was at PURP itself and that was the first time we learned about this. I don't know which department you have contacted, but please check whether there are better ways to contact the right department.</p> <p>Answer from ILACO (Mr. R. Patandin): We will come back to this matter with EBS and all utilities.</p>	
Government	Ms. I. Meulenberg	Archeological Service	<p>I have two remarks: Please discuss at an early stage when the contractor will actually start.</p> <p>Second point: is Telesur's cable indeed indicated on the map, among others?</p> <p>Answer PURP (Ms. N. Deul): We should double-check the map for that. We have worked with what we have received and we have presented it.</p>	
Residents	Ms. C. Lie Wah Hing	VSH Apartments	<p>At the previous meeting we had asked if there could be a speed bump at the slight bend. I think I have sent you a number of videos showing a number of collisions. I assume that when there will be a lot more activities and you have smooth roads, people will fly around the bend again.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>And another question is whether noise pollution will be taken into account. We already have noise nuisance; and after everything has become beautiful, noise nuisance will also need to be taken into account. Will you also discuss that or should we go back to the management board or DC.</p> <p>Answer PURP (Ms. N. Deul): I don't want to give you an answer that will change. So, I will unfortunately have to inform you that we will not be able to do that. We have now completed the design. What we can do is talk to the right department within KPS and make sure we give this as a recommendation. I can't promise we can do anything about this.</p> <p>With regard to noise nuisance, you say it correctly that the Waterfront management council and the DC are liable for this. So once again we are only the ones who carry out the project and we do that on the basis of the agreements made with all stakeholders. If it turns out that the organization is perhaps not passing on the information very well, then we will again invite everyone to talks from top to bottom approach between now and before the contract is signed.</p> <p>Answer POF (Ms. G. Smith): With regard to noise, we have indicated for the mitigating measures that noise labels must be drawn up and that also has to do with the entire management of the Waterfront. So that is also part of the plan for the management of the Waterfront, but we also indicated very specifically in the environmental study that this should be the case. It is also important that, apart from the installation, inspection and monitoring must also take place. How exactly all this should be done is up to the Waterfront management council.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Government	Mr. K. Boender	Public Works	<p>I would like to know the status of the Boardwalk. I understand that something is coming before the water tower. I would like to know the status; the height of it etc. I've been trying to get an answer for a while.</p> <p>Answer PURP (Ms. N. Deul): We've received your email, Mr. Boender, but we can't talk about the Boardwalk in detail just yet. We are now only at the stage where we need to secure the additional funding. So, we're not at the point yet where we can talk about the details of the Boardwalk. That will be in a year or a year and a half.</p> <p>Answer from ILACO (Mr. R. Patandin): In this part where the execution will take place, a boardwalk has already been provided in addition to the current sheet pile wall. And it is about 90 cm lower than the edge of the sheet pile wall, so in principle, people can just walk there; and towards DNA etc. That piece has already been included. The whole Boardwalk is done in parts and this is part 1.</p>	
			<p>Okay so there's nothing else?</p> <p>Answer from ILACO (Mr. R. Patandin): What are you saying?</p> <p>So, there will be nothing else for the sheet pile wall?</p> <p>Answer from ILACO (Mr. R. Patandin): Do you mean in the water? Nothing will come there. That is not included in this section.</p>	
	Mr. J. Tai-Foek	Real Estate VSM	<p>The question is; there is already noise pollution and above the WHO requirement. Is it to be expected that when activities are developed the intensity will increase? Will artists come there with</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>big boxes? Will the noise pollution become enormous? What is its value?</p> <p>The homeless are also a big problem there. Will there be a solution for that?</p> <p>And what will be done about dust and cleaning up pollution so that the enjoyment of living is not disturbed or worsened?</p> <p>Answer PURP (Ms. N. Deul): With regard to the activities, facilities are planned for holding events. So, with regard to the intensity and frequency, we cannot give an answer to that yet. Because that will depend on the permits granted by the DC and the Waterfront management council. But we have to establish the facilities for those kinds of events.</p> <p>With regard to the vagrants and homeless; It has been mentioned before, there are plans that we have already started. It's a two-part approach, the government is engaged in; the DC is mainly engaged in organizing the distribution of food outside the City Center. As a result, the vagrants are no longer in the City Center. And apart from the government's solutions, we are looking at how we can facilitate the vagrants so that they do not come back. So where are they going to stay, what can they do other than wander around the city center. How can we help them with a bit of resocialization? We will deal with such activities afterwards. But it is the intention that this will be in place before the Waterfront is completed. But let me stress that we are very much dependent on decision-making within the government. We can put forward the proposals and make the funds available, but they can be implemented if we get approval.</p>	
	Mr. S. van Frederikslust		Not a question but more of a comment, with all due respect to all the operators and entrepreneurs here; people who have kept the	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
			<p>Waterfront alive in the coolest of times. I want to say something as a visitor, I came here as a visitor and I have really dreamed of this kind of thing. And what I saw tonight; I am proud of this generation of scientists, people who really know and want to make Paramaribo and Suriname beautiful.</p> <p>Watra sei or Waterfront; so many songs; it is the old port and that is why the New Port is called that. It's a story of the Waterfront and we all have memories. I've been through so many fun things here. You could go through so much; Experience Suriname in its utmost form in food and everything and conviviality. And that this is coming now, I think this is a compliment for Paramaribo. And then I just want to say one thing: switie bosie warang brassa. If we embrace this project we will make a great step and maybe in 20 years this will be a club of millionaires from the Waterfront. Good luck and thanks.</p>	
Resident	Mr. Theo Wimpel (Uncle Ray)		<p>I live at the Waterfront so I'm experiencing it. The point is that organizations (internationally) provide the funding; I'm going to cite an example so you understand where I want to go. In Guyana, Norway has offered to give money for carbon credits. And then Norway said, but, and that is a condition. The donors also have the right to set conditions. And those donors have said, but you have to address the land rights problem there. They hired a consultant who made an assessment of the land rights problem in Guyana and he has said that the Ministry of Indigenous Affairs gets a failing grade and the UNDP also gets a failing grade. Then they hired a consultant to adjust and correct the program; and today Guyana does nothing. I do find it scary when I keep hearing yes but it's the government. You are the donor and you have a right.</p>	

Stakeholder Group	Stakeholder Name	Affiliation	Main Discussion Points	Consideration in the ESIA
Resident	Ms. C. Arupa	Craft vendor	<p>My question now is; Is it guaranteed that the craft market will come back? The reason why I ask that question is because I have a feeling that we will not come back. When are they planning to let us move? We have been through a lot with the people who are there, the vagrants and the homeless. I have been threatened several times because we have no surveillance. Especially us as women. I am sometimes there at half past seven and sometimes until seven o'clock in the evening. The vagrants hanging out there are a burden, they just pee and take a dump everywhere, others have wounds on their bodies that just stink.</p> <p>What are the chances of what I have asked for? Who gives us the guarantee that we will come back and where do they plan to give us a place so that we can continue to work. It must not be the case that we are sent away and others will come. There are 17 of us and we all need it. I'm already 70+ but I still need it. That is why I would like to know when we will come back and has a suitable place been chosen.</p> <p>Answer PURP (Ms. N. Deul): It is a prerequisite for updating the new place where everyone who was there comes back. I can guarantee you that the crafters will come back after the renovation. We have a place for all crafters and entrepreneurs who are temporarily relocated so they will be able to sell.</p>	

	Participant	Affiliation		Participant	Affiliation
1	Joyce Koffi-Rozenhout	NV. SMS	36	Armand Moredjo	PIU-PURP
2	Oswald Walker	Rekenkamer	37	Armand Amatali	POF
3	Humphrey Omzigtig	Riverside	38	Martha Irokromo	IRO Food Stand
4	Marie Fortune	NV. Ilaco	39	Ashwien Bhageloe	Ministry of Public Works
5	Arvin Omzigtig	Riverside	40	Maritza Currie	Central Bank of Suriname
6	Stephen Fokké	SGES	41	Ellen Dahan	Ministry of Public Works
7	Priya Bihari	PIU-PURP	42	Melvin Satimin	Central Bank of Suriname
8	Lady yan Putten	Stg. Surinaams Museum	43	Perry van Leesten	Ministry Environment
9	Magda Habibuw	Stg. Surinaams Museum	44	Ruth Austerlitz	Telesur
10	Giovanni Simons	NV. SMS	45	Darsheni Madkan	Telesur
11	Rabin Boeddha	Ministry Tourism	46	Robin Skeffers	Food stand
12	Marian Sabajo	Craftmarket	47	Christiaan Burleson	Corps Police – Traffic
13	Maureen Nahar	Craftmarket	48	Reguillo Tirtojoso	Corps Police – Traffic

	Participant	Affiliation		Participant	Affiliation
14	Angela Dias	Rudisa	49	Baal Kisoensingh	Central Bank of Suriname
15	Rajen Nannan Panday	Privé	50	Tatiana Koppelman	IDB
16	Patricia Djoe	Craftmarket	51	John Tai-Foek	Real Estate VSM
17	Mildred Waarheid	Craftmarket	52	Satifa Menig	PIU-PURP
18	Martha Sabajo	Craftmarket	53	Krishi Oemraw	Rudisa
19	Charita Lie Wah Hing	VSH	54	Charlene Karyadrana	NV. Ilaco
20	Clifton Kuik	VSH	55	Amar Nakchedi	NV. Ilaco
21	Frank van Doorn	Waterkant Beheersraad	56	Edo Doorzon	Broki
22	Mala Gopal		57	Kathleen Toby	Craftmarket
23	Ricardo Bhola	District Commisioner Pararmaribo North-East	58	Ismael Damys	MI-GLIS
24	Monique Linger-Jubitana	SWM	59	Lloyd Playfair	Road Authority
25	Claudia Arupa	Craftsmarket	60	Saskia Chote	Ministry of Public Works
26	Clifton Braam	Onderdirecteur cultuur	61	Ravindra Pantandin	NV. Ilaco

	Participant	Affiliation		Participant	Affiliation
27	Melba Pinas	Uncle Ray Food Stand	62	Ismael Damys	MI-GLIS
28	Pamela Karwafodi	Craftmarket	63	Isle Pradong	Craftmarket
29	Wilma Arupa	Craftmarket	64	Bryan Simons	Craftmarket
30	Ram Santoe		65	Errol Venoaks	Waterkant beheersraad
31	Lindsey van de Wetering	Mojo Architecten	66	Irene Meulenberg	Archeological Dpt
32	Natasja Deul	PIU-PURP	67	Theo Wimpel	Uncle Ray Food Stand
33	Ferdinand Arupa	Craftmarket	68	Ted Panday	
34	Dennis Janssen		69	Philip Dikland	
35	Harold Amalingi	PIU-PURP	70	Steven van Frederikslust	

APPENDIX M: Tree Inventory Study Site



Bomen inventarisatie studiegebied Waterkant t.b.v. PURP

- I. Traject: Waaggebouw – Monument Binnenlandse Conflict
 - 19 Amandelbomen
 - 1 Peltophorum
 - 1 Koningspalm

} naast toilettengroep
- II. Traject: Monument Binnenlandse Conflict – Monument Wilhelmina standbeeld
 - 3 Obe palmen
 - 1 Dennenboom
 - 2 Bottenschaarplamen
 - 1 Bougainville (paars/struik)
 - 1 Arecapalm
 - 6 Koningspalmen
 - 1 Flamboyant
 - 4 Amandelbomen
 - 1 Bosamandel (naast DNA nabij monument Koreaans oorlog)
- III. Traject: Monument Wilhelmina standbeeld – Abraham Crijnsenweg
 - 13 Mahoniebomen
 - 1 Amandelboom
 - 1 Koningspalm
- IV. Achter oud MP gebouw (huidig "Toerist Info Centrum")
 - 3 Mahoniebomen
- V. Rondom Onafhankelijkheidsplein
 - 16 Tamarindebomen (1 kleine pas geplant)
 - 1 Mahonie
- VI. Mirandastraat
 - 3 Groenharthbomen

Opmerking: de inventarisatie is uitsluitend gedaan langs de wegen en niet op afgebakende terreinen.

Appendix A

Socio-Economic Study

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

30 June 2023



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1. Introduction

1.1 Background of the Project

In 2017, the Surinamese Government received a loan of 20 million U\$ dollars from the Inter-American Development Bank to finance the Paramaribo Urban Rehabilitation Program (PURP), contributing to the socio-economic revitalization of the Paramaribo historic center. Paramaribo's historic Waterfront situated along the Suriname River, is the most important public space inside the historical center area defined as a World Heritage Site (WHS) by UNESCO, and will undergo redevelopment.

A plan for the redevelopment of this important area includes: improvement of safety and security, traffic flow and parking, signage and markings, facilities for bicycles and pedestrians, space for (un)loading, connection to the water, tourism revitalization, removing homeless people, preservation of monuments, trees/shade, spaces for events and culture, spaces for commercial activities, sport/leisure activities, spaces for craft seller, accessibility for disabled persons, seating, 24/7 access, waste management, and utilities.

This report presents the socio-economic analysis of the main stakeholders with a specific focus on the craft- and food vendors who will have to relocate during the construction of the project.



Figure 1-1: Waterfront after Redevelopment. Source: PURP

1.2 Methodology

The description of the social environment covered the following parameters for the communities and social groups who are directly and indirectly affected by the project, or who could affect the project:

- Demographics: the broad-based social and demographic profile, including population trends
- Archeological and culturally important sites
- Labor market, employment and income
- Proximity of communities to the project site
- Health and security of the local community
- Socio-cultural activities, livelihood and location
- Utilities, transportation and other provisions for local inhabitants
- Other human development and welfare indicators: health, education, gender
- Perceived project impact
- Other aspects: stakeholder participation, grievance redress.

Data on the background socio-economic conditions of the stakeholders and the existing regulatory regime under which the LRP should be executed was collected as follows:

- **Desk-top Research.** A desk-top exercise, collating information from the internet, databases and a library search of published information.
- **Key-Person Interviews.** Interviews with experts, Government, vendors and other stakeholders
- **Baseline Field Survey.** Field survey for gathering information on the socio-economic profile of the vendors. Household interviews were conducted to obtain a baseline information and profiling of the vendors. Follow-up phone calls were conducted to validate field survey information. The data was analyzed using Kobo Toolbox. The survey questionnaire is shown in the Annex to this report.
- **Focus Group Sessions.** Focus groups were held with the crafters and food vendors to discuss the most appropriate livelihood restoration measures.

Information gathered during interviews was kept confidential. For the purpose of analysis and this report, every individual or household received a unique identifier.

1.3 Content of the Report

This report is structured as follows:

- **Chapter 1 Introduction** - provides an introduction to the socio-economic survey, including the methodology.
- **Chapter 2 Project Description** - provides the project description and the proposed infrastructural works.
- **Chapter 3 Socio-Economic Profile of Crafters and Food Vendors**- describes the baseline socio-economic profile of the crafters and food vendors.
- **Chapter 4 Perspectives about the Area and the Project** – describes the perspectives of stakeholders about the area and the proposed project.

2. Project Description

The history of the Waterfront goes back to the establishment of Paramaribo in 1613. In 1683, the existing 27 houses along the Waterfront and Gravenstraat were being expanded and the area developed as center for core activities. The quay area was used for loading and unloading of ships, mainly because the Suriname river had enough room for ships to maneuver (approximately 1km wide). Also the slave trade settled here; slaves were imported from Africa and reached the shores, after they were weighted and sold to plantation owners until 1863.

In 1821, a large part of the houses at the Waterfront were destroyed in a fire. Redevelopment of the Waterfront included newly established wooden houses with galleries, which is nowadays a feature of the inner city of Paramaribo. There are 291 listed monuments in Paramaribo and in the past three decades only a few have disappeared in favor of new developments. This feature has designated the city as a UNESCO World Heritage Site in 2002.



Figure 2-1: Waterkant a. around 1890s b. Anno 2020.

The Waterfront redevelopment is part of a larger redevelopment plan for the inner city of Paramaribo, focusing on rehabilitating historical buildings and improving social functions. The proposed project consists of approximately 1 hectare and is part of the historic city center of Paramaribo and listed as a World Heritage Site under the UNESCO.

The project site for the Redevelopment of the Waterfront includes the area of the waterfront that stretches between Fort Zeelandia and the Waaggebouw, including part of the streets that run into the Waterfront area and the so-called triangle between the Mr. F.H.R. Lim A Po straat and the Waterfront (Figure 1-3).



Figure 2-2: The proposed project area

The newly-developed Waterfront will provide recreational facilities and selling opportunities for local food and craft vendors. In addition, the area will have outpaths for walking/strolling, a pier, a multifunctional area, a stage/balcony over the water, a watch tower, a playground, and an amphitheater which are accessible to the public.

The construction activities are scheduled to commence in the third quarter of 2023 while operations are scheduled for 12 months later. Below is an overview of the planned activities and timeline (Table 2-1).

Construction Activities (12 months)

The construction activities for the Waterfront redevelopment will mainly include:

- I. Demolition (recreational area and old Flag square/road)
- II. Earthworks (recreational area and old Flag square/road)
- III. Drainage. The main drainage infrastructure will be installed section by section until the whole area is covered. Other works planned are:
 - i) Repair and replacement of non-return flaps for outfall locations.
 - ii) Construction of roadside minor pit and pipe system drains.
 - iii) Installation of new kerbing.
 - iv) Installation of property connections, collector pipes, manholes, couples and check valves.

IV. Utility Conduit Installation. Along the road next to the Waterfront, the water main will be removed and reinstalled and electricity installation will occur.

V. Construction of Sidewalks. Sidewalks will be constructed along the north- and south side of the road next to the Waterfront, as well as the Dr. J.C. de Miranda Straat.

VI. Road Pavements. Pavement of roads will occur in the north- and south side of the road next to the Waterfront, as well as the Dr. J.C. de Miranda Straat. The activities include:

- i) Pavement of pedestrian crossings
- ii) Milling of existing asphalt
- ii) Applying asphalt seal

Pavements for pedestrian crossings and parking will expand into Fort Zeelandia and the Old Flag square, and will include linemarking.

VII. Construction of Waterfront Recreational Area. A variety of works will be executed, including:

- i) Construction of riverside balcony and upgrade of marine pier
- ii) Building of craftmarket using partially the same materials from previous building, 3 buildings of each 45m², totalling 135m²
- iii) Building of food stands, 12 buildings of each 64m², totalling 768m²
- iv) Paving of areas
- v) Construction of planting beds
- vi) Building of public playground, watch tower, recreational area and 2 Gazebo's of each 16m²
- vii) Construction of landscape furniture
- viii) Planting of greenery
- ix) Provision of signage and markings.
- x) Construction of management building and public restrooms, total 105.8m²
- xi) Construction of footpath network including boardwalks and ramp.

Operational activities

The following activities and facilities are projected at the renewed Waterfront:

- I. Recreational area
- II. Crafts market
- III. Food stalls
- IV. Watch tower
- V. Balcony/stage
- VI. Children's playground
- VII. Walking paths and path for cyclists
- VIII. Benches to sit and relax
- IX. Management building and public restrooms

3. Socio-Economic Profile of Crafters and Food Vendors

This Chapter presents the socio-economic profile of the food vendors and crafters, also called Project Affected People (PAP) within the scope of the redevelopment of the Waterfront. The socio-economic profile served as the baseline to identify the PAPs and assess the extend of impact of the proposed project. POF conducted a survey and interviews at the project site among the PAP in January-February 2023.



Figure 3-1: a. Crafter stalls at the Waterfront b. Food vendors at the Waterfont

3.1 Demographics

3.1.1 Population

The survey identified crafters and food vendors as potential PAPs as they are currently selling goods at the Waterfront. There are 14 craft vendors and 11 food vendors at the site with an average household size of 3.78 and 4.81, respectively (Table 3-1).

Table 3-1: Details of potential PAPs

Stakeholder	Number of PAPs	Average Household Size
Craft Vendors	14	3.78
Food Vendors	11	4.81

3.1.2 Age and Gender

The age and gender of the PAP is presented in Tab 3-2. The data shows the crafters to be mainly female and the food vendors are predominantly male (Figure 3-2).

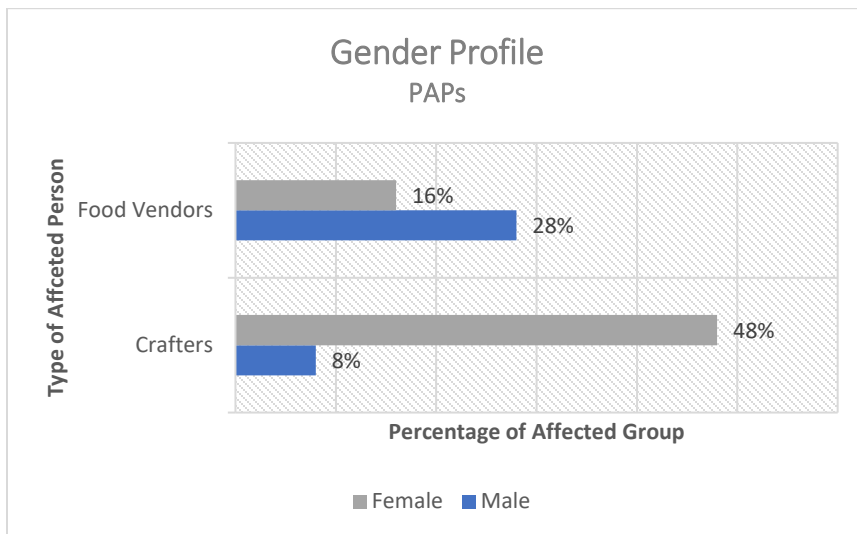


Figure 3-2: Gender profile of PAPs

The average age of the crafters is 51.1 years, while the food vendors are slightly older, on average 58.3 years. The age profile (Table 3-2, Figure 3-3) shows high ages among the food vendors, especially in the age categories 60-70 and 70-80 years.

Table 3-2: Age and gender profile of PAPs

Stakeholder	Gender				Age (Years)				
	Male		Female		30-40	40-50	50-60	60-70	70-80
Craft Vendors	2	8%	12	48%	2	3	8	0	1
Food Vendors	7	28%	4	16%	1	2	3	2	3

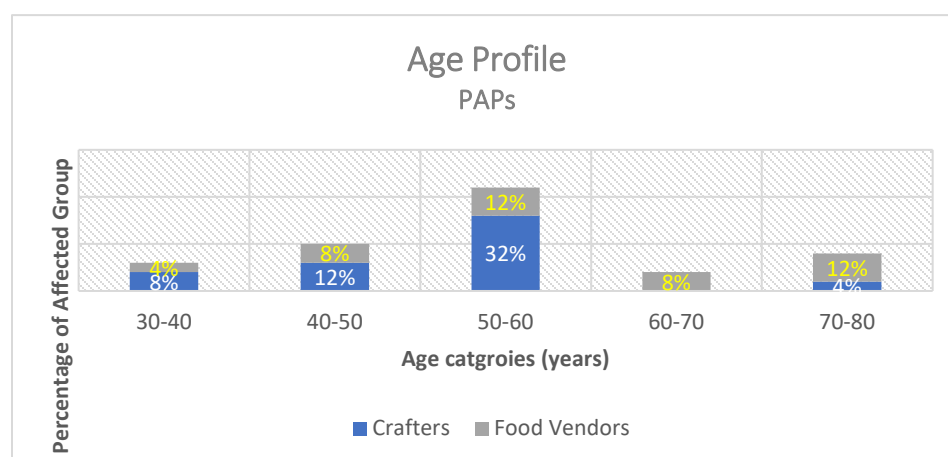


Figure 3-3: Age profile of PAPs

3.1.3 Ethnicity and Religion

The survey shows in Table 3-3, the majority of crafters are of indigenous descent (28% of Total PAPs) while the majority of food vendors are creoles (24% of Total PAPs). When considering the indigenous and tribal groups all together, the crafter group consist of 85.7% of indigenous peoples as defined under the IDB guidelines.

In terms of religion, the majority of PAPs across crafters and food vendors practice the Roman Catholic religion, totaling 48%. Many other religions are being practiced among the PAP, yet, one person is an atheist.

Table 3-3: Ethnicity and religion of PAPs

Religion	Craft Vendors		Food Vendors		Ethnicity	Craft Vendors		Food Vendors	
	#	%	#	%		#	%	#	%
Latter-Day-Saints	3	12	2	8	Indigenous	7	28	0	0
Seven Day Adventist	1	4	0	0	Afro-Decendent/Maroon	5	20	1	4
Roman Catholic	7	28	5	20	Creole	1	4	6	24
Winti Religion	1	4	0	0	Javanese	0	0	1	4
Morovian Church	0	0	2	8	Hindustan	0	0	1	4
Weslyan Church	1	4	0	0	Mixed race	1	4	2	8
Hinduism	0	0	1	4	Total	14		11	
Islam	0	0	1	4					
Atheist	1	4	0	0					
Total	14		11						

3.2 Education and Skills

The data from the survey is presented in Table 3-4. The data shows food vendors to be better educated than crafters. Of the total PAPs, 64% have received secondary education: a larger number of food vendors (32%) compared to secondary education to crafters (28%).

Figure 3-4 shows 32% of the PAPs only received primary education. A small percentage -8%-of the total PAPs have not completed any educational level and these persons belongs to the crafter group.

From the households, 6 crafters (24% of Total PAPs) have dropped out of school because of lack of finances. Food vendors don't account for any school drop-outs.

Table 3-4: Educational level of PAPs

Type of Education Completed	Craft Vendors		Food Vendors	
	M	F	M	F
University	0	0	0	0
Secondary: VWO/HAVO	0	0	1	1
Secondary: HBO	0	0	0	0
Secondary: Natin/AMTO	1	0	2	0
Secondary: IMEO	0	2	0	1
Secondary: Kweekschool	0	1	0	0
Secondary: VOJ	1	2	2	1
Primary: GLO/BO	0	5	2	1
No education	0	2	0	0

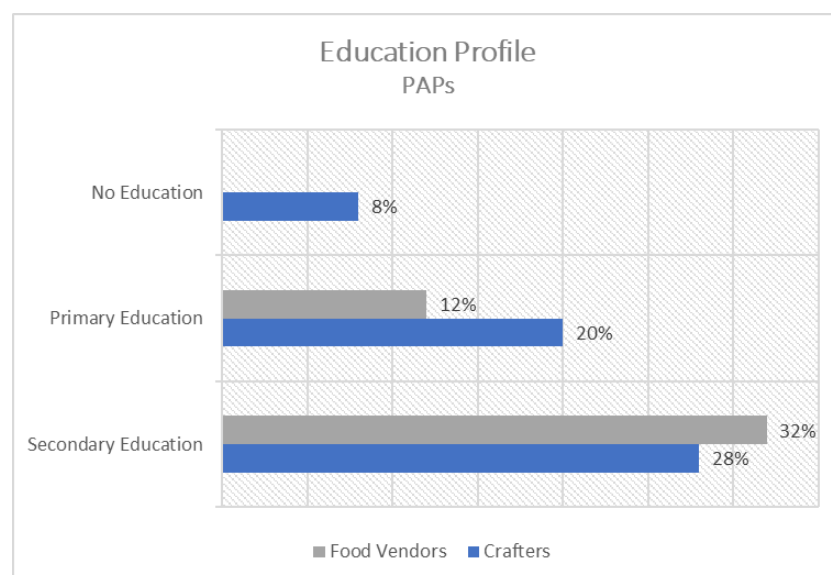


Figure 3-4: Education profile of PAPs

Besides formal education, PAPs possess certain skills listed below:

- Crafters: knitting, sewing, crafting, cooking, nail and hair care, computer skills, agriculture, construction
- Food Vendors: Sales, food and beverage handling, sewing, food and snack preparation, agriculture, leadership skills, business skills.

3.3 Employment and Income

3.3.1 Employment

The craft- and food vendors operate along the Waterfront and therefor they need to rent infrastructure. The craft vendors engage in production and sales of crafts, and the food vendors in production and sales of food and beverages. The average number of years that they are active is shown in Table 3-5. It shows that most food vendors have been active at the site for more than 10 years, while most crafters between 3-10 years (Table 3-5).

Table 3-5: Duration of business activity on site

Number of business active on site	0-2 years	3-5 years	6-10 years	More than 10 year
Craft Vendors	3 (21%)	4 (29%)	5 (36%)	2 (14%)
Food Vendors	1 (9%)	0	2 (18%)	8 (73%)

Crafters. The crafters have mostly businesses consisting of one person, except for one crafter who has 11-20 employees. Half of the crafters (50%, n=7) have a secondary job to bring monies into the household (Table 3-6). Three of these acquire monies from a Government job and retirement benefits, while other engage in painting, construction, sewing or janitorial services.

The majority of crafters (86%) only sell goods at the Waterfront, while the rest has also a vending place(s) at another location. The percentage of food vendors only selling goods at the Waterfront, is slightly lower at 72%.

All crafters have licenses that are valid.

Food Vendors. Food vendors have larger businesses with 2-5 employees, with an average of 3.1 employees. 70% of these employees are working full-time.

The amount of food vendors having a secondary job is significantly lower than crafters and consists of 27% (Table 3-6). One food vendor manages the Waterfront's public bathroom, while the rest engages in tailoring and construction work.

These informal jobs provide a social safety net for people the study site. This is especially important after the economic decline during the COVID-19 epidemic and with the current economic crisis in which citizens are faced with an increase in prices while the value of salaries are decreasing due to devaluation.

Only two food vendors have a valid license. The authorities (DC) has stopped renewing licenses a while ago pending the redevelopment of the Waterfont, and this was officially communicated with the vendors.

Table 3-6: Types of employment among PAPs

	Number of PAPs		Only Primary Business	Secondary Job	Type of Secondary Job
	M	F			
Craft Vendors	2	12	7	7	Government job (2), painting (1), construction (1), retirement benefits (1), janitor (1), sewing (1)
Food Vendors	7	4	8	3	Management Waterfront restroom (1), tailoring (1), construction (1)

3.3.2 Income

a. Household Income

The estimated household income of crafters and food vendors is presented in Table 3-7 and Figure 3-5. The data shows the majority of crafter households fall in the lower income categories, earning monthly between SRD 3,000-8,000 (US\$ 96.77-258.06). Contrastingly, the majority of food vendors earn significantly more monies in the household, often more than SRD 10,000 (US\$ 322.58).

Important to note is that in some instances (PAP 1, 2 and 5) the specified household income is lower than the business income, which is not realistic. Although we had brought this under the attention of the PAPs, no changes were made to the specified household or business income. Based on observations of sales over several weeks, we estimated the household income to be higher than the business income, because the business income was valid. For this reason, we designated the household income as “Unspecified” in the PAPs table (Appendix 2) and the table/graph below.

Monthly Household Income	Craft Vendors	Food Vendors
Unspecified	3	0
3,000-4,000 SRD	2	1
4,001-5,000 SRD	1	0
5,001-6,000 SRD	1	0
6,001-7,000 SRD	1	0
7,001-8,000 SRD	0	0
8,001-9,000 SRD	1	0
9,001-10,000 SRD	2	0
10,001-11,000 SRD	1	0
11,001-12,000 SRD	1	0
12,001-13,000 SRD	0	0
13,001-14,000 SRD	0	0
14,001-15,000 SRD	0	1
More than 15,000 SRD	1	9

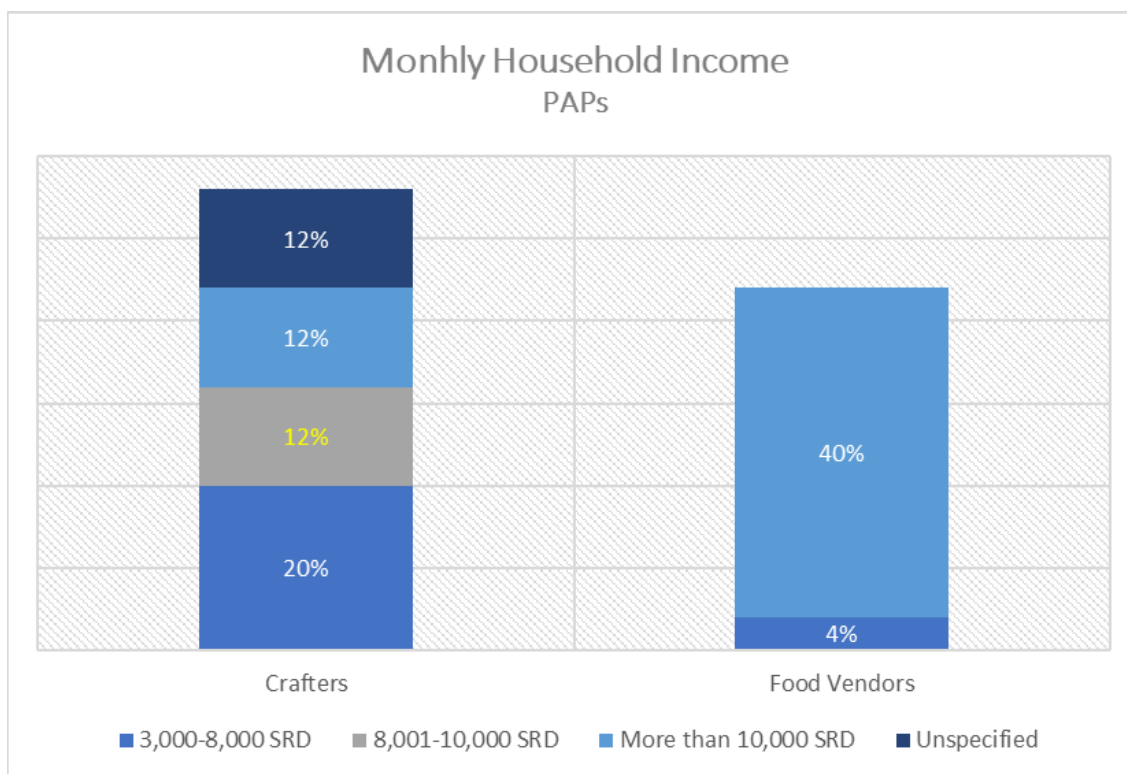


Figure 3-5: Monthly household income of crafters and food vendors

Important to consider is the number of people dependent on this income. Table 3-8 demonstrates that food vendor households have significant more household members and dependents than crafters.

In case crafters need support, they can primarily rely on family. Because they have limited reserves and options at the bank, crafters rely on loan sharks to support them in time of need. One person reported to pawn jewelry in time of need.

For food vendors, the situation is better. They have their own reserves and can access bank loans or rely on family and friends for support. One person reported to buy goods on consignment (Figure 3-6).

Table 3-8: Number of dependents in PAPs households

	Number of PAPs		Average Household Size	Other Dependents
	M	F		
Craft Vendors	2	12	3.78	8
Food Vendors	7	4	4.81	25

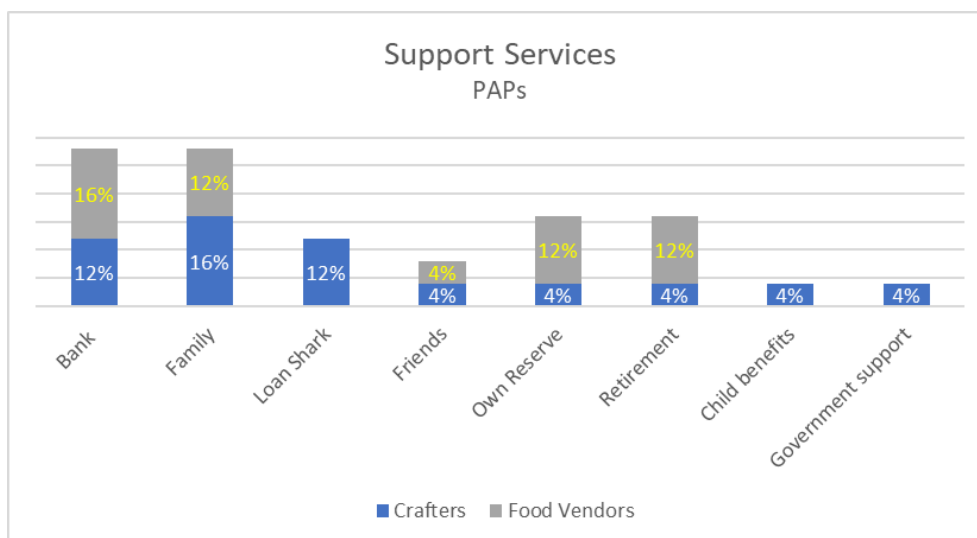


Figure 3-6: Support services available to PAPs

b. Business Income

Income from business activities is shown in Table 3-9. The data demonstrates that food vendors businesses earn substantially more than crafters. Although several attempts have been made, several craft- and food vendors did not want to give information about their income, and this was recorded as “unspecified”.

Table 3-9: Estimated monthly income from business activities

Estimated Monthly Income from Business Activity	Un-specified	1,000-4,000 SRD	4,001-9,000 SRD	9,001-15,000 SRD	15,001-30,000 SRD	30,001-45,000 SRD	45,001-90,000 SRD	More than 90,000 SRD
Craft Vendors	4	2	6	0	2	0	0	0
Food Vendors	2	0	1	0	1	2	4	1

3.3.3 Expenditures

When analyzing the household expenditures, important differences between crafters and food vendors are noticeable.

- Crafters use household monies mainly for basic human needs such as food, housing, utilities, travel and communication.
- Food vendors spend money on these basic needs but have more monies available for paying for education, healthcare, entertainment and internet (Table 3-10 and Figure 3-7).

Table 3-10: Household expenditures of PAPs

Monthly Household Expenditures	Crafters	Food Vendors
Food	13	11
Rent	4	2
Education	0	1
Healthcare	0	1
Electricity	7	8
Fuel	4	7
Clothing	0	0
Transport- taxi/car	4	0
Phone	4	5
Entertainment	0	1
Internet	0	4

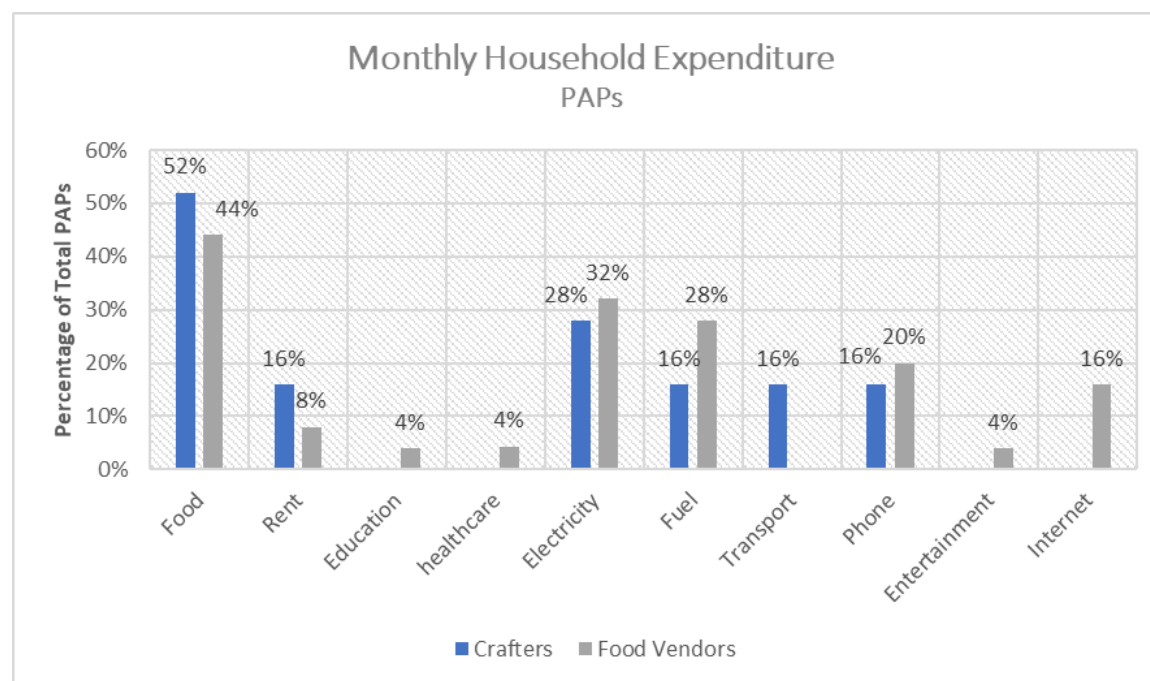


Figure 3-7: Monthly household expenditure of crafters and food vendors

3.4 Production and Infrastructure

3.4.1 Production and Sales

The number of products made and sold daily is shown in Table 3-11. The majority of crafters report selling between on average 1-10 items per day, while the food vendors sell more than 10 items daily. Food vendors have reported that after the Covid-19 epidemic, sales are down and one food vendor has ceased their business accordingly. The addition of Waka Pasi to choices for tourist has also contributed to lower sales at the Waterfront.

Table 3-11: Number of business clients

Daily Number of Business Clients	Don't know	1-10	11-25	26-50	More than 50
Craft Vendors	1	12	1	0	0
Food Vendors	0	0	4	5	1

For both the crafters and food vendors, November and December are the busiest months while January is the slowest month for business sales.

3.4.2 Infrastructure

a. Household Infrastructure

An overview of the household infrastructure is shown in Table 3-12 and Figure 3-8. The data shows that all PAPs have basic infrastructure available consisting of computer/tablet, toilet with running water, in-house water supply, in-house electricity, and a washing machine. However, food vendors have comparatively additional infrastructure available in the following items: car/mini bus/pick up truck and internet connection.

Table 3-12: Household infrastructure of PAPs

Household Infrastructure	Craft Vendors		Food Vendors	
	M	F	M	F
Auto/mini bus/pick up truck	0	6	7	4
Bycicle	1	0	1	0
Computer/tablet	1	3	3	1
Toilet with running water	1	9	6	2
In-house water supply	2	10	6	4
In-house electricity	2	11	7	4
Washing machine	2	9	6	3
Clothing dryer	0	2	2	1

Fridge	1	9	7	4
Freezer	0	6	5	3
Generator	0	1	1	0
Internet connection	0	7	6	4
In-house kitchen	1	6	5	3
Outdoor kitchen	0	0	1	0

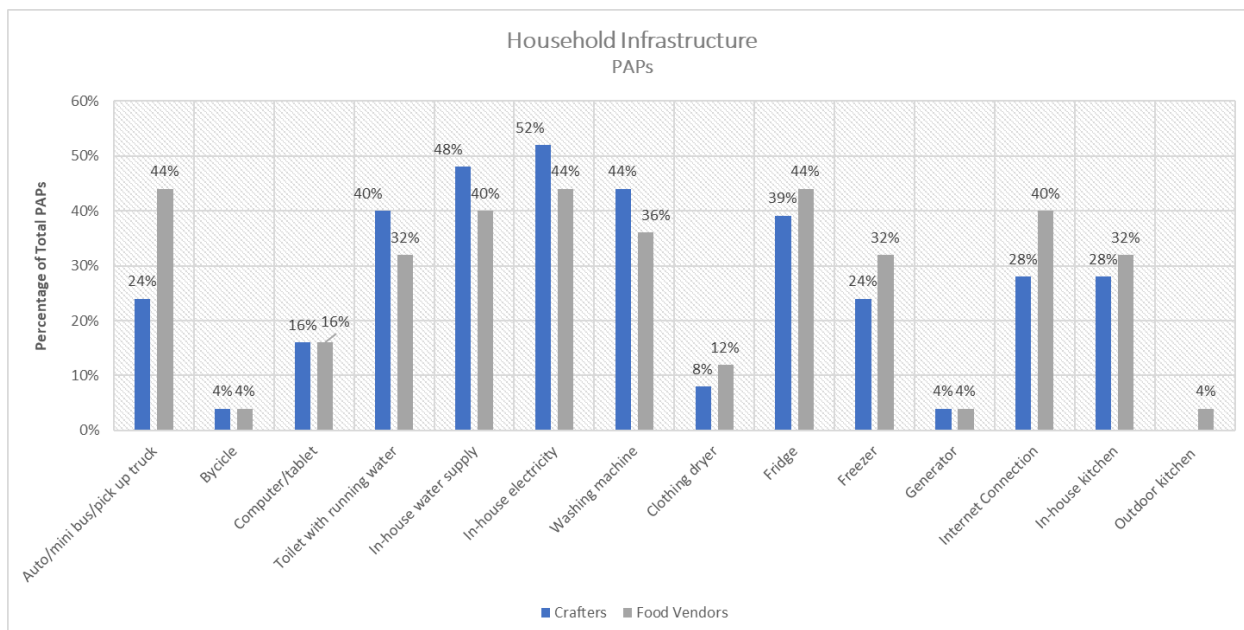


Figure 3-8: Household infrastructure of PAPs

b. Rent infrastructure

14 craft- and 10 food vendors are renting a space from the Government, which specifics are listed below. One person sells food out of his own container which is located at the Waterfront.

Both food- and craft vendors use a public restroom on site, which costs SRD 15, (US\$ 0.48) every visit, which easily adds up to more than US\$1 per day.

Table 3-13: Rent infrastructure for craft- and food vendors

	Craft Vendors	Food Vendors
Rental area	4m2	16m2
Electricity 120V	14	10
Water	0	10
Closed area	0	8
Bar	0	10
Sales table/stand	14	10
Concrete floor	14	10

3.5 Gender and Vulnerability

Female-headed Households. The survey revealed that 1 crafter and 4 food vendors (20% of Total PAPs) crafters are female-headed households with children or other dependents to support. These are considered vulnerable households in the LRP.

Households below the Poverty Line. In February 2023, the poverty line was about to set at SRD 6,000 (U\$ 193.50) monthly income for a 40-hour workweek, after the Government was forced to overturn the decision. We assume this value as the cut off point for vulnerable households because it was set recently calculated by the Government.

5 PAPs (20% of Total PAPs) are currently living below the poverty line. Of these 5 households, 4 are crafters and 1 is a food vendor. These are all considered vulnerable households.

Two households (8% of Total PAPs) possess double vulnerability: female-headed with dependents and living below the poverty line, and these are PAP 8 and PAP 23.

A list of all vulnerable households - total 8 (32% of Total PAPs).

3.6 Perceptions of Project Impacts

3.6.1 Impact of the Project

The perception of crafters about the project impact is divided: 50% of crafters thinks the situation will become worse while 29% think the project will bring improvement and the remaining 21% can't assess the impact yet.

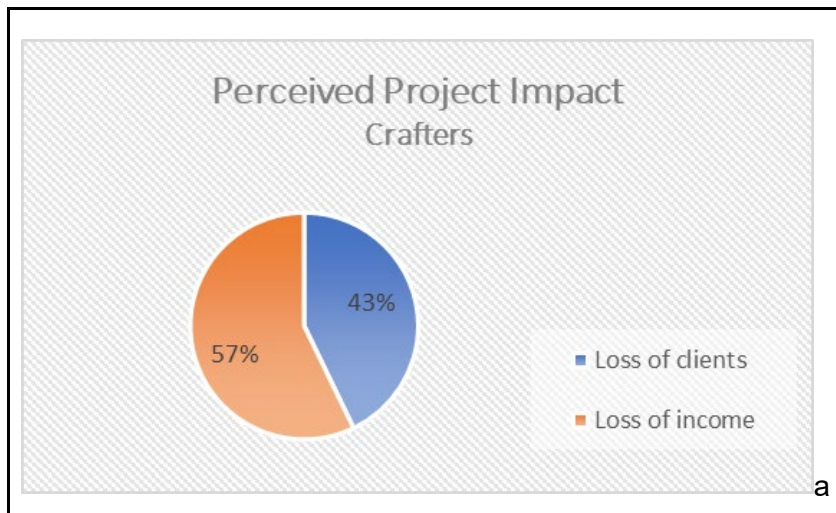
However, food vendors are more pessimistic about the project impact. 64% of food vendors thinks the situation will become worse while the remaining 26% can't assess the impact.

When looking closer at the perception of stakeholders about the project impacts in Table 3-14 and Figure 3-9, the data shows that crafters are mostly worried about loss of income (57%) and loss of clients (43%).

Similar concerns are raised by food vendors: 73% of food vendors is worried about loss of clients, 18% of food vendors are worried they will lose part of their income, and 9% of food vendors are worried about losing employees (and their income). Other concerns are: noise nuisance, loss of parking space, loss of safety, loss of vending space and obtaining additional financial burdens that come with relocation.

Table 3-14: Project impact perceived by crafters and food vendors

	Craft Vendors		Food Vendors	
	M	F	M	F
Loss of clients	1	5	4	1
Loss of income	1	7	6	2
Noise nuisance	0	0	2	0
Loss of parking space	0	0	0	1
Loss of safety	0	0	0	1
Loss of jobs/income of employees	0	0	0	1
Loss of vending space	0	0	0	1
More financial burden	0	0	1	0



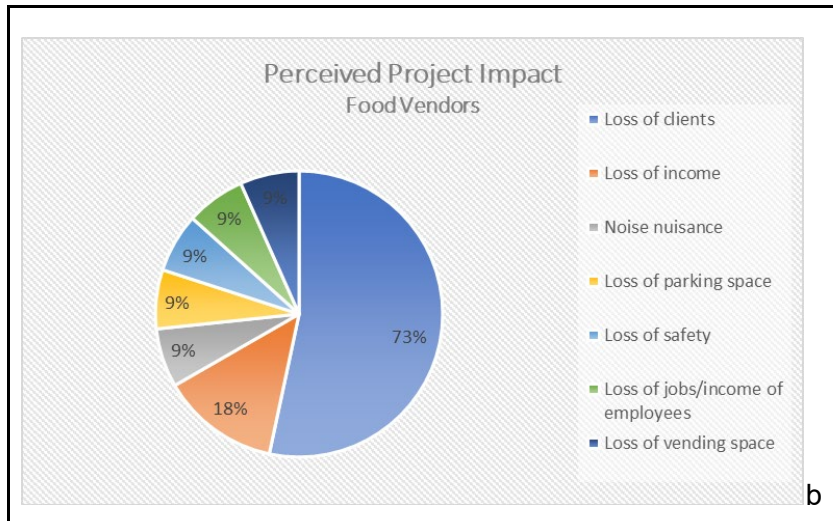


Figure 3-9: Perceived project impact by a. Crafters, and b. Food vendors

The impact can be best minimized when suitable provisions are made by the project (Figure 3-10). According to the crafters, the most important mitigation measure is to provide comparable vending spaces (93%) and a good compensation package (57%). In addition, the crafters value good instructions during the project life.

For the food vendors, a good compensation package (82%) and regular communication (82%) is equally important, followed by timely information sharing (64%) and clear instructions (55%).

For both crafters and food vendors, parking spaces seem to be the least important mitigation measure.

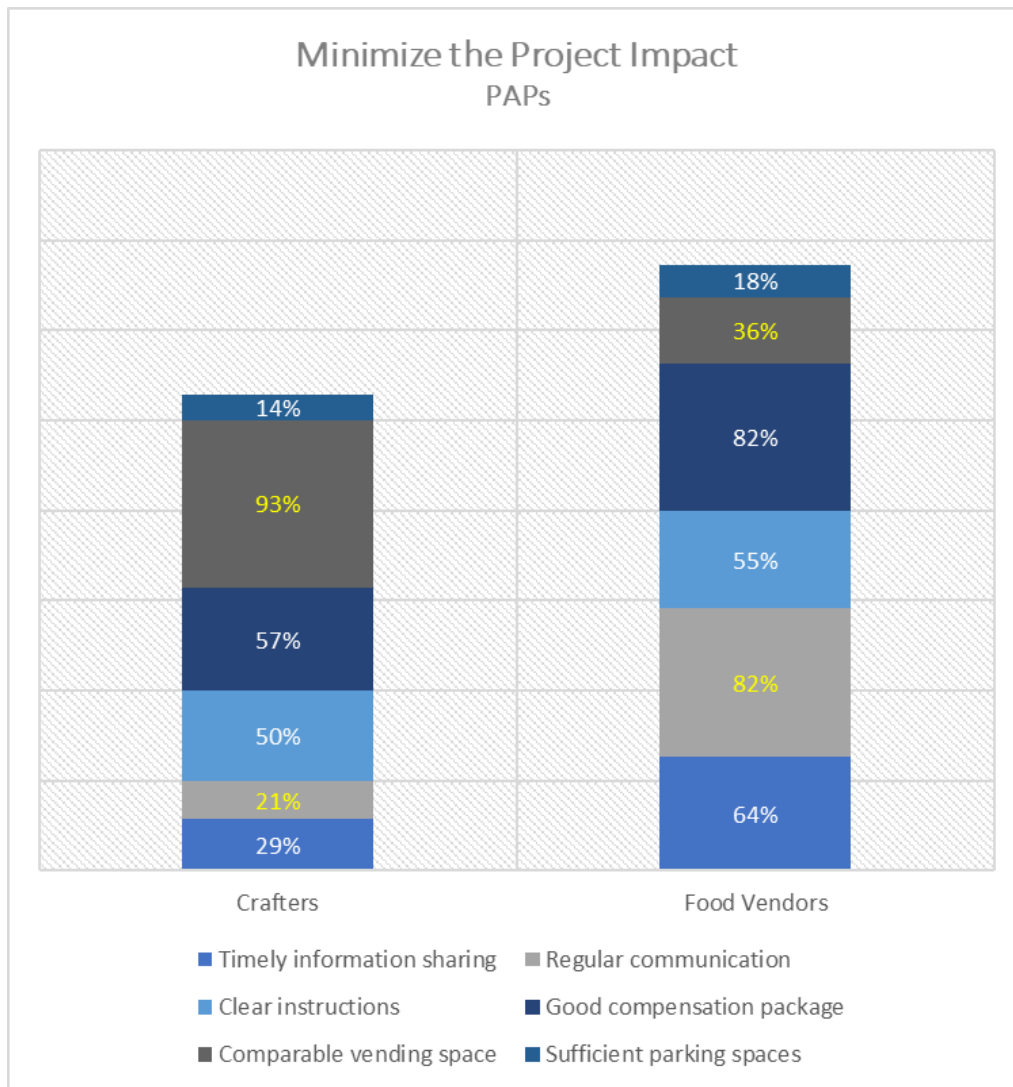


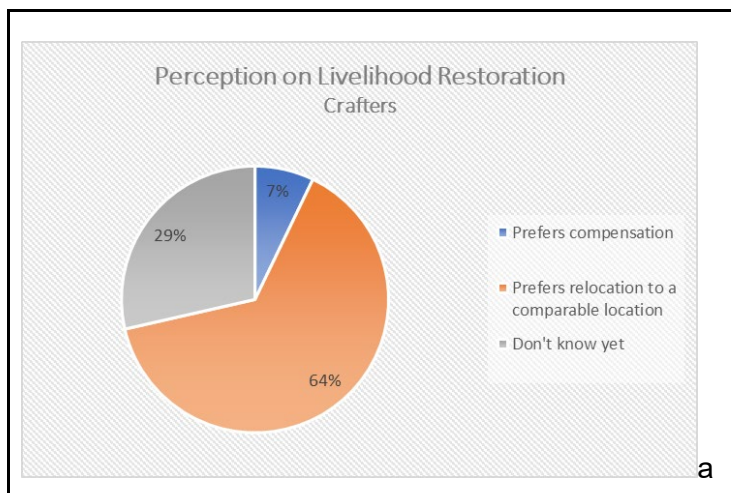
Figure 3-10: Perception about how to minimize the project impact

3.6.2 Perception about Livelihood Restoration

All PAPs are willing to work towards an acceptable solution during the project implementation. Table 3-15 and Figure 3-11 show that the majority of crafters (64%, n=14) prefers to be relocated to a comparable location with minimal loss of clients. 7% of crafters prefers to receive compensation while 29% don't know yet what option to prefer. A comparable location for both groups should be within 500m radius of the Waterfront to keep the clientele. One option could be the SMS pier, located next to the Waterfront.

Table 3-15: Livelihood restoration preference by crafters and food vendors

	Craft Vendors		Food Vendors	
	M	F	M	F
Compensation	0	1	5	3
Relocation to a comparable location	2	7	2	1
Don't know yet	0	4	0	0



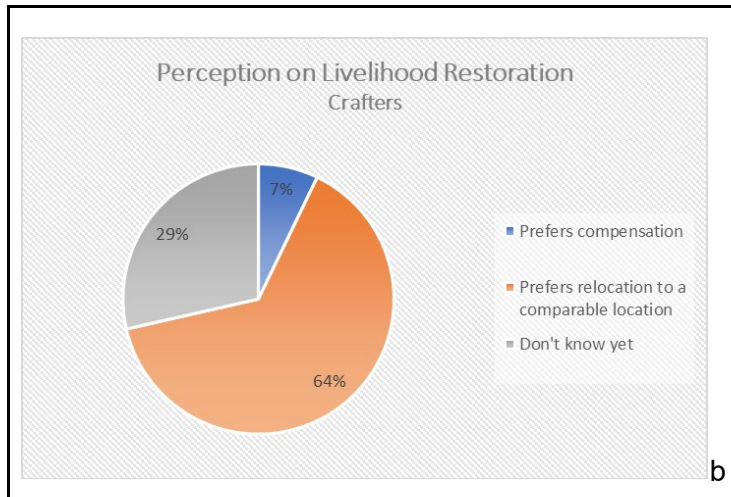


Figure 3-11: Perception on livelihood restoration by a. Crafters, and b. Food vendors

Representation. Most crafters (71%, n=14) are represented by the market leader Mw. Marian Sabajo Emanuelson, while 14% prefers to represent themselves and another 14% like to depend their representation on the outcome is of a collaborative meeting.

For the food vendors, 55% (n=11) is represented by Mr. Frank van Doorn, representative of stall holders in the Waterkant Beheersraad. 9% represents themselves and the remaining 27% doesn't have any representation.

4. Perspectives about the Area and the Project

4.1 Transportation

4.1.1 Transportation

Half of the residents, businesses and vendors reach the Waterfront by car (Figure 4-1a). A substantial amount is dependent on other means of transportation and reach the Waterfront by bus (18%), taxi (14%) or by getting a lift from others (7%). Those who are residing and work at the Waterfront can easily walk to their destination.

The duration to reach the Waterfront varies between 15 minutes or less to 120 minutes (Figure 4-1b). The majority of residents, business and vendors reach the Waterfront from their residence within 30 minutes.

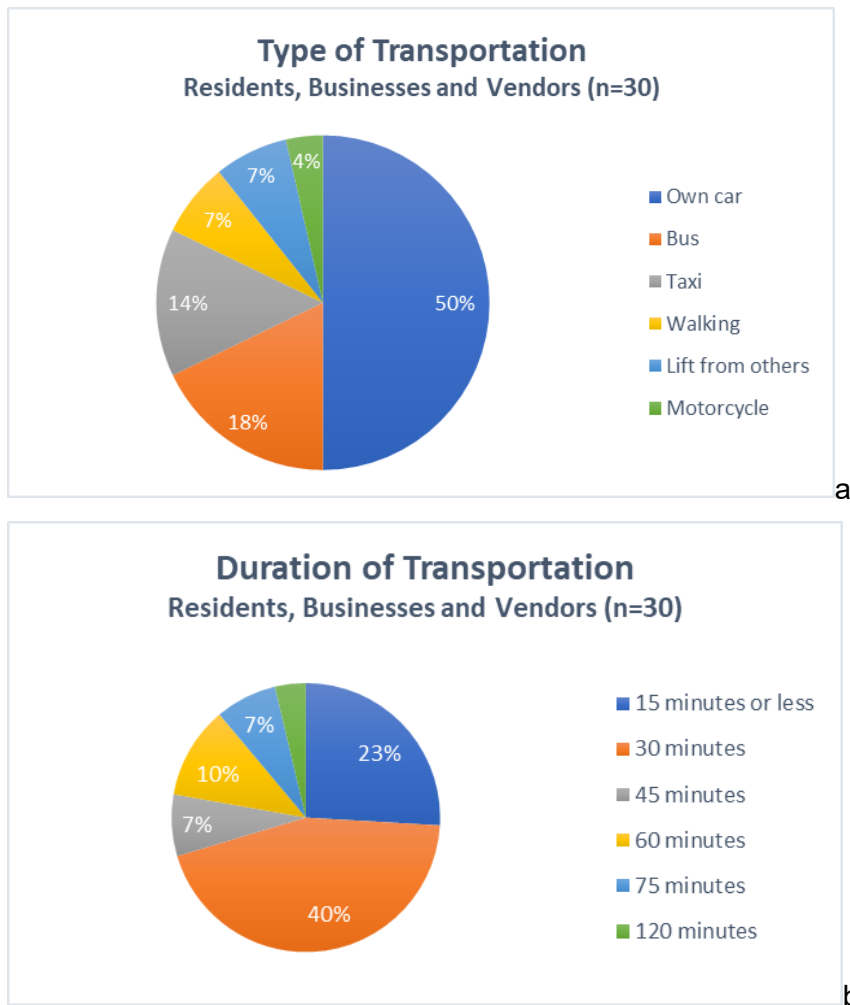


Figure 4-1: a. Type of Transportation to the Waterfront b. Duration of transportation to the Waterfront by residents, businesses and vendors

4.1.2 Road Traffic

The perception about road traffic is shown in Figure 4-2.

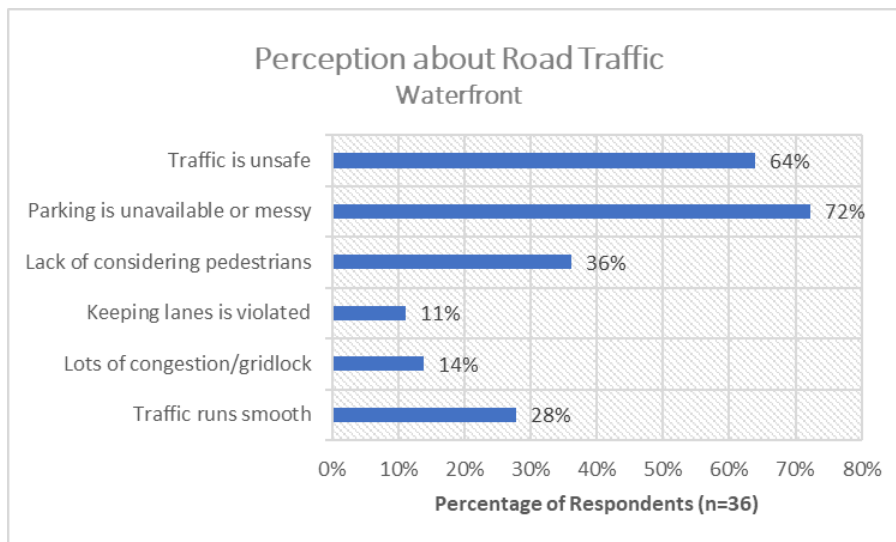


Figure 4-2: Perception of respondents about road traffic

The residents, businesses and vendors along the Waterkant reported experiencing traffic accidents. Figure 4-3 gives an overview of the observed traffic accidents in the last year.

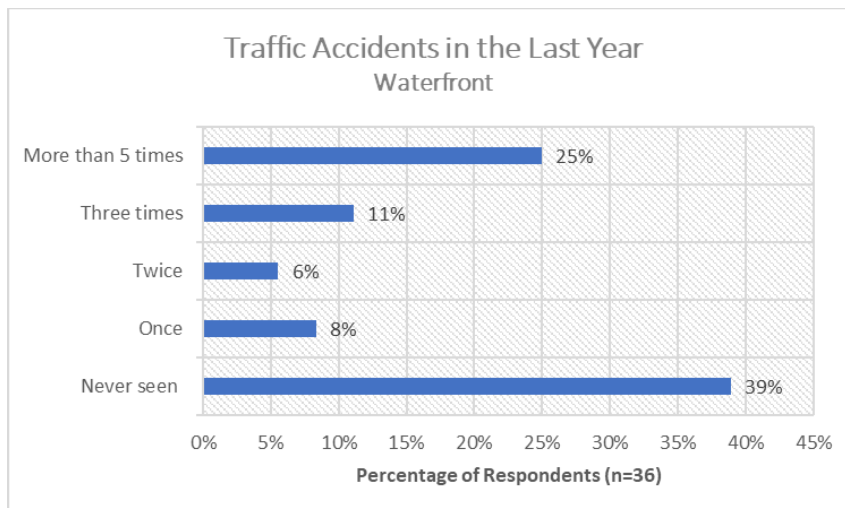


Figure 4-3: Observed traffic accidents by respondents along the Waterfront in the last year

4.1.2 Parking

Only a small percentage -13%- of the residents, businesses and vendors make use of parking lots in the area (Figure 4-4). The businesses are mostly using the parking spaces located on their own parcel while vendors prefer to park close to their business, usually adjacent to the vendor stands.

Conflict over parking spaces have been reported at the site by 8% of respondents in the 2023 socio-economic survey.

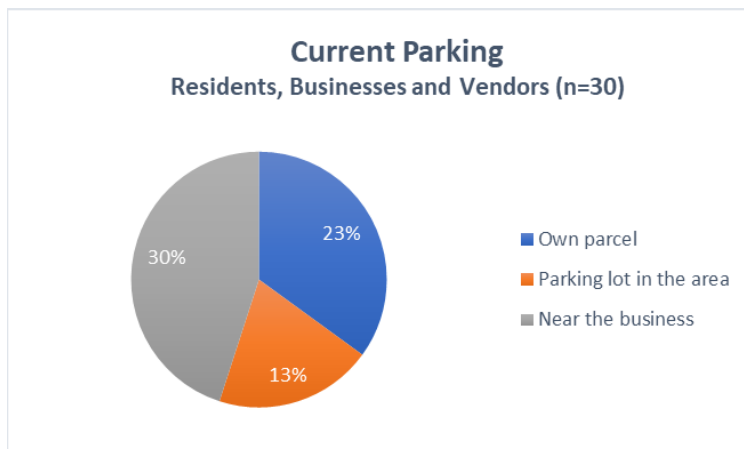


Figure 4-4: Current parking situation of residents, businesses and vendors

Business and residents during have expressed concern about access to their premises and parking during the construction phase. Figure 4-5 gives an overview about preferences of these stakeholders.

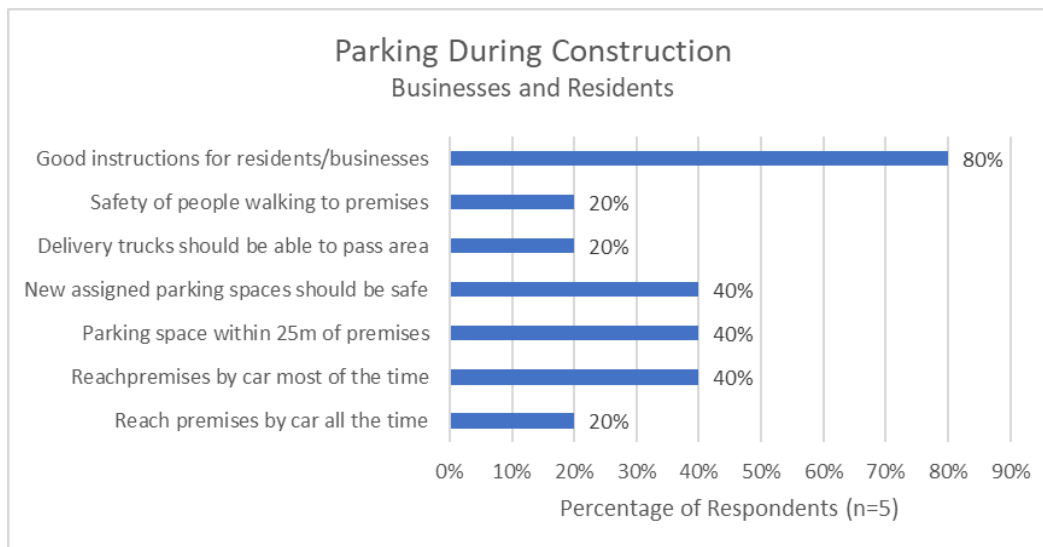


Figure 4-5: Preferences of residents/businesses access to premises and parking during construction

4.2 Local Perception about the Project

Data was gathered on the perceived impact of the projects on key-stakeholder groups: i) craft vendors (n=14), ii) food vendors (n=11), iii) businesses/residents (n=5). The findings are presented below.

4.2.1 Advantages of the Project

The majority of respondents (97%) think the project will bring significant improvement to the Waterfront and surrounding area. Respondents also believe the area will become safer (67%). An increase in tourists is expected, as well as more clients for vendors selling crafts and food.

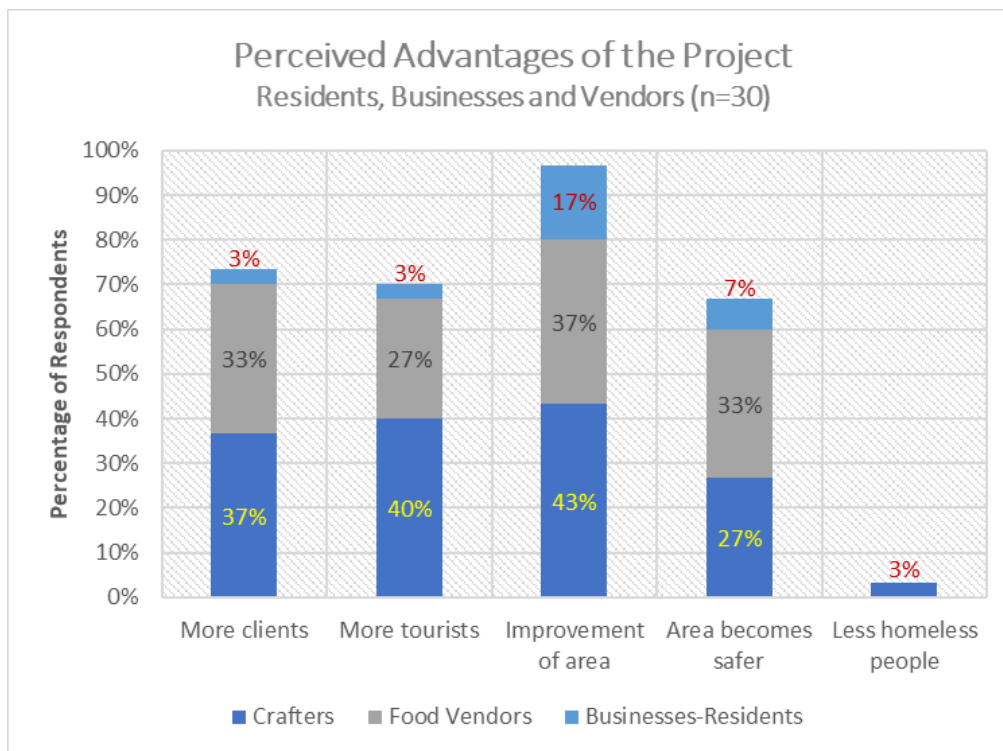


Figure 4-6: Perceived advantages of the Waterfront project

4.2.2 Project Impact

The data shows residents, businesses and vendors are predominantly concerned with the loss of clients, income or vending spots. Other important concerns include business-related (loss of employee jobs, extra costs, increase rental rate of vending space, division of group) or related to property (damage to building), traffic (use of heavy machinery) or the environment (excessive dust release) (Figure 4-7).

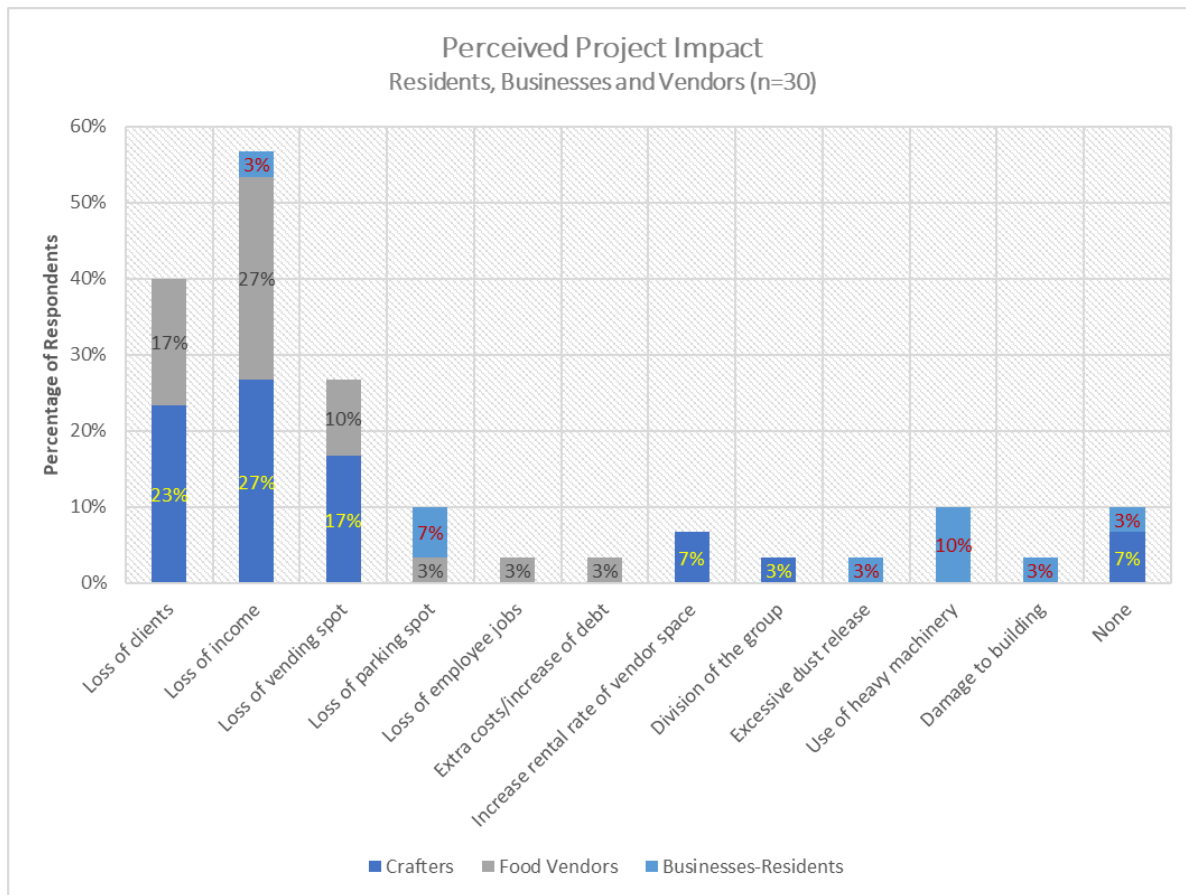


Figure 4-7: Perceived impact of the Waterfront project

4.2.3 Minimize Negative Effects

The respondents were asked how the negative effects of the project could be minimized. Respondents reported having a good compensation package and a comparable new location (mostly vendors) would minimize the negative impacts. All round Information transfer seems very important to the respondents: they seek for frequent communication (57% of respondents), clear instructions (27% of respondents) and sharing information about the negative effects (43% of respondents).

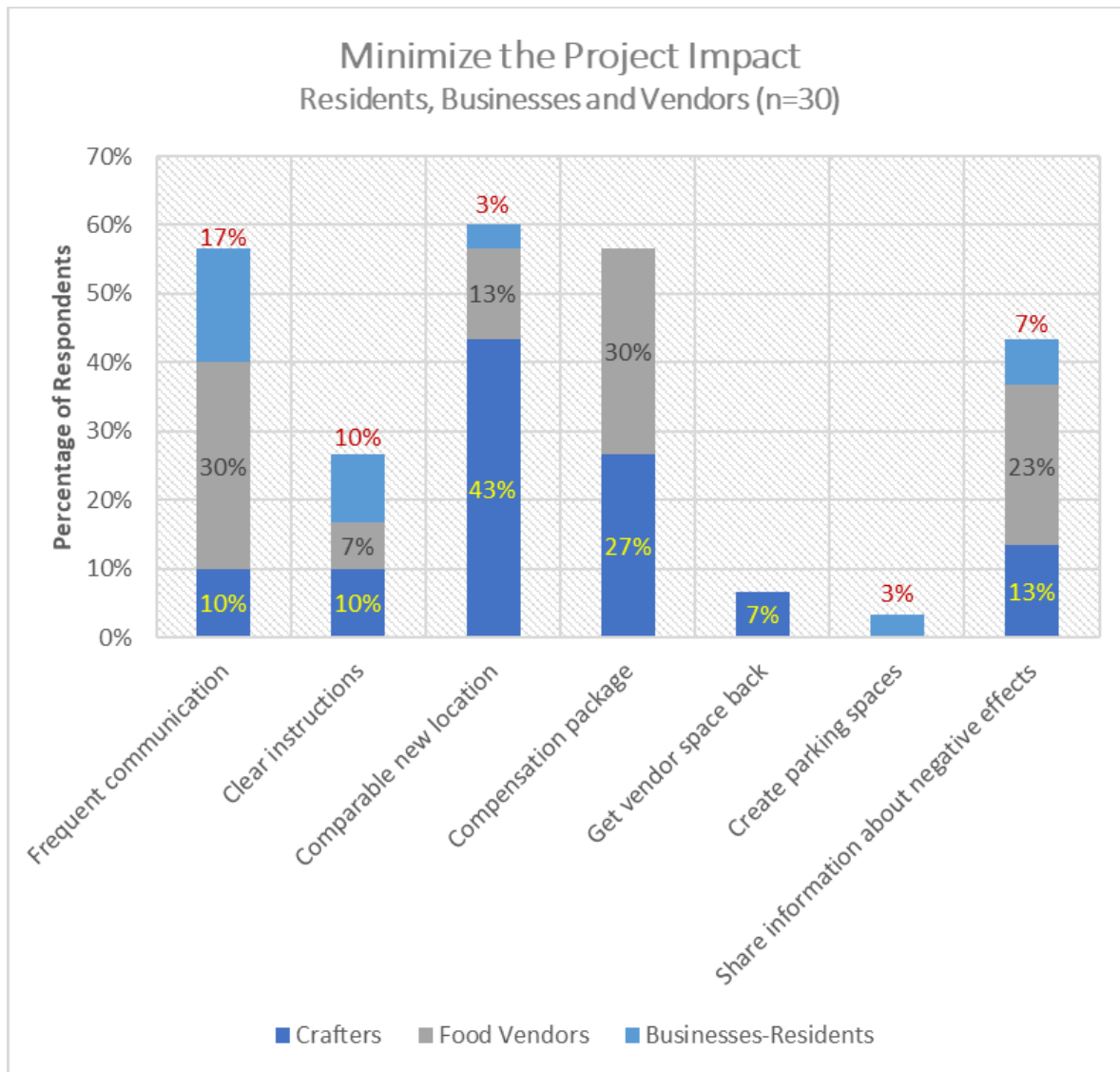


Figure 4-8: Perception of residents on minimizing the effects of the Waterfront project

4.3 Safety and Security

The survey shows safety violations experienced by the majority of the residents, businesses, vendors and other active at the Waterfront. Name-calling is reported by 58% of respondents, followed by threats, vandalism and fighting (Figure 4-9).

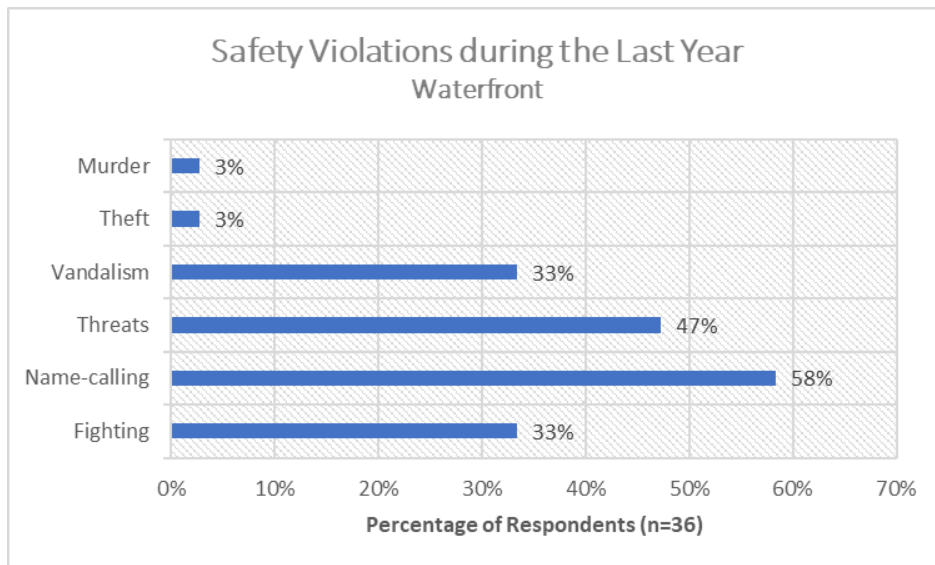


Figure 4-9: Safety violations at the Waterfront during the last year

Annex: Survey Questionnaire



The survey questionnaire can be found here:

[Survey Questionnaire.pdf](#)

Appendix B

Noise Baseline Report

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023



ESIA for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure

Noise Baseline Report

Final



Paramaribo, 13 March 2023

Prepared by



ISO 9001:2015 certified

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Document: Noise Baseline Report

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Abbreviations and Terminology

Abbreviation	Definition
A-weighted sound level	A measure of sound pressure level designed to reflect the acuity of the human ear, which does not respond equally to all frequencies.
ADI	Area of Direct Influence
AII	Area of Indirect Influence
dBA	Decibel using the A-weighting setting
dB	Linear decibel level
Decibel (dB)	A measure of sound. Equal to 10 times the logarithm (base 10) of the ratio of a given sound pressure to a reference sound pressure. The reference sound pressure used is 20 micro-Pascal, which is the lowest audible sound for the human ear.
EHS	Environment Health and Safety
ESIA	Environmental and Social Impact Assessment
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
L ₁₀	L ₁₀ is the level exceeded for 10% of the time. For 10% of the time, the sound or noise has a sound pressure level above L ₁₀ . For the rest of the time, the sound or noise has a sound pressure level at or below L ₁₀ .
L ₉₀	See L ₁₀ but read 90% instead of 10% and L ₉₀ instead of L ₁₀ .
LAeq	Equivalent Sound Pressure Level using the A-weighting setting
L _{max}	Maximum RMS (root mean squared) level of a sound source or environment.
L _{min}	Minimum RMS (root mean squared) level of a sound source or environment.
NIMOS	Nationaal Instituut voor Milieu en Ontwikkeling in Suriname
POF	Perspectives of Freedom Foundation
WHO	World Health Organization

Executive Summary

The Ministry of Education, Science and Culture is planning to redevelop the Waterfront and improve the surrounding mobility infrastructure as part of the Paramaribo Urban Rehabilitation Program. As per NIMOS guidelines a Category-B Environmental Social Impact Assessment (ESIA) should be conducted for which the consultancy Perspectives of Freedom Foundation (POF) has been contracted. POF has contracted ILACO Suriname N.V. (ILACO) to execute three baseline studies for this ESIA, namely the water quality, air quality and noise baseline studies.

This report presents the methodology and the results of the noise baseline study.

For the noise baseline study, previous baseline data (not older than 5 years) has been used from the following studies:

- ESIA for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019);
- Noise monitoring for the Suriname River Dredging Project – Phase I (ILACO, 2020)

In addition, a site visit was conducted on the 26th of January 2023 and noise measurements have been conducted during one season (short rainy season), on the 1st – 3rd of February 2023. The noise measurements have been conducted at five (5) representative locations within the wider study area, namely along and near the Waterkant, Zeelandiaweg and at the SMS Pier complex. The noise measurements were carried out according to the General Environment, Health and Safety (EHS) Guidelines of the WHO/IFC for Noise monitoring (2007). The measurements were conducted with a sound level meter and analyzer, the SVAN 977C (#98852) mounted on a tripod at approximately 1.5 m above the surface level, and at least 3 m away from obstacles or reflecting surfaces. All measurements have been carried out for approx. 30 minutes continuously during daytime (7:00 – 22:00) and night time (22:00 – 07:00).

From the noise baseline assessment, the following can be concluded:

- The measured LAeq levels during daytime varied between 51.1 and 70.0 dBA. The main noise source during daytime were continuous noise of traffic passing by. Location N2 and N3 were along main roads (respectively 3 and 15 m away from the edge of the main roads), where the higher noise levels are measured.
- The measured LAeq levels during night time varied between 45.1 and 65.3 dBA. The main noise sources during nighttime were noise of music in background and traffic passing by. Other frequent observed noises sources were noise of starting engine from mopeds and noise of talking persons at N2, and noise of birds at N4.
- Comparing the current baseline noise levels with the previous noise levels, it is observed that the current noise levels are within the same range. Higher noise levels are recorded along the main roads, because of the intensity of vehicles passing by. The noise levels decrease with increasing distance from the main roads. It is expected that institute buildings located further from the main roads will experience noise levels lower than levels measured along the main roads.

1. Introduction & Background

The Ministry of Education, Science and Culture is planning to redevelop the Waterfront and improve the surrounding mobility infrastructure as part of the Paramaribo Urban Rehabilitation Program. As per NIMOS guidelines a Category-B Environmental and Social Impact Assessment (ESIA) should be conducted for which the consultancy Perspectives of Freedom Foundation (POF) has been contracted. POF has contracted ILACO Suriname N.V. (ILACO) to execute three baseline studies for this ESIA, namely the water quality, air quality and noise baseline studies.

This report presents the methodology and the results of the noise baseline study.

1.1 Project Background

The Redevelopment of the Waterfront and the improvement of the surrounding mobility infrastructure involves Civil, Landscaping, Small Structures and Utilities Works associated with the Streetscape and includes activities such as:

- Earthworks
- Paving and asphaltting work
- Drainage improvement
- Structural work (including buildings, craft market stall, etc.)
- Street furniture
- Landscaping

The construction work is planned to start in the second half of 2023 and the execution period is 12 months.

The project area meaning the direct project footprint or area of direct influence (ADI), is part of Paramaribo's cultural heritage and central business district. The area can be reached via the one-way Waterkant and the Mirandastraat.

The project area comprises (see **Figure 1**):

- The Waterkant between the Henck Arronstraat and the Waag Building;
- The area in between the Waterkant and the Suriname River;
- The Kromme Elleboogstraat and Mr. Dr. J.C. De Mirandastraat till the Mr. F.H.R. Lim A Postraat;
- The 'Vlaggenplein' and
- The National Assembly and five buildings along the Zeelandiaweg at the Fort Zeelandia complex.

For the noise baseline study, a wider study area (area of indirect influence (AII)) was considered to identify the land use, sensitive receptors within the area and the possible noise sources which can cause induced or cumulative changes in noise quality in combination with the project activities. The area of indirect influence, a radius of 200 - 250 m from the project area, is bordered by the Suriname River, Kromme Elleboogstraat, Mr. F. H. R. Lim A Postraat, Mr. Dr. J.C. De Mirandastraat and Henck Arronstraat till Fort Zeelandia (see **Figure 1**).



Figure 1: Overview of project area and wider study area

1.2 Objective and Scope of Works

The purpose of the noise baseline study is to establish a noise baseline for one season within the project and wider study area. The scope included the following:

- Conducting a desktop study to identify and review noise data from previous studies in the AII. These studies comprise the:
 - ESIA study for the Reconstruction of the Parliament Building, the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019), and
 - Environmental Monitoring for the Suriname River Dredging Project (SRDP-Phase I), Noise baseline study (ILACO, 2020).
- Conducting a site visit to map land uses, sensitive receptors and to select representative measurement locations.
- Conducting day- and nighttime noise baseline measurements within the project and wider study area, namely along and near the Waterkant, Zeelandiaweg and at the SMS Pier complex.

1.3 Land Use and Sensitive Receptors

On the 26th of January 2023, a site visit was conducted to the project and the wider study area. From this site visit it can be concluded that the project area and its immediate surroundings consists mainly of government and private sector office buildings, followed by restaurants, food courts, museums and guesthouses (see **Figure 2**). Some governmental institutions within the project area are:

- the National Assembly building,
- the Central Bank of Suriname and
- departments from a number of ministries.

In the open area between the SMS Pier complex and the Mr. Dr. J.C. De Mirandastraat various food courts and a crafters market can be found. The land use of the project area can therefore generally be

classified as institutional and commercial. Observed sensitive receptors within the AII are a polyclinic, church and two museums. There are also residents within the project and wider study area.

The main noise sources that were identified during a site visit are:

- Traffic along the roads within the study area;
- Construction works for example at a building of the Ministry of Social Affairs and Housing at the junction of the Kromme Elleboogstraat and Waterkant, and
- Construction works near the junction of the Mr. F. H. R. Lim A Postraat and the Tamarindelaan.



Figure 2: Overview of land use and nearest receptors within the project and wider study area

1.4 Applicable Noise Standards

In the absence of specific national guidelines for noise levels, the international standards of the World Health Organization/ International Finance Corporation (WHO/IFC) for community-based noise limits, also used by NIMOS, are applied (see **Table 1**).

Table 1: Applicable Outdoor Noise Standards for Community-based noise (WHO/IFC).

Receptor	Maximum Allowable Ambient Noise Levels 1-hour LAeq (dBA)	
	Daytime 07:00-22:00	Nighttime 22:00-07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

The IFC states that noise impacts should be limited to a maximum increase above background levels of 3dBA at the nearest receptor location off-site (IFC 2007). For a person with average hearing acuity an increase of less than 3 dBA in the general ambient noise level is not detectable.

Since the majority of the buildings in the project area are offices and other commercial buildings with operating hours between 7:00 – 17:00, both standards, for residential/institutional as well as the standards for commercial receptors, will be used to assess the measured noise levels during daytime. For nighttime, the residential standards will be used to assess the measured noise levels, as there are also residents within the wider study area.

2. Methodology

For the noise baseline study, a desktop study was conducted using previous baseline data (not older than 5 years). In addition, a site visit was conducted on the 26th of January 2023 and noise measurements have been conducted during one season (short rainy season), on the 1st – 3rd of February 2023.

2.1 Desktop Study

Previous noise measurements were conducted in 2018 and 2020 within the wider project area. A summary of the measurement method, procedure, locations and period for each study is outlined below:

1. ESIA study for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019): Noise measurements were conducted in the long dry season on the 2nd of October 2019 at four locations (N1- N4) along main roads (**Figure 3**). The measurements were conducted during three (3) different time intervals during daytime using the SVAN 957 (#15357) meter.
2. Environmental Monitoring for the Suriname River Dredging Project (SRDP- Phase I) (ILACO, 2020): Noise measurement was conducted in the short dry season on the 2nd of April 2020 at one (1) location (P-1) on the parking area of the National Assembly at Waterkant (**Figure 3**). The measurement was conducted during daytime using the SVAN 957 (#15357) meter.



Figure 3: Overview of previous noise measurement locations

2.2 Current Noise Measurements

The current noise measurements were carried out according to the General Environment, Health and Safety (EHS) Guidelines of the WHO/IFC for Noise monitoring (2007).

2.2.1 Measurement Instruments

Noise measurements were performed with a sound level meter and analyzer SVAN 977Cc (#98852) mounted on a tripod. The MK 255 pre-polarised microphone is provided with a SA22 windscreen, through which the measurements are performed.

The measurements were done with Class 1 IEC 61672:2013 accuracy in the frequency range of 20Hz to 20 kHz with an MK 255 microphone. A FAST detector was used for the measurements with A, C and Z filters. Also, an 1/1 OCTAVE analysis with 10 filters with center frequencies 31.5 Hz ÷ 16 kHz, Class 1 IEC 61260-1:2014 were logged. Before each measurement period, a calibration was done with an SV 33B Acoustic Calibrator (serial # 125676) with IEC 60942:2003 standard, Type 1 accuracy. The logged data was analyzed with the software SVANPC++ version 3.3.16. See **Appendix 1** for the specifications of the SVAN 977c. The calibration overview of the SVAN 977c Sound Analyser is described in **Table 2**.

Table 2: Dates of calibration

Calibrated on	Measurement took place on
31 st of January 2023	1 st of February 2023
2 nd of February 2023	2 nd and 3 th of February 2023

2.2.2 Measurement Parameters

At every measurement the following was recorded:

- Time and date;
- Location and GPS;
- Name of person carrying out the monitoring;
- Serial number of equipment used;
- Noted noise sources and noise levels and direction from source of interest;
- Duration of monitoring;
- Weather conditions such as wind direction, cloud cover etc.
- SVAN 977c measures noise levels in L linear peak (dBL), and LAeq, L10, L50, L90, Lmax and Lmin, all provided in dBA.
- Audio recordings

The LAeq provides information on the nature and extent of the noise sources. The L10 represents the higher noise levels during the measurement period and together with L50 and L90 are generally utilized for traffic noise levels. The L90 gives an indication of the underlying noise level or the noise level that is present 90% of the measurement time. It is generally used to represent background noise levels i.e., the noise levels without the influence of infrequent transient sources.

2.2.3 Measurement Locations

The noise measurement locations were chosen by means of the previous noise studies, land use information, presence of sensitive receptors and to collect representative baseline noise levels,

A total of five (5) locations were selected in the wider study area (see Figure 4):

- The SMS Pier complex (N1)
- The junction of the Mr. Dr. J.C. De Miranda and the Waterkant (N2)
- The Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein (N3)
- An open grass field along the Zeelandiaweg (N4) and
- The shore at Waterkant near the balcony over the Suriname River (N5)



Figure 4: Overview of noise measurement locations for the current study

2.2.4 Measurement Procedures

All measurements have been carried out by a survey team of two (2) persons, with the SVAN meter placed on a tripod at approximately 1.5 m above the surface level and at least 3 m away from obstacles or reflecting surfaces. Audio recordings have also been made during all measurements by attaching an audio recorder to the sound meter. In case of rain, the measurements were stopped earlier or postponed.

The noise measurements have been carried out for 30 minutes continuously during daytime (07:00 – 22:00) and nighttime (22:00 – 07:00). See **Table 3** for description of the measurement locations and date.

Table 3: Overview of noise measurement locations

Type	Location	Description	Date (Daytime)	Date (Nighttime)
Baseline noise measurement	N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden jetty in the Suriname River. Some boats were observed at the jetty.	1 st of February 2023	2 nd of February 2023
	N2	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 away from the edge of the road. The ground was paved with street tiles.		3 th of February 2023
	N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.		

	N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.		
	N5	Along the shore at Waterkant near the Balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.		

3. Results

3.1 Desktop Study

A summary of the previous noise measurement results, including count of motorized traffic passing by, are presented in

Table 4.

Table 4: Overview of previous noise measurement results

No	Location	Time period	Motorized traffic intensity	LAeq	Remarks
N1	At the junction of the Henck Arronstraat and the Grote Combeweg.	06:30-07:00	658	67.6	5 m away from the axis of the Henck Arronstraat
		12:30-13:00	848	68.5	
		16:00-16:30	854	68.1	
N2	At the junction of the Onafhankelijkheidsplein and the Kleine Waterstraat	07:15-07:45	849	72.5	5 m away from the axis of the Kleine Waterstraat
		13:15-13:45	667	72.0	
		16:45-17:15	866	71.6	
N3	At the junction of Mr. J.C de Mirandastraat and Mr. F.H.R Lim A Po straat	08:00-08:30	400	63.7	5 m away from the axis of the Mr. J.C De Mirandastraat
		14:00-14:30	340	62.7	
		17:30-18:00	229	60.7	
N4	At the junction of the Kromme Elleboogstraat and Waterkant	09:00-09:30	497	69.3	5 m away from the axis of the Waterkant
		15:00-15:30	420	68.8	
		18:15-18:45	390	70.2	
P-1	On the parking lot of the National Assembly, the terrain is covered with gravel and is along Waterkant (south-east) and the National Assembly.	9:16 – 9:46	345	52.8	45 m away from the axis of the Waterkant

The main findings from the noise measurements conducted in 2018 are (ILACO, 2019):

- The noise levels for the ESIA studies for the Reconstruction of the Parliament Building and Rehabilitation and operation of Historical Buildings in the inner city of Paramaribo varied between 60.7 and 72.5 dBA.
- During daytime, all measured noise levels exceeded the applicable WHO/IFC daytime standard of 55 dBA for residential/institutional areas at all locations.
- The measured noise levels at two locations, namely at the corner of the junction between the Kleine Waterstraat and the Zeelandiaweg (N2) and at the corner of the junction of the Kromme Elleboogstraat and the Waterkant (N4) also exceeded the applicable WHO/IFC daytime standard of 70 dBA for commercial areas.
- A high motorized traffic intensity was observed during the measurements, which also is the main source of the higher noise levels recorded. It should be noted that the measurements were also conducted approx. 5 m away from the axis of the roads, which is quite close by.

The main findings from the noise measurements conducted in 2020 are (ILACO, 2020):

- At the parking lot of the National Assembly (P-1), a daytime noise level of 52.8 dBA was measured.
- The measured noise level was below the applicable WHO/IFC daytime standard of 55 dBA for residential/institutional areas and 70 dBA for commercial areas.

From the previous study it can be concluded that higher noise levels are recorded along the main roads, because of the intensity of vehicles passing by. The noise levels decrease with further distance from the

main road. This can be confirmed with the noise study conduct in 2020 at location P-1. Also, at this location continuous noise of traffic along the Waterkant was observed.

3.2 Current Baseline Conditions

The current baseline noise measurements were conducted on the 1st, 2nd and 3th of February 2023. During the noise measurements all noise sources were recorded in a field observation sheet (**Appendix 2A and 2B**). The logger results of all measurements are presented in **Appendix 3A and 3B**, together with general information. A photo report is presented in **Appendix 4**.

3.2.1 Weather Conditions

Noise measurements have been carried out during day and nighttime. The weather conditions during daytime measurements were dominated by cloud cover with no sun. The wind speed varied from light air till light breeze. A predominant northeast wind direction was observed.

The weather conditions during nighttime measurements varied between clear sky with stars and cloud cover. The wind speed varied between calm and light air. A predominant northeast wind direction was observed. No measurements were conducted during rainfall.

3.2.2 Baseline Noise Levels

The results of the day and nighttime measurements, including count of motorized traffic passing by, are summarized in **Table 5**.

Table 5: Current measured day and nighttime results

ID #	Location	Daytime (07:00-22:00)				Night time (22:00- 07:00)			
		Motorized traffic intensity	L10	L90	LAeq	Motorized traffic intensity	L10	L90	LAeq
N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden jetty in the Suriname River. Some boats were observed at the jetty.	543	54.5	46.4	51.1	324	52.7	45.3	50.6
N2	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 m away from the edge of the road. The ground was paved with street tiles.	451	73.0	57.7	70.0	198	68.5	55.3	65.3
N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel	403	64.1	54.8	61.9	86	61.0	44.5	56.4
N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.	20	55.1	48.6	52.9	3	47.1	42.9	45.1

N5	Along the shore at Waterkant near the Balcony over the Suriname River, approx. 30 m from the Waterkant and 2 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.	289	65.8	53.1	60.9	65	54.4	38.5	50.3
xx	Exceeds the IFC noise standard of 55 dBA for institutional areas at daytime (7:00-22:00)								
xx	Exceeds the IFC noise standard of 45 dBA for institutional areas at nighttime (7:00-22:00)								
xx	Exceeds the IFC noise standard of 55 dBA for institutional areas and 70 dBA for commercial areas at daytime (22:00-7:00)								

Daytime background levels (L90) varied between 46.35 and 57.65 dBA, which indicate rather noise conditions. The increase background noise level at N2 was caused by continues noise of music in background and traffic passing by. At location N3 and N5, this was caused by continues noise of traffic passing by. The background levels (L90) during nighttime varied between 38.45 and 55.30 dBA. The background levels (L90), except at N2, indicate quiet environments during nighttime. The increased nighttime background noise level at N2 was caused by continues noise of music in background and traffic passing by.

During daytime the higher noise levels (exceeding the applicable WHO/IFC standards) at location N2, N3 and N5 are mainly caused by traffic passing along the main roads. It should be noted that these measurements are conducted relatively close to the road and it is expected that these noise levels will be almost unnoticeable in the buildings in the surroundings. Other noise sources observed during these measurements are man-made noises, such as noise of talking and yelling persons, claxon and noise from the surroundings such as from birds and rustling of leaves from trees by the wind.

During nighttime, the measured noise levels exceed the applicable WHO/IFC nighttime standard of 45 dBA for residential areas at all locations. Traffic passing by along the roads is the main cause for these higher noise levels. The higher LAeq level (65.3 dBA) at N2 is caused by visitors at the Waterfront starting their moped engines. This can be confirmed by the higher measured L10 level (68.5 dBA). The noise level as this location can be derived from the L90 of 55.3 dBA. Other noise sources observed during the nighttime measurements are noise of music from the cars parked along Waterfront (N1), noise of birds chirping occasionally (N4) and noise of talking persons (N5).

3.3 Noise sources from the Project

The redevelopment of the Waterfront and improvement of surrounding mobility infrastructure may result in higher noise levels during the construction phase. Activities such as mobilization and transportation, loading and unloading of material, material storage, earthworks, paving and asphaltting works, structural work and the use several construction equipment may contribute to existing noise levels. During the operational phase it is expected that the noise levels may be the same as the current situation, as the movement of persons and traffic will be normalized again in the project area.

4. Conclusion

From the noise baseline assessment, the following can be concluded:

- The measured LAeq levels during daytime varied between 51.1 and 70.0 dBA. The main noise source during daytime were continuous noise of traffic passing by. Location N2 and N3 were along main roads (respectively 3 and 15 m away from the edge of the main roads), where the higher noise levels are measured.
- The measured LAeq levels during night time varied between 45.1 and 65.3 dBA. The main noise sources during nighttime were noise of music in background and traffic passing by. Other frequent observed noises sources were noise of starting engine from mopeds and noise of talking persons at N2, and noise of birds at N4.
- Comparing the current baseline noise levels with the previous noise levels, it is observed that the current noise levels are within the same range. Higher noise levels are recorded along the main roads, because of the intensity of vehicles passing by. The noise levels decrease with increasing distance from the main roads. It is expected that institute buildings located further from the main roads will experience noise levels lower than levels measured along the main roads.

References

- IFC, 2007. Environmental, Health, and Safety (EHS) Guidelines. General EHS Guidelines. International Finance Corporation / World Bank Group, April 30, 2007.
- ILACO, 2019. Environmental and Social Impact Assessment (ESIA) for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo.
- ILACO, 2020. Environmental Monitoring for the Suriname River Dredging Project (SRDP-Phase I), Noise Monitoring Report, ILACO, April 2020.

Appendices

Appendix 1 Specifications SVAN 977c

SVAN 957

Sound & Vibration Analyser

The SVAN957 is all digital, Type 1 sound & vibration level meter along with analyser. Instrument is intended to general acoustic and vibration measurements, environmental monitoring, occupational health and safety monitoring.

Three profiles allow parallel acoustic or vibration measurements with independently defined filters and RMS detector time-constants. Each profile provides significant number of results (e.g. for sound: L_{eq} , L_{Max} , L_{Min} , L_{Peak} , Spl , SEL or for vibration: RMS, PEAK, VDV, MTW). Advanced time-history logging for each profile provides complete information about measured signal in non-volatile 32 MB internal memory or external USB memory stick. All required weighting filters (e.g.: A, C, W_k , W_e , W_f) including the latest ISO 2631-1 & 2 standard are available with this instrument. RMQ detector enables direct measurement of the Vibration Dose Value (VDV). Using computational power of its digital signal processor the SVAN957 instrument can, simultaneously to the meter mode, perform real-time 1/1 or 1/3 octave analysis including statistical calculations, acoustic dose measurements, FFT analysis and Reverberation Time measurements. The time-history logging

of 1/1 octave, 1/3 octave and FFT analysis is provided. The time-domain signal recording on the external USB memory stick is also available.

Fast USB 1.1 interface (12 MHz) creates real-time link for the PC "front-end" application of the SVAN957. Instrument can be remotely controlled and measurement results can be downloaded to PC using the RS 232 (GPRS) or IrDA interfaces. It can be offered with GPRS modem, LAN & WLAN connection module. Together with SvanPC+_RC remote communication software, these interfaces provide easy remote access to instrument settings & data over internet and local area network.

Instrument is powered from four AA standard or rechargeable batteries (separate charger is required). The external DC power source or USB interface can be also used for its powering.

Robust, hand held case and light weight design accomplish the exceptional features of this new unusual instrument.

FEATURES

- | Type 1 sound level measurements meeting IEC 61672:2002
- | General vibration measurements (acceleration, velocity and displacement) and HMM meeting ISO 8041:2005 standard
- | Three parallel independent profiles
- | 1/1 and 1/3 octave real-time analysis
- | Time-domain signal recording
- | FFT real-time analysis (1600 lines in up to 20.0 kHz band)
- | All weather measurements with SA 203 microphone protection kit
- | Reverberation Time measurements
- | Advanced data logger including spectra logging
- | USB memory stick providing almost unlimited logging capacity
- | Acoustic dose meter function
- | Advanced trigger and alarm functions
 - | USB 1.1 Host & Client interfaces (real-time PC "front end" application supported)
- | RS 232 for modems support (GPRS, Ethernet, WLAN)
- | Integration time programmable up to 24 h
- | Power supply by four AA rechargeable or standard batteries
- | Hand held, light weight and robust case
- | Easy in use



TECHNICAL SPECIFICATIONS

SOUND LEVEL METER & ANALYSER

Standards	Type 1: IEC 61672-1:2002
Meter Mode	SPL, L_{eq} , SEL, L_{den} , L_{tm3} , L_{tm5} , Statistics - L_n (L_1 - L_{99}), L_{Max} , L_{Min} , L_{Peak} Simultaneous measurement in three profiles with independent set of filters and detector time-constants
Analyser	1/1 octave ^X real-time analysis, Type 1, IEC 61260 1/3 octave ^X real-time analysis, Type 1, IEC 61260 (option) Acoustic dosimeter ^X meeting IEC 61252 with SV 25_2 microphone (option) FFT ^X real-time analysis, 1600 lines, up to 20.0 kHz band (option) Reverberation Time analysis in 1/3 octave bands (RT 60 option)
Weighting Filters	A, C and Z
RMS Detector	Digital True RMS detector with Peak detection, resolution 0.1 dB Time constants: Slow, Fast, Impulse
Microphone	7052H, 20 mV/Pa, prepolarised 1/2" condenser microphone with SV 12L IEPE preamplifier
Sound Field	Free-field or diffuse-field selectable (digital filter)
Measurement Range	Total Dynamic Range: 15 dBA RMS ÷ 140 dBA Peak Linearity Range: 25 dBA RMS ÷ 140 dBA Peak
Dynamic Range	100 dB (both in Low and High ranges)
Internal Noise Level	Less than 15 dBA RMS
Frequency Range	0.5 Hz ÷ 20 kHz; microphone dependent, with 7052H microphone: 10 Hz ÷ 20 kHz

VIBRATION LEVEL METER & ANALYSER

Standards	ISO 8041:2005 and ISO 10816-1
Meter mode	RMS, VDV, MTVV or Max, Peak, Peak-Peak Simultaneous measurement in three profiles with independent set of filters and detector time-constants
Analyser	1/1 octave ^X real-time analysis, Type 1, IEC 61260 1/3 octave ^X real-time analysis, Type 1, IEC 61260 (option) FFT ^X real-time analysis, 1600 lines, up to 20.0 kHz band (option) RPM ^X rotation speed measurement parallel to the vibration measurement (option)
Filters	HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Dil1, Dil3, Dil10, KB, W_k , W_c , W_d , W_j , W_m , W_b , W_g (ISO 2631), W_h (ISO 5349) (option)
RMS & RMQ Detectors	Digital True RMS & RMQ detectors with Peak detection, resolution 0.1 dB Time constants: from 100 ms to 10 s
Accelerometer (option)	Dytran 3185D general purpose accelerometer with 100 mV/g sensitivity
Measurement Range	Accelerometer dependent, with Dytran 3185D accelerometer: 0.003 ms ⁻² RMS ÷ 500 ms ⁻² Peak
Frequency Range	0.5 Hz ÷ 20 kHz; accelerometer dependent, with Dytran 3185D accelerometer: 2 Hz ÷ 10 kHz

BASIC DATA

Input	IEPE type (TNC connector)
Frequency Range	0.5 Hz ÷ 20 kHz, sampling rate 48 kHz
Data Logger ^X	Time-history logging to internal memory or USB memory stick Time-domain signal recording on USB memory stick (option)
Display	LCD 128 x 64 pixels plus icons with backlighting
Memory	32 MB non-volatile flash type, external USB memory stick (not included)
Interfaces	USB 1.1 Client, USB 1.1 Host, RS 232 (with SV 55 option), IrDA (option) Extended I/O - AC output (1 V Peak) or Digital Input/Output (Trigger - Pulse)
Power Supply	Four AA batteries (alkaline) operation time > 12 h (6.0 V / 1.6 Ah) ^{X X} Four AA rechargeable batteries (not included) operation time > 16 h (4.8 V / 2.6 Ah) ^{X X} SA 17A external battery pack (option) operation time > 24 h ^{X X} External power supply 6 V DC ÷ 24 V DC (1.5 W) USB interface 500 mA HUB
Environmental Conditions	Temperature from -10 °C to 50 °C Humidity up to 90 % RH, non-condensed
Dimensions	338 x 82 x 42 mm (with microphone and preamplifier)
Weight	0.6 kg with batteries, microphone and preamplifier

^X each function parallel to the meter mode ^{X X} with USB 1.1 Host function not active and backlight off

Continuous product development and innovation are the policy of our company. Therefore, we reserve the right to change the specifications without prior notice.



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Appendix 2 Field observation sheets

2A	Daytime Baseline Noise Measurements
2B	Nighttime Baseline Noise Measurements

Appendix 2A Daytime Baseline Noise Measurements

Daytime Baseline Measurements																					
Measuring date:				1 February 2023														Legend			
Number of measurements:				5														1x		Counts of observations	
Measured by:				Welzijn B/ Jainath A														x		Observed noise (not countable)	
Noise measurement locations:				See below														Remarks			
																		*		Noise measurement at N3 and N4 were stopped earlier as it started raining.	
No #	Locations	Coordinates (UTM21N/ WGS84)	Time/ Weather	Provide numbers							Birds	Insects	Leaves/ Grass	Dogs	Music	Claxon	Alarm	Talking	Wind speed (m/s) See wind scale table	Wind direction	Remarks
				Cars	Light truck	Bus	Heavy truck	Moped	Bike	Overfly											
N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.	21N 704411 644146	17:12 – 17:42 hrs. (30 min) / No sun/ Cloud cover	428x	34x	8x	8x	58x	7x	1x						x	x	x	0.3–1.5 m/s	North-East	Continuous noise of traffic passing by at distance (car; light truck; heavy truck; bus, moped and bike). Occasional noise of talking persons at distance; noise of siren at distance; noise of claxon at distance; noise of overfly; noise of falling object at distance; noise of car alarm at distance; noise of outboard engine at distance and noise of parrots at distance.
N2	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 m away from the edge of the road. The ground was paved with street tiles.	21N 704531 644231	15:53 – 16:23 hrs. (30 min) No sun/ Cloud cover	328x	33x	10x	15x	65x							x	x	x	x	0.3–1.5 m/s	North-East	Continuous noise of music in the background and noise of traffic passing by (car; light truck; heavy truck; bus and moped). Occasional noise of talking persons at distance; noise of laughing persons at distance; noise of claxon; noise of workers throwing construction waste on the ground at distance in the Mr. Dr. J. C. de Mirandastraat; noise of braking car; noise of car alarm at distance; noise of closing car door at distance.
N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.	21N 704666 644257	14:23 – 14:52 hrs. (28 min*) / No sun/ Cloud cover	270x	42x	10x	12x	68x	1x		x					x		x	1.5–3.3 m/s	North-East	Continuous noise of traffic passing by (car; light truck; heavy truck; moped; bus and bike). Occasional noise of talking persons at distance; noise of singing person at distance; noise of claxon at distance; noise of birds; noise of plastic cup rolling on gravel; noise of person passing by; noise of falling object on gravel; noise of closing car door at distance; noise of starting car at distance; noise of laughing persons at distance; noise of light truck started at distance; noise of ice cream bike with bells passing by.
N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.	21N 704840 644217	13:28 – 13:55 hrs. (27 min*) / No sun/ Cloud cover	10x					10x		x		x		x	x		x	1.5–3.3 m/s	North-East	Frequent noise of traffic at distance and noise of talking persons at distance. Occasional noise of moped passing by; noise of talking persons; noise of closing car door; noise of claxon; noise of car passing by; noise of wind rustling leaves; noise of birds; noise of music in the background; noise of moped started at distance; noise of laughing person at distance; noise of starting car at distance and noise of office door closing at distance.
		21N 704556 644183	15:12 – 15:43 hrs. (30 min) / No sun/ Cloud cover	211x	32x	6x	18x	20x	2x						x	x		x	0.3–1.5 m/s	North-East	Continuous noise of traffic passing by (car, light truck, heavy truck, bus, moped and bike) and noise of machine used for crafts. Occasional noise of talking persons at distance; noise of music in the background; noise of talking persons passing by; noise of crying baby at distance; noise of falling object at distance; noise from handsaw used for sawing of wood material at distance; noise of starting car at distance; noise of laughing person at distance and noise of claxon.
N5	Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.																				

Baseline Daytime measurements									
ID #	Location	Date	Time	LAeq	L10	L50	L90	Lmax	Lmin
N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.	01-Feb-23	17:12 hrs.	51.96	54.45	50.7	46.35	70.12	41.73
N2	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 away from the edge of the road. The ground was paved with street tiles.	01-Feb-23	15:53 hrs.	70.03	73	66.65	57.65	87.2	47.49
N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.	01-Feb-23	14:23 hrs.	61.93	64.95	60.85	54.75	79.96	47.89
N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.	01-Feb-23	13:28 hrs.	52.87	55.05	51.15	48.6	74.48	45.92
N5	Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.	01-Feb-23	15:12 hrs.	60.92	65.8	58.15	53.05	76.7	47.62

Appendix 2B Nighttime Baseline Noise Measurements

Nighttime Baseline Measurements																								
Measuring date:				2 & 3 February 2023																	Legend			
Number of measurements:				5																	1x		Counts of observations	
Measured by:				Welzijn B/ Karijoëtomomo C																	x		Observed noise (not countable)	
Noise measurement locations:				See below																	Remarks			
																					*		Noise measurement at N2 was stopped earlier as it started raining	
No #	Locations	Coordinates (UTM21N/ WGS84)	Date / Time/ Weather	Provide numbers										Leaves/ Grass	Dogs	Music	Claxon	Alarm	Talking	Wind speed (m/s) See wind scale table	Wind direction	Remarks		
				Cars	Light truck	Bus	Cargo truck	Heavy truck	Moped	Bike	Overfly													
N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.	21N 704411 644146	2 February 2023 22:16 – 22:46 hrs. (30 min) / Cloud cover/ stars	276x	14x	8x		2x	24						x	x		x	0.3–1.5 m/s	North-East	Continuous noise of falling water; noise of music in the background coming from the side of the Waterkant and noise of traffic at distance (cars; light truck; bus; heavy truck and moped). Frequent noise of talking person at distance. Occasional noise of persons passing by; noise of car passing by with music at distance; noise of yelling person at distance; noise of claxon at distance; noise of alarm form moped turning signal at distance; noise of starting engine from moped; noise of laughing persons at distance; noise of siren at distance.			
N2	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 m away from the edge of the road. The ground was paved with street tiles.	21N 704531 644231	2 February 2023 23:19 – 23:47 hrs. (28 min*) / Cloud cover/ stars	167x	7x	4x		1x	19x						x	x	x	x	0.3–1.5 m/s	North-East	Continuous noise of music in the background coming from the food stands at Waterkant and noise of traffic passing by (cars; light truck; bus; heavy truck and moped). Occasional noise of talking persons at distance; noise of claxon at distance; noise of alarm from car at distance; noise of car with music passing by; noise of yelling persons at distance; noise of starting engine from moped at distance; noise of car engine hood closing at distance and noise of car starting at distance.			
N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.	21N 704666 644257	3 February 2023 01:37 – 02:07 hrs. (30 min)/ Cloud cover	67x	8x	1x			10x			x			x	x		x	<0.3 m/s	North-East	Continuous noise from lamp of lantern pole in background; noise of music in the background coming from the side of the Waterkant and noise of traffic (car, light truck, bus and moped). Occasional noise of tour bus passing by with music; noise of talking persons at distance; noise of claxon at distance; noise of yelling persons at distance; noise of claxon from boat at distance.			
N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.	21N 704840 644217	3 February 2023 02:18 – 02:48 hrs. (30 min) / Cloud cover	3x								x			x			x	<0.3 m/s	North-East	Frequent noise of birds. Occasional noise of car started at distance; noise of starting engine from moped at distance; noise of talking persons at distance; noise of moped driving away at distance; noise of car driving away at distance; noise of traffic at distance; noise of car passing by with music at distance.			
N5	Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.	21N 704556 644183	3 February 2023 03:07 – 03:37 hrs. (30 min) / Cloud cover	48x	3x	7x		1x	6x			x			x	x		x	0.3–1.5 m/s	North-East	Continuous noise of music in the background coming from persons sitting near office of Beheerraad Waterkant. Frequent noise of traffic passing by (car, light truck, heavy truck, bus and moped). Occasional noise of birds; noise of talking persons at distance; noise of claxon; noise of car with music passing by; noise of car engine running; noise of closing car door; noise of car reversing and driving away; noise of person coughing.			

Baseline Nighttime measurements									
ID #	Location	Date	Time	LAeq	L10	L50	L90	Lmax	Lmin
N1	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.	02-Feb-23	22:16 hrs.	50.64	52.7	48.85	45.3	68.33	39.76
N2	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 away from the edge of the road. The ground was paved with street tiles.	02-Feb-23	23:19 hrs.	65.32	68.45	61.55	55.3	83.13	46.24
N3	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.	03-Feb-23	01:37 hrs.	56.43	61	50.95	44.45	70.71	40.41
N4	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.	03-Feb-23	02:18 hrs.	45.12	47.05	43.95	42.85	59.81	41.57
N5	Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.	03-Feb-23	03:07 hrs.	50.31	54.4	44.45	38.45	68.67	36.59

Wind Beaufort scale

#	Description	Conditions	Wind speed
0	Calm	Calm. Smoke rises vertically.	<0.3 m/s
1	Light air	Smoke drift indicates wind direction. Leaves and wind vanes are stationary.	0.3–1.5 m/s
2	Light breeze	Wind felt on exposed skin. Leaves rustle. Wind vanes begin to move.	1.5–3.3 m/s
3	Gentle breeze	Leaves and small twigs constantly moving, light flags extended.	3.3–5.5 m/s
4	Moderate breeze	Dust and loose paper raised. Small branches begin to move.	5.5–8 m/s
5	Fresh breeze	Branches of a moderate size move. Small trees in leaf begin to sway.	8–10.8 m/s
6	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic bins tip over.	10.8–13.9 m/s
7	High wind	Whole trees in motion. Effort needed to walk against the wind.	49.9–61.8 km/h

Appendix 3 Logger results

3A	Daytime Baseline Noise Measurements
3B	Nighttime Baseline Noise Measurements

Appendix 3A Daytime Baseline Noise Measurements

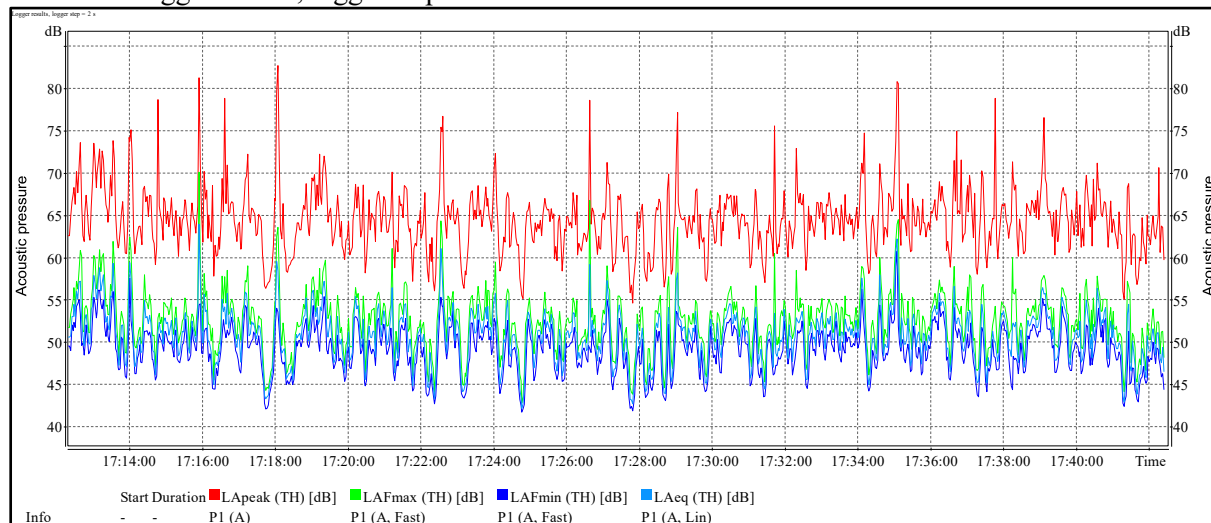
Daytime Baseline Noise Measurements (N1-N5)

07.00 – 22.00 hrs.

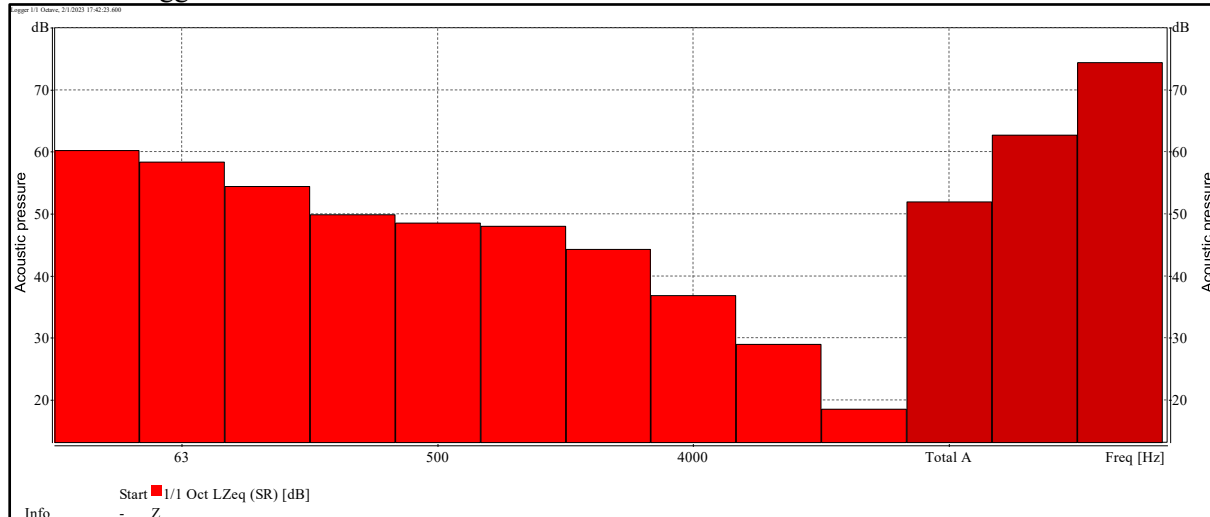
Location N1

Log number:	Log 111
Date:	1 February 2023
Time:	17:12 – 17:42 hrs. (30 min)
Description of the location:	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.
Observation during measurement	<p>Continuous noise of traffic passing by at distance (car; light truck; heavy truck; bus, moped and bike).</p> <p>Occasional noise of talking persons at distance; noise of siren at distance; noise of claxon at distance; noise of overfly; noise of falling object at distance; noise of car alarm at distance; noise of outboard engine at distance and noise of parrots at distance.</p> <p>Wind speed: 0.3–1.5 m/s Wind direction: North -East</p>
Position of the noise meter	The meter was placed approx. 60 m away from the main road and 1.5 m above surface level.

LOG111: Logger results, logger step = 2 s



LOG111: Logger 1/1 Octave



Causes of exceedance of the background level.

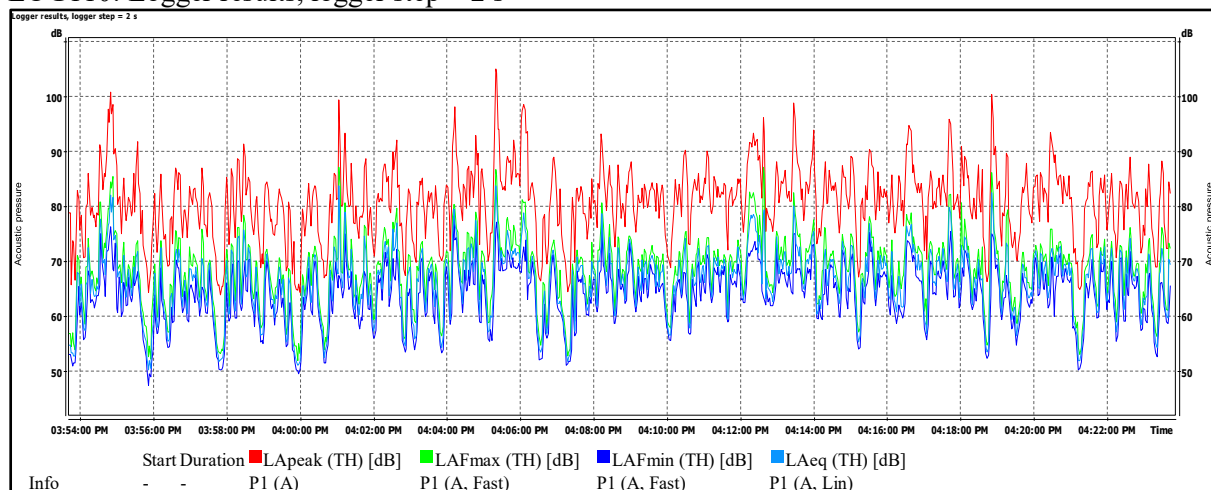
Nr.	Time	Cause
1	17:12 – 17:42 hrs.	Continuous noise of traffic passing by at distance.
2	17:12 – 17:13 hrs.	Noise of car passing by (7x); noise of bus passing by (2x) and noise of moped passing by (1x).
3	17:13 – 17:14 hrs.	Noise of car passing by (7x); noise of light truck passing by (1x); noise of truck passing by (1x); noise of moped passing by (7x) and noise of bike passing by (1x).
4	17:14 – 17:15 hrs.	Noise of talking persons at distance and noise of car passing by (20x).
5	17:15 – 17:16 hrs.	Noise of car started at distance; noise of siren at distance; noise of car passing by (10x); noise of light truck passing by (2x) and noise of bus passing by (1x).
6	17:16 – 17:17 hrs.	Noise of car passing by (11x); noise of light truck passing by (1x); noise of bus passing by (1x); noise of moped passing by (1x) and noise of bike passing by (1x).
7	17:17 – 17:18 hrs.	Noise of car passing by (13x); noise of light truck passing by (2x) and noise of moped passing by (3x).
8	17:18 – 17:19 hrs.	Noise of car passing by (10x) and noise of heavy truck passing by (2x).
9	17:19 – 17:20 hrs.	Noise of claxon at distance (1x); noise of car passing by (16x); noise of light truck passing by (3x); noise of heavy truck passing by (1x) and noise of moped passing by (3x).
10	17:20 – 17:21 hrs.	Noise of talking persons at distance; noise of overfly (1x); noise of car passing by (7x); noise of light truck passing by (2x); noise of bike passing by (1x) and noise of moped passing by (1x).
11	17:21 – 17:22 hrs.	Noise of claxon at distance (2x); noise of car passing by (16x); noise of bus passing by (1x) and noise of moped passing by (1x).
12	17:22 – 17:23 hrs.	Noise of car started at distance; noise of car passing by (15x); noise of bus passing by (1x) and noise of moped passing by (1x).
13	17:23 – 17:24 hrs.	Noise of car passing by (10x); noise of light truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (2x).
14	17:24 – 17:25 hrs.	Noise of car passing by (12x); noise of light truck passing by (1x); noise of moped passing by (1x).
15	17:25 – 17:26 hrs.	Noise of falling object at distance; noise of car passing by (15x) and noise of light truck passing by (1x).

16	17:26 – 17:27 hrs.	Noise of claxon at distance (1x); noise of car passing by (16x); noise of light truck passing by (2x); noise of heavy truck passing by (1x) and noise of bike passing by (1x).
17	17:27 – 17:28 hrs.	Noise of car passing by (14x) and noise of light truck passing by (1x).
18	17:28 – 17:29 hrs.	Noise of car passing by (12x) and noise of moped passing by (2x).
19	17:29 – 17:30 hrs.	Noise of car passing by (21x) and noise of light truck passing by (2x).
20	17:30 – 17:31 hrs.	Noise of car passing by (13x); noise of light truck passing by (1x) and noise of moped passing by (2x).
21	17:31 – 17:32 hrs.	Noise of claxon at distance (1x); noise of car alarm at distance; noise of falling object at distance; noise of car passing by (19x); noise of light truck passing by (1x) and noise of moped passing by (2x).
22	17:32 – 17:33 hrs.	Noise of claxon at distance (1x); noise of car passing by (14x); noise of light truck (1x) and noise of moped passing by (4x).
23	17:33 – 17:34 hrs.	Noise of falling object at distance; noise of car passing by (15x) and noise of moped passing by (6x).
24	17:34 – 17:35 hrs.	Noise of claxon at distance (1x); noise of car passing by (16x); noise of light truck passing by (2x) and noise of moped passing by (3x).
25	17:35 – 17:36 hrs.	Noise of car passing by (17x); noise of light truck passing by (1x) and noise of moped passing by (4x).
26	17:36 – 17:37 hrs.	Noise of outboard engine at distance; noise of car passing by (14x); noise of light truck passing (2x) and noise of moped passing by (4x).
27	17:37 – 17:38 hrs.	Noise of claxon at distance (1x); noise of car passing by (15x); noise of light truck passing by (1x); noise of bus passing by (1x) and noise of moped passing by (5x).
28	17:38 – 17:39 hrs.	Noise of outboard engine at distance; noise of parrots at distance; noise of car passing by (9x); noise of heavy truck passing by (1x) and noise of moped passing by (3x).
29	17:39 – 17:40 hrs.	Noise of car passing by (17x); noise of light truck passing by (1x); noise of heavy truck passing by (1x); noise of moped passing by (2x) and noise of bike passing by (3x).
30	17:40 – 17:41 hrs.	Noise of parrots at distance; noise of claxon at distance (1x); noise of car passing by (10x); noise of light truck passing by (2x); noise of heavy truck passing by (2x) and noise moped passing by (2x).
31	17:41 – 17:42 hrs.	Noise of car passing by (7x); noise of light truck passing by (2x); noise of bus passing by (1x) and noise of moped passing by (1x); noise of heavy truck passing by (1x) and noise of parrots at distance.

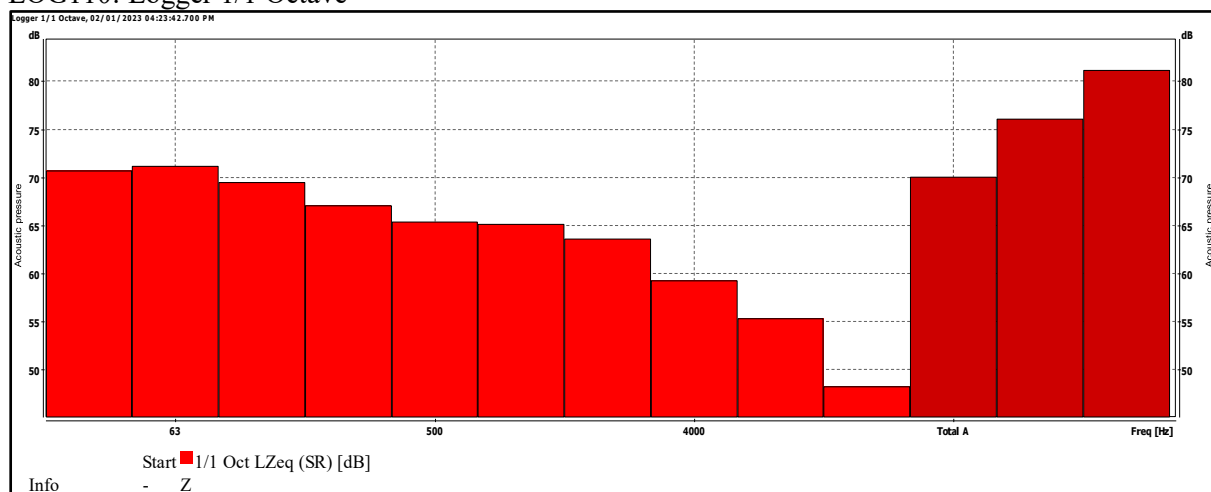
Location N2

Log number:	Log 110
Date:	1 February 2023
Time:	15:53 – 16:23 hrs. (30 min)
Description of the location:	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 away from the edge of the road. The ground was paved with street tiles.
Observation during measurement	Continuous noise of music in the background and noise of traffic passing by (car; light truck; heavy truck; bus and moped). Occasional noise of talking persons at distance; noise of laughing persons at distance; noise of claxon; noise of workers throwing construction waste on the ground at distance in the Mr. Dr. J. C. de Mirandastraat; noise of braking car; noise of car alarm at distance; noise of closing car door at distance. Wind speed: 0.3–1.5 m/s Wind direction: North -East
Position of the noise meter	The meter was placed approx. 3 away from the edge of the road and 1.5 above surface level.

LOG110: Logger results, logger step = 2 s



LOG110: Logger 1/1 Octave



Causes of exceedance of the background level.

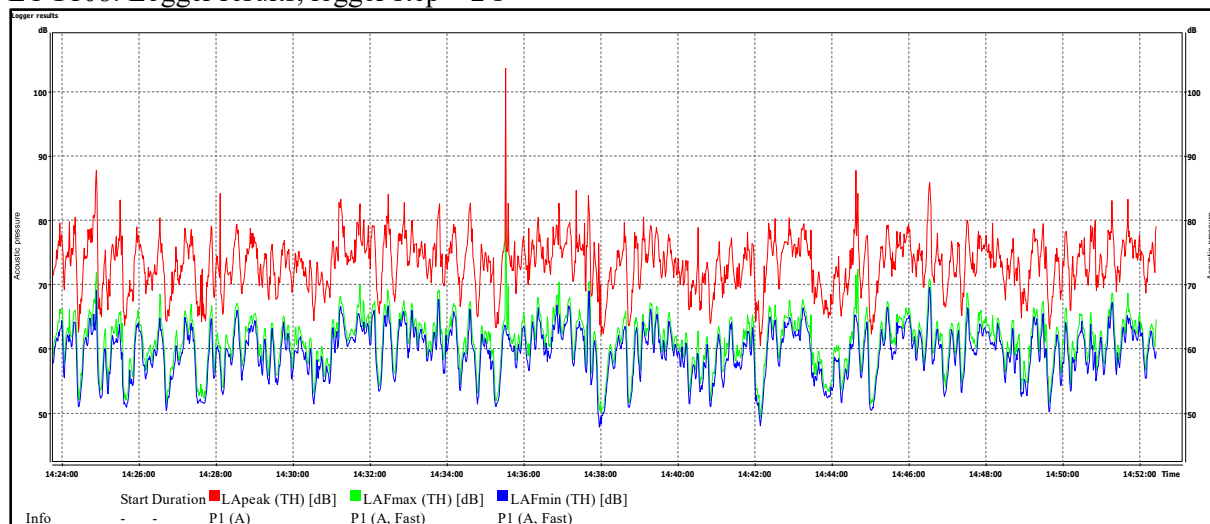
Nr.	Time	Cause
1	15:53 – 16:23 hrs.	Continuous noise of music in the background and continuous noise of traffic passing by.
2	15:53 – 15:54 hrs.	Noise of car passing by (14x); noise of light truck passing by (2x); noise of bus passing by (2x) and noise of moped passing by (2x).
3	15:54 – 15:55 hrs.	Noise of car passing by (4x).
4	15:55 – 15:56 hrs.	Noise of talking persons at distance; noise of laughing persons at distance; noise of car passing by (6x) and moped passing by (1x).
5	15:56 – 15:57 hrs.	Noise of claxon (1x); noise of workers throwing construction waste on the ground at distance in the Mr. Dr. J. C. de Mirandastraat and noise of car passing by (16x).
6	15:57 – 15:58 hrs.	Noise of braking car and noise of car passing by (11x).
7	15:58 – 15:59 hrs.	Noise of car alarm; noise of car passing by (8x); noise of light truck passing by (2x) and noise of moped passing by (2x).
8	15:59 – 16:00 hrs.	Noise of car passing by (9x); noise of light truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (1).
9	16:00 – 16:01 hrs.	Noise of talking persons at distance; noise of car passing by (9x); noise of light truck passing by (1x); noise of bus passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
10	16:01 – 16:02 hrs.	Noise of claxon (2x); noise of car passing by (10); noise of heavy truck passing by (2x); noise of bus passing by (1x) and noise of moped passing by (2x).
11	16:02 – 16:03 hrs.	Noise of car passing by (10x); noise of light truck passing by (1x) noise of bus passing by (1x); noise of heavy truck passing by (2x) and noise of moped passing by (1x).
12	16:03 – 16:04 hrs.	Noise of talking persons at distance; noise of car passing by (7x); noise of light truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (3x).
13	16:04 – 16:05 hrs.	Noise of car passing by (4x); noise of light truck passing by (4x); noise of heavy truck passing by (2x) and noise of moped passing by (2x).
14	16:05 – 16:06 hrs.	Noise of car passing by (14x); noise of light truck passing by (2x); noise of moped passing by (7x).
15	16:06 – 16:07 hrs.	Noise of car passing by (11x); noise of light truck passing by (1x) and noise of moped passing by (1x).
16	16:07 – 16:08 hrs.	Noise of car passing by (16x); noise of light truck passing by (2x); noise of heavy truck passing by (1x) and noise of moped passing by (3x).
17	16:08 – 16:09 hrs.	Noise of car passing by (2x); noise of light truck passing by (2x) and noise of moped passing by (2x).
18	16:09 – 16:10 hrs.	Noise of claxon (1x); noise of talking persons passing by; noise of car passing by (10x) and noise of moped passing by (1x).
19	16:10 – 16:11 hrs.	Noise of car passing by (10x); noise of light truck passing by (2x); noise of bus passing by (1x) and noise of moped passing by (3x).
20	16:11 – 16:12 hrs.	Noise of car passing by (16x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
21	16:12 – 16:13 hrs.	Noise of alarm from moped turning signal; noise of car passing by (13x) and noise of moped passing by (2x).
22	16:13 – 16:14 hrs.	Noise of car passing by (16x); noise of light truck passing by (2x) and noise of moped passing by (4x).
23	16:14 – 16:15 hrs.	Noise of claxon (1x); noise of car passing by (11x); noise of light truck passing by (2x) and noise of moped passing by (4x).
24	16:15 – 16:16 hrs.	Noise of car passing by (17x); noise of heavy truck passing by (1x); noise of bus passing by (1x) and noise of moped passing by (5x).

25	16:16 – 16:17 hrs.	Noise of car alarm at distance; noise of talking persons at distance; noise of car passing by (9x); noise of light truck passing by (2x); noise of heavy truck passing by (1x) and noise of moped passing by (5x).
26	16:17 – 16:18 hrs.	Noise of car passing by (7x); noise of light truck passing by (1x) and noise of moped passing by (4x).
27	16:18 – 16:19 hrs.	Noise of claxon (3x); noise of car passing by (11x); noise of light truck passing by (2x) and noise of moped passing by (3x).
28	16:19 – 16:20 hrs.	Noise of claxon (2x); noise of car passing by (9x); noise of bus passing by (2x) and noise of moped passing by (2x).
29	16:20 – 16:21 hrs.	Noise of claxon (3x); noise of car passing by (10x); noise of bus passing by (1x) and noise of moped passing by (3x).
30	16:21 – 16:22 hrs.	Noise of car passing by (13x); noise of light truck passing by (1x); noise of bus passing by (1x) and noise of moped passing by (2x).
31	16:22 – 16:23 hrs.	Noise of car passing by (17x); noise of light truck passing by (3x); noise of moped passing by (1x); noise of claxon (2x); noise of heavy truck (1x); noise of closing car door at distance and noise of talking persons at distance.

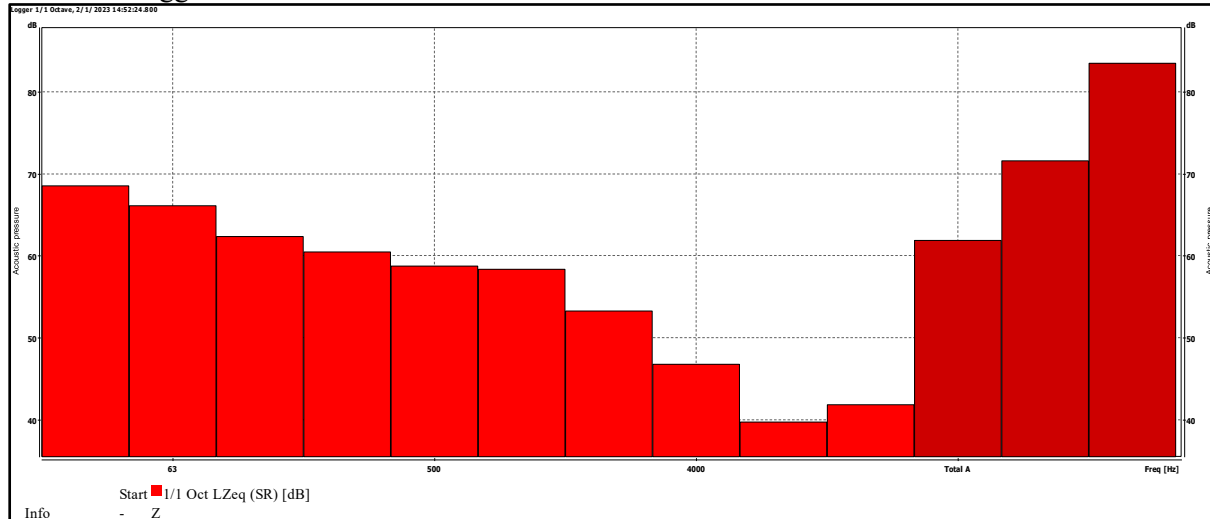
Location N3

Log number:	Log 108
Date:	1 February 2023
Time:	14:23 – 14:52 hrs. (28 min) Measurement was stopped earlier as it started raining.
Description of the location:	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 away from the edge of the road. The ground was paved with street tiles.
Observation during measurement	Continuous noise of traffic passing by (car; light truck; heavy truck; moped; bus and bike). Occasional noise of talking persons at distance; noise of singing person at distance; noise of claxon at distance; noise of birds; noise of plastic cup rolling on gravel; noise of person passing by; noise of falling object on gravel; noise of closing car door at distance; noise of starting car at distance; noise of laughing persons at distance; noise of light truck started at distance; noise of ice cream bike with bells passing by. Wind speed: 1.5–3.3 m/s Wind direction: North-East
Position of the noise meter	The meter was placed approx. 15 m away from the edge of the road and 1.5 m above surface level.

LOG108: Logger results, logger step = 2 s



LOG108: Logger 1/1 Octave



Causes of exceedance of the background level.

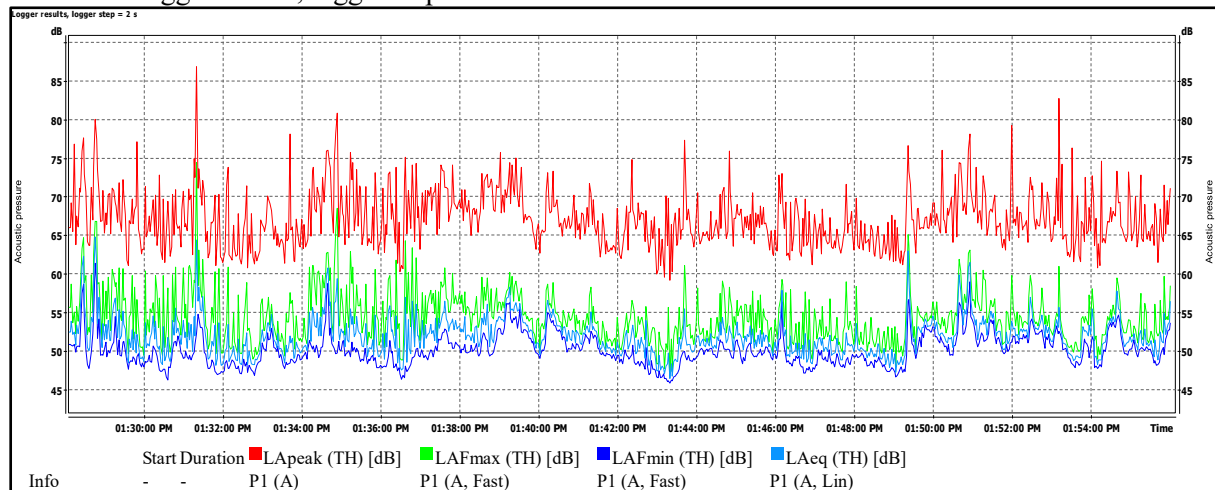
Nr.	Time	Cause
1	14:23 – 14:52 hrs.	Continuous noise of traffic.
2	14:24 – 14:25 hrs.	Noise of talking persons at distance; noise of car passing by (15x); noise of bike passing by (1x); and noise of moped passing by (2x).
3	14:25 – 14:26 hrs.	Noise of singing person at distance; noise of car passing by (5x) and noise of light truck passing by (2x).
4	14:26 – 14:27 hrs.	Noise of claxon at distance (1x); noise of car passing by (6x); noise of light truck passing by (2x) and noise of bus passing by (2x).
5	14:27 – 14:28 hrs.	Noise of birds; noise of plastic cup rolling on gravel; noise of car passing by (6x); noise of light truck passing by (2x) and noise of bus passing by (1x).
6	14:28 – 14:29 hrs.	Noise of persons passing by; noise of car passing by (9x); noise of light truck passing by (3x) and noise of heavy truck passing by (1x).
7	14:29 – 14:30 hrs.	Noise of birds; noise of car passing by (10x); noise of light truck passing by (2x); noise of heavy truck passing by (1x) and noise of moped passing by (2x).
8	14:30 – 14:31 hrs.	Noise of claxon at distance (1x); noise of car passing by (10x) and noise of moped passing by (2x).
9	14:31 – 14:32 hrs.	Noise of car passing by (16x); noise of light truck passing by (5x); noise of bus passing by (1x); noise of heavy truck passing by (2x) and noise of moped passing by (3x).
10	14:32 – 14:33 hrs.	Noise of car passing by (7x).
11	14:33 – 14:34 hrs.	Noise of car passing by (14x) and noise of light truck passing by (1x).
12	14:34 – 14:35 hrs.	Noise of car passing by (10x); noise of light truck passing by (1x) and noise of moped passing by (4x).
13	14:35 – 14:36 hrs.	Noise of claxon (2x); noise of birds; noise of falling object on gravel; noise of car passing by (5x); noise of light truck passing by (1x) and noise of bus passing by (1x).
14	14:36 – 14:37 hrs.	Noise of claxon at distance (3x); noise of closing car door (2x); noise of starting car; noise of car passing by (11x) and noise of heavy truck passing by (2x).
15	14:37 – 14:38 hrs.	Noise of claxon at distance (1x); noise of car passing by (12x); noise of light truck passing by (3x) and noise of heavy truck passing by (1x).
16	14:38 – 14:39 hrs.	Noise of car passing by (10x); noise of light truck passing by (3x) and noise of moped passing by (1x).

17	14:39 – 14:40 hrs.	Noise of starting car at distance; noise of car passing by (13x); noise of light truck passing by (3x) and noise of moped passing by (1x).
18	14:40 – 14:41 hrs.	Noise of car passing by (5x) and noise of light truck passing by (1x)
19	14:41 – 14:42 hrs.	Noise of laughing and talking person at distance; noise of car passing by (7x); noise of light truck passing by (3x) and noise of heavy truck passing by (1x).
20	14:42 – 14:43 hrs.	Noise of light truck starting at distance; noise of car passing by (15x); noise of light truck passing by (2x) and noise of bus passing by (2x).
21	14:43 – 14:44 hrs.	Noise of claxon (1x); noise of car passing by (7x) and noise of moped passing by (1x).
22	14:44 – 14:45 hrs.	Noise of claxon (1x); noise of birds; noise of car passing by (9x) and noise of moped passing by (1x).
23	14:45 – 14:46 hrs.	Noise of car passing by (13x); noise of light truck passing by (5x); noise of bus passing by (2x) and noise of moped passing by (1x).
24	14:46 – 14:47 hrs.	Noise of talking persons passing by; noise of car passing by (9x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
25	14:47 – 14:48 hrs.	Noise of claxon at distance (1x); noise of car passing by (12x) and noise of light truck passing by (1x).
26	14:48 – 14:49 hrs.	Noise of car passing by (13x) and noise of moped passing by (1x).
27	14:49 – 14:50 hrs.	Noise of laughing and talking person at distance; noise of car passing by (7x) and noise of light truck passing by (2x).
28	14:50 – 14:51 hrs.	Noise of ice cream bike with bells passing by; noise of car passing by (8x) and noise of heavy truck passing by (2x);
29	14:51 – 14:52 hrs.	Noise of claxon (1x); noise of car passing by (10x); noise of light truck passing by (2x) and noise of bus passing by (1x).

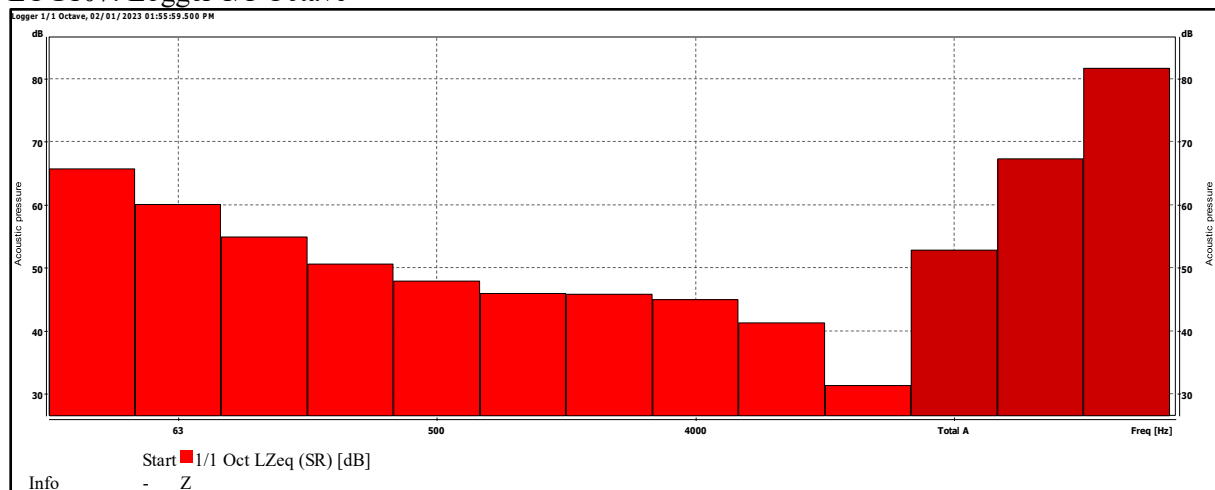
Location N4

Log number:	Log 107
Date:	1 February 2023
Time:	13:28 – 13:56 hrs. (27 min) Measurement was stopped earlier as it started raining.
Description of the location:	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.
Observation during measurement	Frequent noise of traffic at distance and noise of talking persons at distance. Occasional noise of moped passing by; noise of talking persons; noise of closing car door; noise of claxon; noise of car passing by; noise of wind rustling leaves; noise of birds; noise of music in the background; noise of moped started at distance; noise of laughing person at distance; noise of starting car at distance and noise of office door closing at distance. Wind speed: 1.5–3.3 m/s Wind direction: North-East
Position of the noise meter	The meter was placed approx. 10 m away from the edge of the road and 1.5 m above surface level.

LOG107: Logger results, logger step = 2 s



LOG107: Logger 1/1 Octave



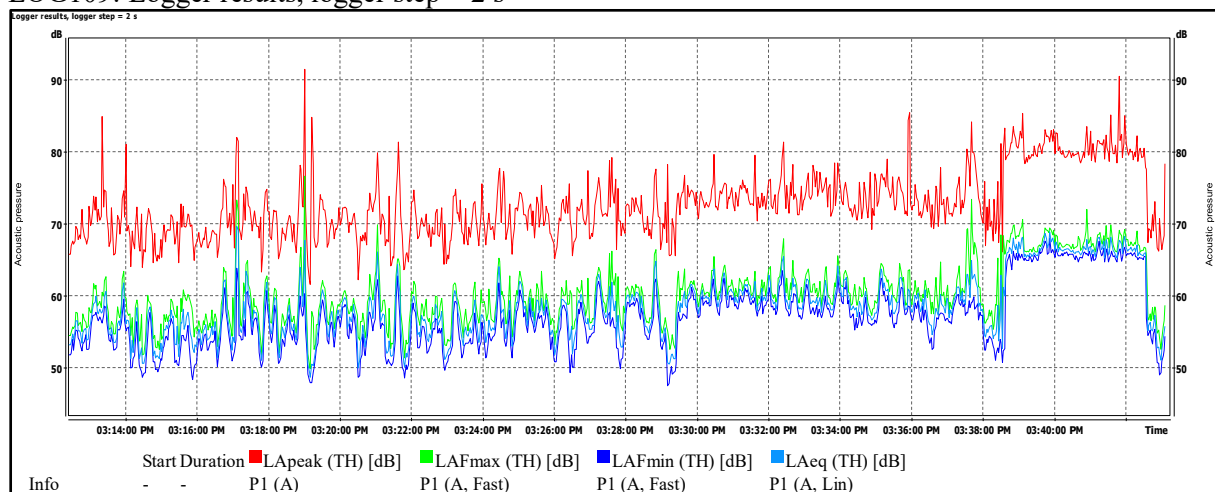
Causes of exceedance of the background level.

Nr.	Time	Cause
1	13:28 – 13:29 hrs.	Noise of moped passing by (2x).
2	13:29 – 13:30 hrs.	Noise of talking persons at distance and noise of traffic at distance.
3	13:30 – 13:31 hrs.	Noise of talking persons at distance; noise of light truck passing by (1x); noise of closing car door and noise of car passing by (1x).
4	13:31 – 13:32 hrs.	Noise of claxon (1x); noise of car passing by (1x) and noise of moped passing by (1x).
5	13:32 – 13:33 hrs.	Noise of claxon (1x) and noise of talking persons at distance.
6	13:33 – 13:34 hrs.	Noise of traffic at distance; noise of wind rustling leaves and noise of talking persons.
7	13:34 – 13:35 hrs.	Noise of moped passing by (1x) and noise of birds.
8	13:35 – 13:36 hrs.	Noise of birds and noise of talking persons at distance.
9	13:36 – 13:37 hrs.	Noise of birds; noise of talking persons; noise of wind rustling leaves and noise of music in the background.
10	13:37 – 13:38 hrs.	Noise of birds; noise of talking persons at distance; noise of wind rustling leaves; noise of moped started at distance and noise of car passing by (1x).
11	13:38 – 13:39 hrs.	Noise of moped passing by at distance (1x).
12	13:39 – 13:40 hrs.	Noise of birds; noise of wind rustling leaves and noise of car passing by (1x).
13	13:40 – 13:41 hrs.	Noise of birds; noise of wind rustling leaves and noise of car passing by (1x).
14	13:41 – 13:42 hrs.	Noise of birds; noise of wind rustling leaves; noise of starting car at distance; noise of laughing person at distance and noise of closing car door at distance.
15	13:42 – 13:43 hrs.	Noise of birds; noise of wind rustling leaves and noise of laughing and talking person at distance.
16	13:43 – 13:44 hrs.	Noise of birds; noise of wind rustling leaves; noise of talking person at distance and noise of car passing by (2x).
17	13:44 – 13:45 hrs.	Noise of birds; noise of wind rustling leaves and noise of car passing by (1x).
18	13:45 – 13:46 hrs.	Noise of claxon at distance (1x); noise of office door closing at distance and noise of birds.
19	13:46 – 13:47 hrs.	Noise of moped passing by (1x) and noise of talking persons at distance.
20	13:47 – 13:48 hrs.	Noise of talking persons at distance and noise of traffic at distance.
21	13:48 – 13:49 hrs.	Noise of talking persons at distance and noise of birds.
22	13:49 – 13:50 hrs.	Noise of talking persons at distance; noise of birds; noise of car passing by (1x); noise of wind rustling leaves and noise of traffic at distance.
23	13:50 – 13:51 hrs.	Noise of wind rustling leaves; noise of birds and noise of moped passing by (2x).
24	13:51 – 13:52 hrs.	Noise of wind rustling leaves; noise of birds; noise of talking persons at distance and noise of traffic at distance.
25	13:52 – 13:53 hrs.	Noise of traffic at distance.
26	13:53 – 13:54 hrs.	Noise of talking persons at distance.
27	13:54 – 13:55 hrs.	Noise of traffic at distance and noise of car passing by (1x).
28	13:55 – 13:56 hrs.	Noise of birds.

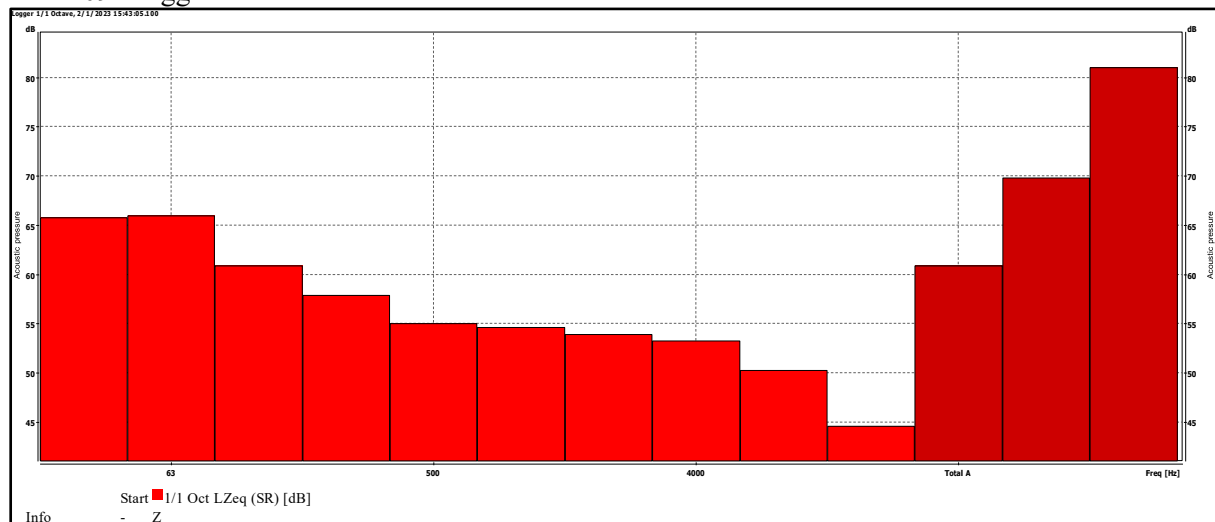
Location N5

Log number:	Log 109
Date:	1 February 2023
Time:	15:12 – 15:43 hrs. (30 min)
Description of the location:	Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.
Observation during measurement	<p>Continuous noise of traffic passing by (car, light truck, heavy truck, bus, moped and bike) and noise of machine used for crafts.</p> <p>Occasional noise of talking persons at distance; noise of music in the background; noise of talking persons passing by; noise of crying baby at distance; noise of falling object at distance; noise from handsaw used for sawing of wood material at distance; noise of starting car at distance; noise of laughing person at distance and noise of claxon.</p> <p>Wind speed: 0.3–1.5 m/s Wind direction: North-East</p>
Position of the noise meter	The meter was placed approx. 30 m away from the main road and 1.5 m above surface level.

LOG109: Logger results, logger step = 2 s



LOG109: Logger 1/1 Octave



Causes of exceedance of the background level.

Nr.	Time	Cause
1	15:12 – 15:43 hrs.	Continuous noise of traffic.
2	15:12 – 15:13 hrs.	Noise of talking person at distance; noise of music in the background and noise of car passing by (9x)
3	15:13 – 15:14 hrs.	Noise of claxon (1x); noise of talking persons passing by; noise of car passing by (6x) and noise of light truck passing by (3x).
4	15:14 – 15:15 hrs.	Noise of talking person at distance; noise of persons passing by; noise of starting car at distance; noise of crying baby at distance; noise of car passing by (5x) and noise of light truck passing by (2x).
5	15:15 – 15:16 hrs.	Noise of crying baby at distance; noise of talking persons at distance; noise from handsaw used for sawing of wood material at distance; noise of car passing by (11x) and noise of light truck passing by (3x).
6	15:16 – 15:17 hrs.	Noise of talking person at distance; noise of crying baby at distance; noise of starting car at distance; noise from handsaw used for sawing of wood material at distance; noise of car passing by (8x); noise of light truck passing by (2x); and noise of bike passing by (1x).
7	15:17 – 15:18 hrs.	Noise of falling object at distance; noise of car passing by (10x); noise of light truck passing by (2x) and noise of moped passing by (1x).
8	15:18 – 15:19 hrs.	Noise from handsaw used for sawing of wood material at distance; noise of car passing by (12x); noise of bus passing by (2x) and noise of moped passing by (2x).
9	15:19 – 15:20 hrs.	Noise of claxon (1x); noise of car passing by (14x) and noise of heavy truck passing by (1x).
10	15:20 – 15:21 hrs.	Noise of talking person at distance; noise of car passing by (7x) and noise of moped passing by (1x).
11	15:21 – 15:22 hrs.	Noise of laughing persons at distance; noise of car passing by (5x) and noise of heavy truck passing by (1x).
12	15:22 – 15:23 hrs.	Noise of car passing by (8x) and noise of heavy truck passing by (1x).
13	15:23 – 15:24 hrs.	Noise of talking persons at distance; noise of car passing by (18x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
14	15:24 – 15:25 hrs.	Noise of car passing by (8x); noise of heavy truck passing by (1x) and noise of bus passing by (1x).
15	15:25 – 15:26 hrs.	Noise of claxon (1x); noise of laughing person at distance; noise of car passing by (14x); noise of light truck passing by (1x) and noise of heavy truck passing by (1x).
16	15:26 – 15:27 hrs.	Noise of car passing by (8x); noise of light truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
17	15:27 – 15:28 hrs.	Noise of car passing by (10x); noise of light truck passing by (1x) and noise of heavy truck passing by (1x).
18	15:28 – 15:29 hrs.	Noise of car passing by (15x); noise of light truck passing by (4x) and noise of heavy truck passing by (1x).
19	15:29 – 15:30 hrs.	Noise of laughing and talking persons; continuous noise of machine used for crafts; noise of car passing by (7x); noise of light truck passing by (1x) and noise of heavy truck passing by (1x).
20	15:30 – 15:31 hrs.	Continuous noise of machine used for polishing crafts; noise of car passing by (5x); noise of heavy truck passing by (1x); noise of bus passing by (2x) and noise of moped passing by (1x).
21	15:31 – 15:32 hrs.	Continuous noise of machine used for polishing crafts; noise of car passing by (15x); noise of light truck passing by (1x) and noise of bus passing by (1x).
22	15:32 – 15:33 hrs.	Continuous noise of machine used for polishing crafts; noise of talking persons at distance; noise of car passing by (5x); noise of light

		truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
23	15:33 – 15:34 hrs.	Continuous noise of machine used for polishing crafts; noise of car passing by (9x); noise of light truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
24	15:34 – 15:35 hrs.	Continuous noise of machine used for polishing crafts; noise of claxon (1x); noise of car passing by (7x); noise of light truck passing by (2x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
25	15:35 – 15:36 hrs.	Continuous noise of machine used for polishing crafts; noise of car passing by (9x); noise of light truck passing by (1x); noise of heavy truck passing by (2x) and noise of moped passing by (1x).
26	15:36 – 15:37 hrs.	Continuous noise of machine used for polishing crafts; noise of falling object at distance; noise of talking persons; noise of car passing by (15x); noise of heavy truck passing by (1x) and noise of moped passing by (3x).
27	15:37 – 15:38 hrs.	Noise of talking persons; noise of car passing by (8x) and noise of moped passing by (1x).
28	15:38 – 15:39 hrs.	Continuous noise of machine used for polishing crafts; noise of talking persons; noise of car passing by (9x) and noise of bike passing by (1x).
29	15:39 – 15:40 hrs.	Noise of car passing by (17x); noise of light truck passing by (3x) and noise of moped passing by (2x).
30	15:40 – 15:41 hrs.	Noise of talking persons; noise of car passing by (13x); noise of light truck passing by (1x) and noise of moped passing by (1x).
31	15:41 – 15:42 hrs.	Noise of claxon (1x); noise of car passing by (12x); noise of heavy truck passing by (1x) and noise of moped passing by (2x).
32	15:42 – 15:43 hrs.	Noise of car passing by (11x) and noise of light truck passing by (1x).

Appendix 3B Nighttime Baseline Noise Measurements

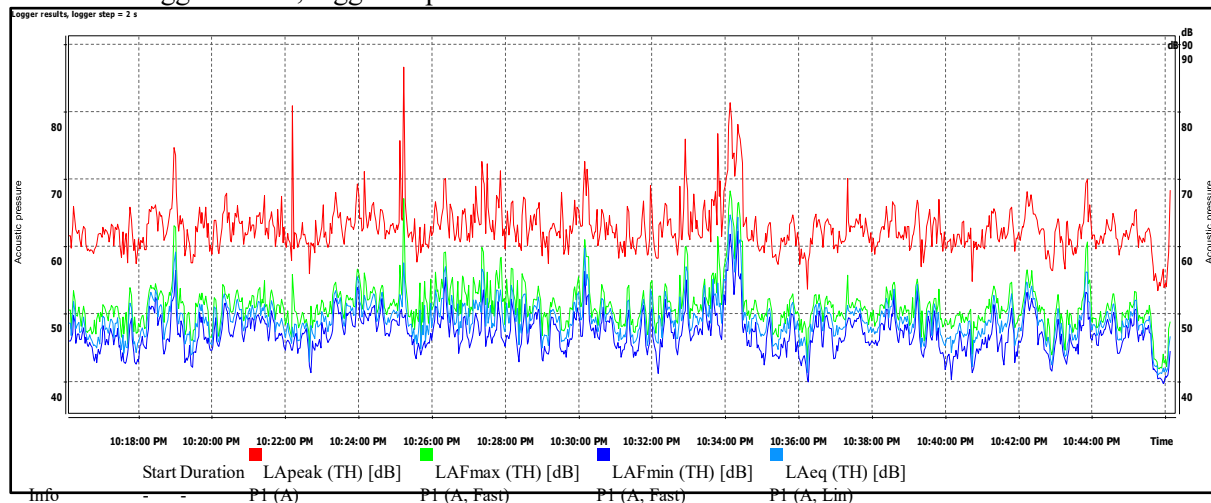
Nighttime Baseline Noise Measurements (N1-N5)

22:00 – 07:00 hrs.

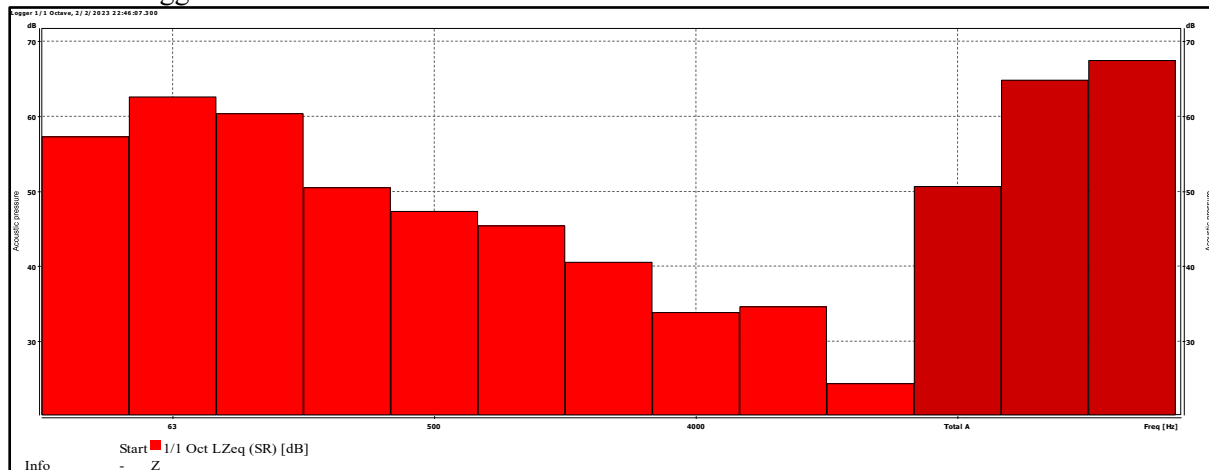
Location N1

Log number:	Log 112
Date:	2 February 2023
Time:	22:16 – 22:46 hrs. (30 min)
Description of the location:	At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.
Observation during measurement:	<p>Continuous noise of falling water; noise of music in the background coming from the side of the Waterkant and noise of traffic at distance (cars; light truck; bus; heavy truck and moped). Frequent noise of talking person at distance.</p> <p>Occasional noise of persons passing by; noise of car passing by with music at distance; noise of yelling person at distance; noise of claxon at distance; noise of alarm from moped turning signal at distance; noise of starting engine from moped; noise of laughing persons at distance; noise of siren at distance.</p> <p>Wind speed: 0.3–1.5 m/s Wind direction: North-East</p>
Position of the noise meter:	The meter was placed approx. 60 m away from the main road and 1.5 m above surface level.

LOG112: Logger results, logger step = 2 s



LOG112: Logger 1/1 Octave



Causes of exceedance of the background level.

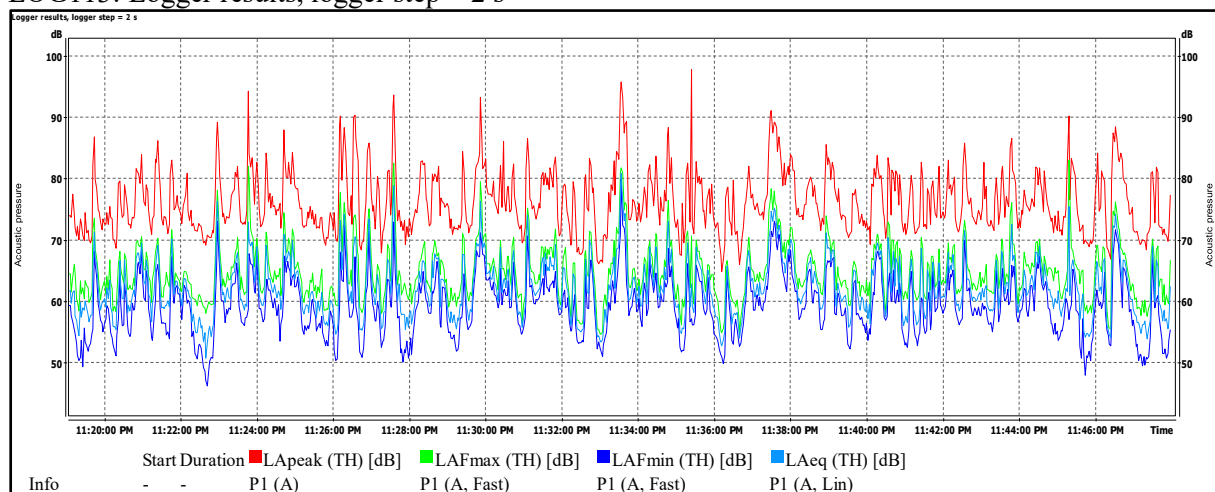
Nr.	Time	Cause
1	22:16 – 22:46 hrs.	Continuous noise of music in the background coming from the side of the Waterkant and noise of traffic at distance.
2	22:16 – 22:33 hrs.	Continuous noise of falling water in background.
3	22:16 – 22:17 hrs.	Noise of car passing by (10x); noise of light truck passing by (1x) and noise of moped passing by (1x).
4	22:17 – 22:18 hrs.	Noise of car passing by (8x).
5	22:18 – 22:19 hrs.	Noise of talking persons at distance; noise of car passing by with music at distance and noise of car passing by (14x).
6	22:19 – 22:20 hrs.	Noise of yelling persons at distance; noise of claxon at distance (1x); noise of car passing by (8x); noise of light truck passing by (1x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
7	22:20 – 22:21 hrs.	Noise of car passing by (8x) and noise of light truck passing by (1x).
8	22:21 – 22:22 hrs.	Noise of car passing by (12x) and noise of light truck passing by (2x).
9	22:22 – 22:23 hrs.	Noise of talking persons at distance; noise of car passing by (7x) and noise of moped passing by (1x).
10	22:23 – 22:24 hrs.	Noise of car passing by (11x) and noise of moped passing by (3x).
11	22:24 – 22:25 hrs.	Noise of car passing by (13x); noise of light truck passing by (1x) and noise of heavy truck passing by (1x).
12	22:25 – 22:26 hrs.	Noise of person passing by; noise of car passing by (7x) and noise of moped passing by (1x).
13	22:26 – 22:27 hrs.	Noise of talking persons at distance; noise of car passing by (9x) and noise of moped passing by (3x).
14	22:27 – 22:28 hrs.	Noise of alarm from moped turning signal at distance; noise of car passing by (6x); noise of light truck passing by (1x) and noise of moped passing by (1x).
15	22:28 – 22:29 hrs.	Noise of car passing by (10x) and noise of bus passing by (1x).
16	22:29 – 22:30 hrs.	Noise of car passing by (6x).
17	22:30 – 22:31 hrs.	Noise of starting engine from moped at distance; noise of car passing by (15x) and noise of bus passing by (1x).
18	22:31 – 22:32 hrs.	Noise of talking and laughing persons at distance; noise of car passing by (4x) and noise of moped passing by (1x).
19	22:32 – 22:33 hrs.	Noise of car passing by (6x) and noise of moped passing by (1x).
20	22:33 – 22:34 hrs.	Noise of claxon at distance (1x); noise of laughing person at distance; noise of car passing by (7x) and noise of moped passing by (3x).
21	22:34 – 22:35 hrs.	Noise of laughing person at distance; noise of car passing by (10x); noise of light truck passing by (1x) and noise of moped passing by (1x).

22	22:35 – 22:36 hrs.	Noise of car passing by (9x).
23	22:36 – 22:37 hrs.	Noise of car passing by (7x); noise of light truck passing by (1x); noise of bus passing by (1x) and noise of moped passing by (1x).
24	22:37 – 22:38 hrs.	Noise of siren at distance; noise of car passing by (11x); noise of light truck passing by (1x) and noise of bus passing by (1x).
25	22:38 – 22:39 hrs.	Noise of claxon at distance (3x); noise of car passing by (7x) and noise of moped passing by (1x).
26	22:39 – 22:40 hrs.	Noise of car passing by (7x) and noise of bus passing by (2x).
27	22:40 – 22:41 hrs.	Noise of people passing by; noise of car passing by (6x) and noise of light truck passing by (1x).
28	22:41 – 22:42 hrs.	Noise of car passing by (5x).
29	22:42 – 22:43 hrs.	Noise of claxon at distance (2x); noise of car passing by (15x) and noise of light truck passing by (1x).
30	22:43 – 22:44 hrs.	Noise of claxon (1x); noise of car passing by (7x) and noise of moped passing by (1x).
31	22:44 – 22:45 hrs.	Noise of car passing by (7x); noise of light truck passing by (1x) and noise of moped passing by (2x).
32	22:45 – 22:46 hrs.	Noise of car passing by (17x); noise of light truck passing by (1x); noise of bus passing by (1x); noise of moped passing by (1x) and noise of people passing by.

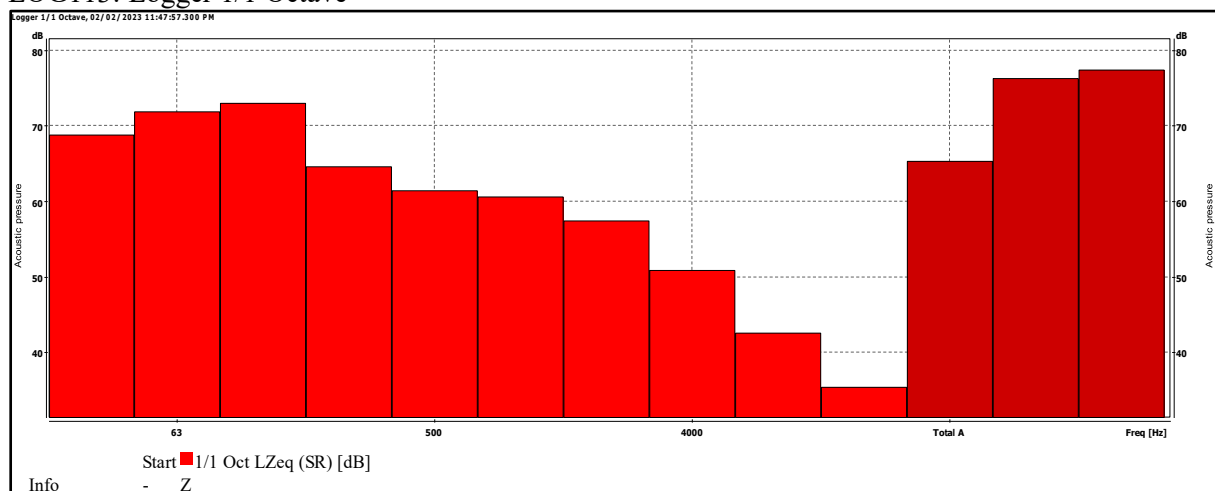
Location N2

Log number:	Log 113
Date:	2 February 2023
Time:	23:19 – 23:47 hrs. (28 min) Measurement was stopped earlier as it started raining.
Description of the location:	At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 away from the edge of the road. The ground was paved with street tiles.
Observation during measurement:	<p>Continuous noise of music in the background coming from the food stands at Waterkant and noise of traffic passing by (cars; light truck; bus; heavy truck and moped).</p> <p>Occasional noise of talking persons at distance; noise of claxon at distance; noise of alarm from car at distance; noise of car with music passing by; noise of yelling persons at distance; noise of starting engine from moped at distance; noise of car engine hood closing at distance and noise of car starting at distance.</p> <p>Wind speed: 0.3–1.5 m/s Wind direction: North-East</p>
Position of the noise meter:	The meter was placed approx. 3 m away from the edge of the road and 1.5 m above surface level.

LOG113: Logger results, logger step = 2 s



LOG113: Logger 1/1 Octave



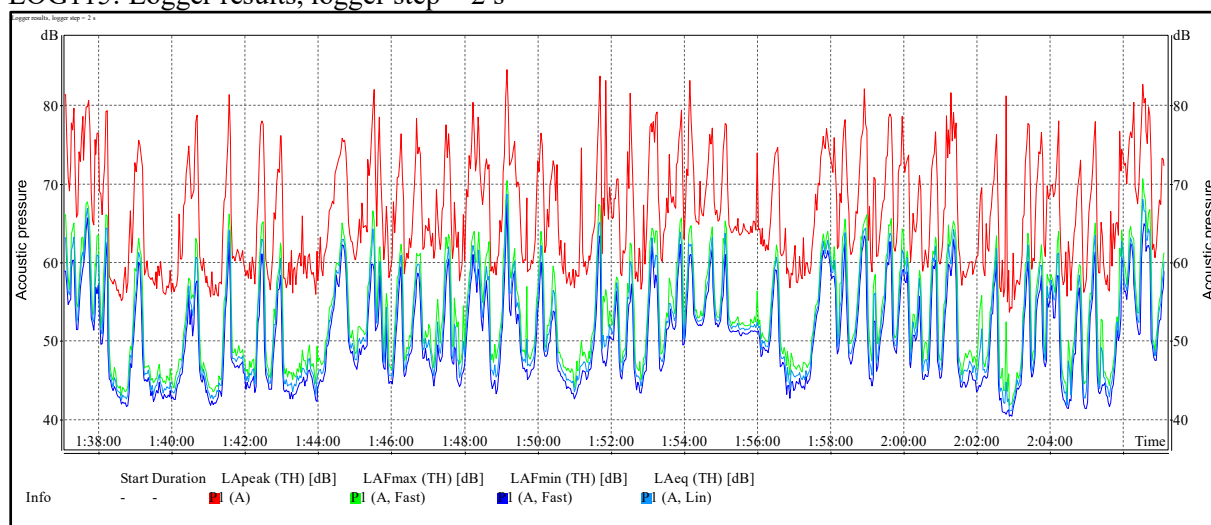
Causes of exceedance of the background level.

Nr.	Time	Cause
1	23:19 – 23:47 hrs.	Continuous noise of music in the background coming from the food stands at Waterkant and noise of traffic.
2	23:19 – 23:20 hrs.	Noise of talking persons at distance and noise of car passing by (3x).
3	23:20 – 23:21 hrs.	Noise of talking person; noise of car passing by (8x) and noise of moped passing by (1x).
4	23:21 – 23:22 hrs.	Noise of car passing by (4x); noise of light truck passing by (1x) and noise of moped passing by (1x).
5	23:22 – 23:23 hrs.	Noise of talking person at distance; noise of claxon at distance (1x); noise of car passing by (3x) and noise of moped passing by (1x).
6	23:23 – 23:24 hrs.	Noise of car alarm at distance; noise of claxon (1x); noise of car passing by (3x); noise of light truck passing by (1x); noise of bus passing by (1x) and noise of moped passing by (1x).
7	23:24 – 23:25 hrs.	Noise of car passing by (7x).
8	23:25 – 23:26 hrs.	Noise of car passing by (3x).
9	23:26 – 23:27 hrs.	Noise of talking persons at distance; noise of car with music passing by; noise of car passing by (10x) and noise of moped passing by (1x).
10	23:27 – 23:28 hrs.	Noise of talking persons at distance; noise of starting engine from moped at distance; noise of car passing by (4x) and noise of moped passing by (1x).
11	23:28 – 23:29 hrs.	Noise of car passing by (4x) and noise of moped passing by (1x).
12	23:29 – 23:30 hrs.	Noise of talking persons at distance; noise of car alarm at distance; noise of car with music passing by; noise of car passing by (4x); noise of light truck passing by (1x) and noise of bus passing by (1x).
13	23:30 – 23:31 hrs.	Noise of car passing by (7x).
14	23:31 – 23:32 hrs.	Noise of car passing by (11x); noise of heavy truck passing by (1x) and noise of moped passing by (1x).
15	23:32 – 23:33 hrs.	Noise of claxon at distance (3x); noise of car passing by (3x) and noise of light truck passing by (1x).
16	23:33 – 23:34 hrs.	Noise of yelling persons at distance; noise of starting engine from moped at distance; noise of car passing by (5x) and noise of moped passing by (3x).
17	23:34 – 23:35 hrs.	Noise of car passing by (9x).
18	23:35 – 23:36 hrs.	Noise of person blowing nose at distance and noise of car passing by (6x).
19	23:36 – 23:37 hrs.	Noise of starting engine from moped at distance and noise of car passing by (7x).
20	23:37 – 23:38 hrs.	Noise of starting engine from moped at distance; noise of car engine hood closing at distance; noise of car passing by (10x); noise of light truck passing by (1x) and noise of moped passing by (4x).
21	23:38 – 23:39 hrs.	Noise of car starting at distance; noise of car passing by (8x) and noise of light truck passing by (1x).
22	23:39 – 23:40 hrs.	Noise of car passing by (4x).
23	23:40 – 23:41 hrs.	Noise of car passing by (8x); noise of light truck passing by (1x) and noise of moped passing by (1x).
24	23:41 – 23:42 hrs.	Noise of car passing by (7x).
25	23:42 – 23:43 hrs.	Noise of persons passing by; noise of car passing by (10x) and noise of moped passing by (1x).
26	23:43 – 23:44 hrs.	Noise of car passing by (8x) and noise of moped passing by (1x).
27	23:44 – 23:45 hrs.	Noise of car passing by (7x).
28	23:45 – 23:46 hrs.	Noise of car passing by (1x) and noise of moped passing by (1x).
29	23:46 – 23:47 hrs.	Noise of car passing by (17x), noise of bus passing by (2x) and noise of claxon at distance (3x)

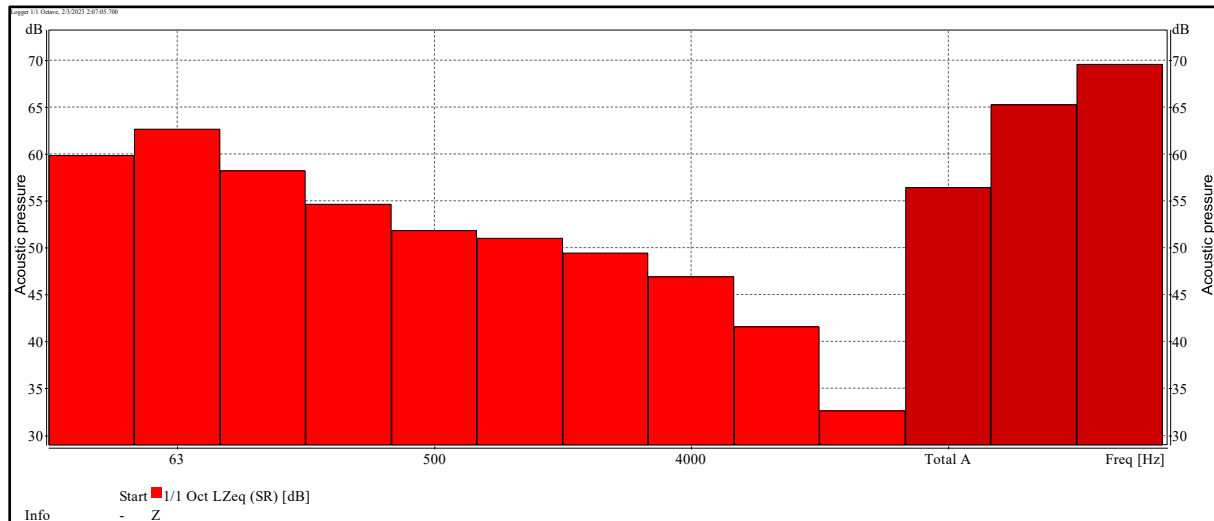
Location N3

Log number:	Log 115
Date:	3 February 2023
Time:	01:37 – 02:07 hrs. (30 min)
Description of the location:	At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.
Observation during measurement	<p>Continuous noise from lamp of lantern pole in background; noise of music in the background coming from the side of the Waterkant and noise of traffic (car, light truck, bus and moped).</p> <p>Occasional noise of tour bus passing by with music; noise of talking persons at distance; noise of claxon at distance; noise of yelling persons at distance; noise of claxon from boat at distance.</p> <p>Wind speed: < 0.3 m/s Wind direction: North-East</p>
Position of the noise meter	The meter was placed approx. 15 m away from the edge of the road and 1.5 m above surface level.

LOG115: Logger results, logger step = 2 s



LOG115 : Logger 1/1 Octave



Causes of exceedance of the background level.

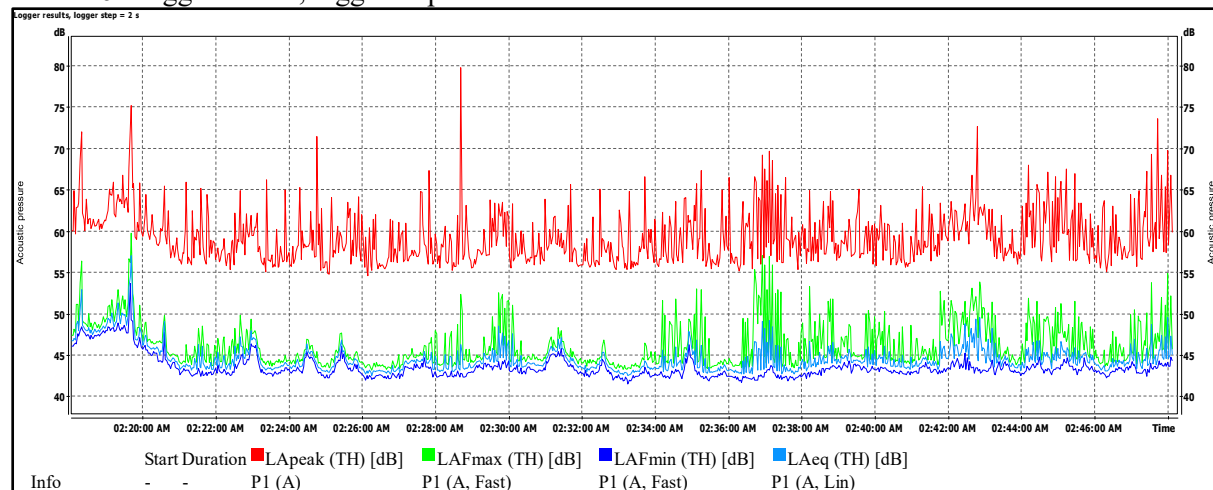
Nr.	Time	Cause
1	01:37 – 02:07 hrs.	Continuous noise from lamp of lantern pole in the background and noise of music in the background coming from the side of the Waterkant.
2	01:37 – 01:38 hrs.	Noise of car passing by (6x) and noise of moped passing by (1x).
3	01:38 – 01:39 hrs.	Noise of car passing by (3x) and noise of moped passing by (1x).
4	01:40 – 01:41 hrs.	Noise of car passing by (2x)
5	01:41 – 01:42 hrs.	Noise of car passing by (1x)
6	01:42 – 01:43 hrs.	Noise of car passing by (2x)
7	01:44 – 01:45 hrs.	Noise of tour bus with music passing by (1x) and noise of moped passing by (1x).
8	01:45 – 01:46 hrs.	Noise of car passing by (2x)
9	01:46 – 01:47 hrs.	Noise of car passing by (3x)
10	01:47 – 01:48 hrs.	Noise of talking persons at distance; noise of claxon at distance (1x); noise of car passing by at distance (2x) and noise of light truck passing by at distance (1x).
11	01:48 – 01:49 hrs.	Noise of yelling persons at distance; noise of talking persons at distance; noise of car passing by at distance (1x) and noise of moped passing by (2x).
12	01:49 – 01:50 hrs.	Noise of claxon at distance (1x); noise of car passing by (2x) and noise of moped passing by (1x).
13	01:50 – 01:51 hrs.	Noise of light truck passing by (1x)
14	01:51 – 01:52 hrs.	Noise of talking persons at distance; noise of laughing persons at distance and noise light truck passing by (1x).
15	01:52 – 01:53 hrs.	Noise of car passing by (1x) and noise of light truck passing by (1x).
16	01:53 – 01:54 hrs.	Noise of car passing by (4x) and noise of light truck passing by (1x).
17	01:54 – 01:55 hrs.	Noise of car passing by (4x); noise of starting car and noise of car engine running.
18	01:55 – 01:56 hrs.	Noise of car passing by (1x) and noise of car engine running.
19	01:56 – 01:57 hrs.	Noise of car passing by (2x) and noise of car driving away.
20	01:57 – 01:58 hrs.	Noise of car passing by (8x) and noise of light truck passing by (2x).
21	01:58 – 01:59 hrs.	Noise of car passing by with music; noise of claxon at distance (1x); noise of car passing by (3x) and noise of moped passing by (1x).
22	01:59 – 02:00 hrs.	Noise of car passing by (2x) and noise of moped passing by (2x).
23	02:00 – 02:01 hrs.	Noise of car passing by (1x) and noise of light truck passing by (1x).
24	02:01 – 02:02 hrs.	Noise of car passing by (3x)

25	02:02 – 02:03 hrs.	Noise of car started at distance; noise of claxon at distance (1x); noise of birds and noise of car passing by (1x).
26	02:03 – 02:04 hrs.	Noise of claxon from boat at distance (1x) and noise of car passing by (1x).
27	02:04 – 02:05 hrs.	Noise of claxon from boat at distance (2x) and noise of car passing by (2x).
28	02:05 – 02:06 hrs.	Noise of claxon from boat at distance (2x); noise of car passing by with music; noise of claxon from a car (1x) and noise of car passing by (3x).
29	02:06 – 02:07 hrs.	Noise of car passing by (5x) and noise of moped passing by (1x)

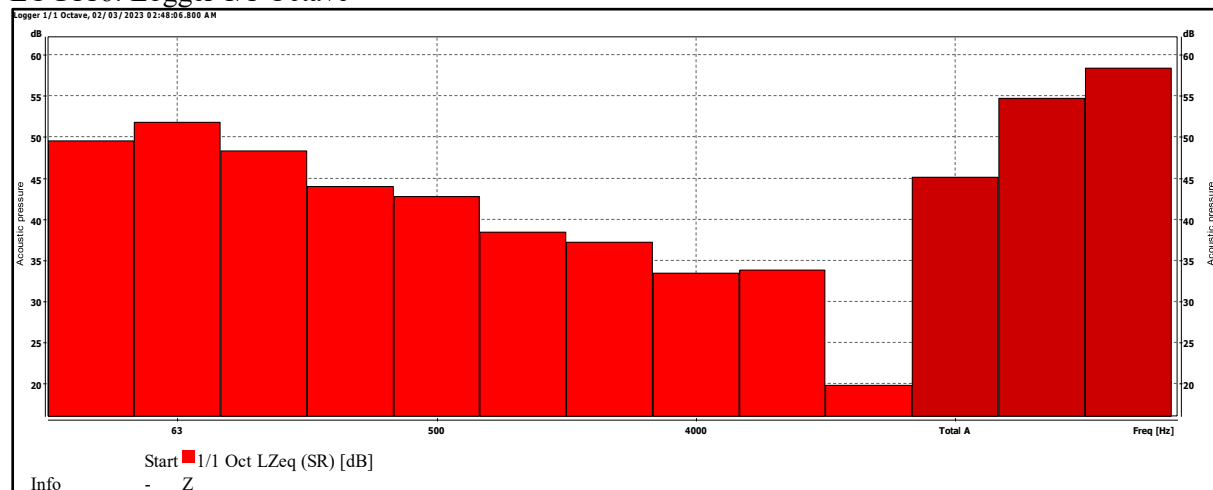
Location N4

Log number:	Log 116
Date:	3 February 2023
Time:	02:18 – 02:48 hrs. (30 min)
Description of the location:	At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.
Observation during measurement	<p>Frequent noise of birds.</p> <p>Occasional noise of car started at distance; noise of starting engine from moped at distance; noise of talking persons at distance; noise of moped driving away at distance; noise of car driving away at distance; noise of traffic at distance; noise of car passing by with music at distance.</p> <p>Wind speed: < 0.3 m/s Wind direction: North-East</p>
Position of the noise meter	The meter was placed approx. 10 m away from the edge of the road and 1.5 m above surface level.

LOG116: Logger results, logger step = 2 s



LOG116: Logger 1/1 Octave



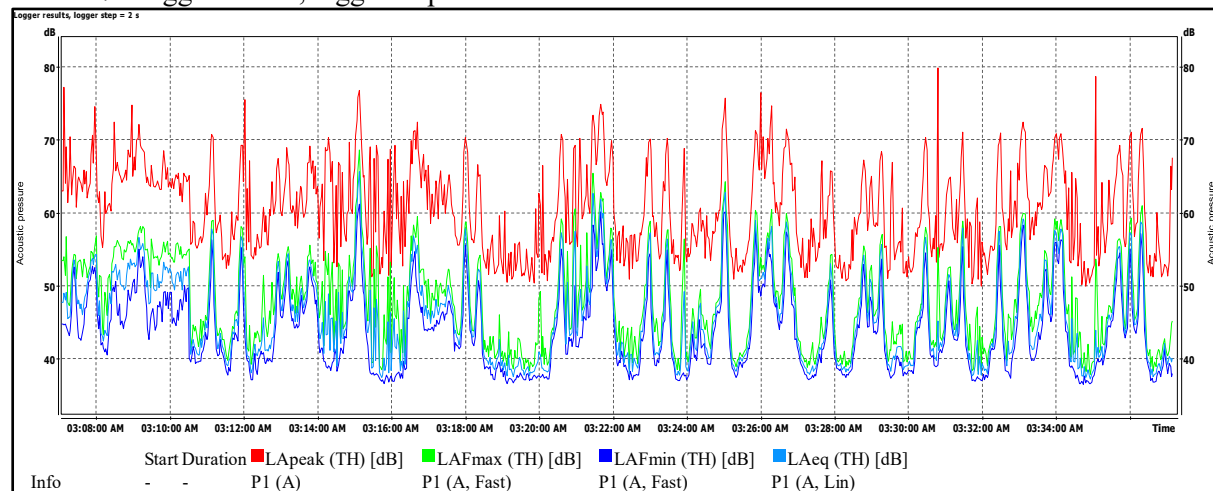
Causes of exceedance of the background level.

Nr.	Time	Cause
1	02:18 – 02:48 hrs.	Frequent noise of birds
2	02:18 – 02:19 hrs.	Noise of car started at distance (1x); noise of starting engine from moped at distance and noise of talking persons at distance.
3	02:19 – 02:20 hrs.	Noise of talking persons at distance and noise of moped driving away at distance (1x).
4	02:20 – 02:21 hrs.	Noise of car driving away at distance
5	02:21 – 02:22 hrs.	Noise of birds
6	02:22 – 02:23 hrs.	Noise of birds
7	02:23 – 02:24 hrs.	Noise of birds and noise of traffic at distance.
8	02:24 – 02:25 hrs.	Noise of traffic at distance
9	02:25 – 02:26 hrs.	Noise of birds
10	02:26 – 02:27 hrs.	Noise of birds
11	02:27 – 02:28 hrs.	Noise of birds
12	02:28 – 02:29 hrs.	Noise of birds
13	02:29 – 02:30 hrs.	Noise of birds
14	02:31 – 02:32 hrs.	Noise of car passing by with music at distance (1x).
15	02:32 – 02:33 hrs.	Noise of traffic at distance
16	02:34 – 02:35 hrs.	Noise of birds and noise of traffic at distance
17	02:35 – 02:36 hrs.	Noise of birds
18	02:36 – 02:37 hrs.	Noise of birds
19	02:37 – 02:38 hrs.	Noise of birds
20	02:38 – 02:39 hrs.	Noise of birds
22	02:39 – 02:40 hrs.	Noise of birds
24	02:41 – 02:42 hrs.	Noise of birds
25	02:42 – 02:43 hrs.	Noise of birds
26	02:43 – 02:44 hrs.	Noise of birds and noise of car passing by with music at distance (1x)
28	02:45 – 02:46 hrs.	Noise of birds and noise of car passing by at distance (1x)
29	02:46 – 02:47 hrs.	Noise of birds
30	02:47 – 02:48 hrs.	Noise of birds

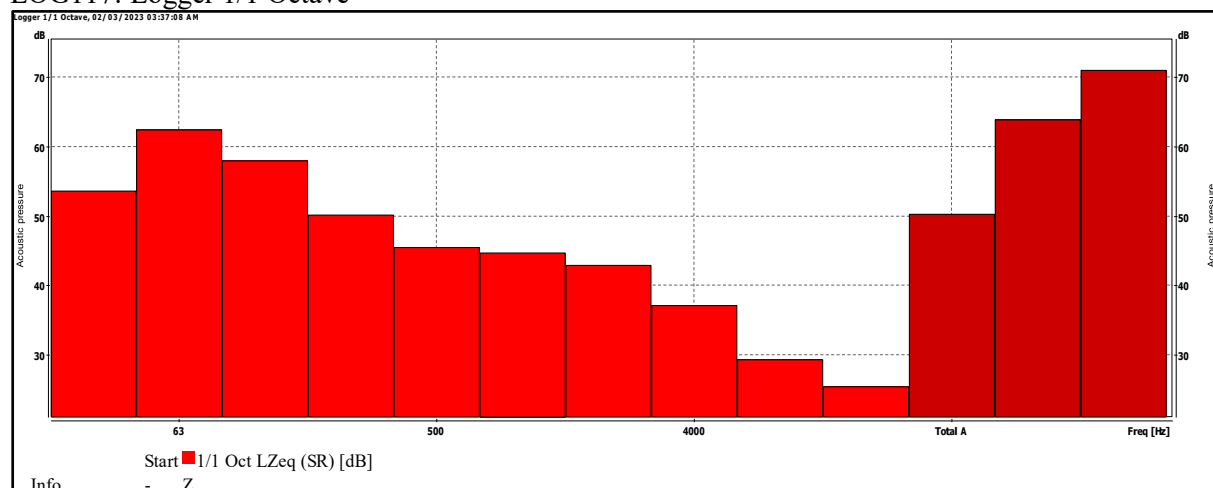
Location N5

Log number:	Log 117
Date:	3 February 2023
Time:	03:07 – 03:37 hrs. (30 min)
Description of the location:	Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.
Observation during measurement	<p>Continuous noise of music in the background coming from persons sitting near office of Beheerraad Waterkant.</p> <p>Frequent noise of traffic passing by (car, light truck, heavy truck, bus and moped). Occasional noise of birds; noise of talking persons at distance; noise of claxon; noise of car with music passing by; noise of car engine running; noise of closing car door; noise of car reversing and driving away; noise of person coughing.</p> <p>Wind speed: 0.3–1.5 m/s Wind direction: North-East</p>
Position of the noise meter	The meter was placed approx. 30 m away from the main road and 1.5 m above surface level.

LOG117: Logger results, logger step = 2 s



LOG117: Logger 1/1 Octave



Causes of exceedance of the background level.

Nr.	Time	Cause
1	03:07 – 03:10 hrs.	Continuous noise of music in the background coming from persons sitting near office of Beheerraad Waterkant.
2	03:07 – 03:08 hrs.	Noise of bird; noise of claxon (1x) and noise of car passing by (4x).
3	03:08 – 03:09 hrs.	Noise of car started at distance; noise of talking persons at distance and noise of car passing by (2x).
4	03:09 – 03:10 hrs.	Noise of car passing by (2x)
5	03:10 – 03:11 hrs.	Noise of car passing by (2x)
6	03:11 – 03:12 hrs.	Noise of car passing by (1x)
7	03:12 – 03:13 hrs.	Noise of car with music passing by at distance (1x); noise of talking persons at distance and noise of car passing by (3x).
8	03:13 – 03:14 hrs.	Noise of person with music passing by; noise of moped passing by at distance
9	03:14 – 03:15 hrs.	Noise of birds and noise of car passing by (1x).
10	03:15 – 03:16 hrs.	Noise of birds and noise of bus passing by (1x).
11	03:16 – 03:17 hrs.	Noise of birds; noise of car engine running and noise of car passing by (2x).
12	03:17 – 03:18 hrs.	Noise of car with music; noise of closing car door; noise of talking persons; noise of car passing by (1x).
13	03:18 – 03:19 hrs.	Noise of talking persons and noise of car passing by (3x).
14	03:19 – 03:20 hrs.	Noise of talking persons
15	03:20 – 03:21 hrs.	Noise of talking persons; noise of starting car and noise of car passing by (3x).
16	03:21 – 03:22 hrs.	Noise of car reversing and driving away; noise of car passing by (3x) and noise of light truck passing by (1x).
17	03:22 – 03:23 hrs.	Noise of birds; noise of person coughing and noise of car passing by (2x).
18	03:23 – 03:24 hrs.	Noise of person coughing and noise of car passing by (1x).
19	03:24 – 03:25 hrs.	Noise of heavy truck passing by (1x) and noise of bus passing by (1x).
20	03:25 – 03:26 hrs.	Noise of bus passing by (1x); noise of moped passing by (1x) and noise of car passing by (1x).
21	03:26 – 03:27 hrs.	Noise of car passing by (3x); noise of bus passing by (1x) and noise of moped passing by (3x).
22	03:27 – 03:28 hrs.	Noise of car passing by with music and noise of car passing by (1x).
23	03:28 – 03:29 hrs.	Noise of car passing by (2x)
24	03:29 – 03:30 hrs.	Noise of birds; noise of car with music at distance and noise of car passing by (1x).
25	03:30 – 03:31 hrs.	Noise of car passing by (1x)
26	03:31 – 03:32 hrs.	Noise of birds; noise of claxon at distance (1x); noise of car passing by (1x) and noise of moped passing by (1x).
27	03:32 – 03:33 hrs.	Noise of birds and noise of car passing by (1x).
28	03:33 – 03:34 hrs.	Noise of birds; noise of car passing by (2x) and noise of bus passing by (1x).
29	03:34 – 03:35 hrs.	Noise of birds; noise of talking persons at distance; noise of closed car door at distance; noise of car passing by (3x) and noise of bus passing by (1x).
30	03:35 – 03:36 hrs.	Noise of birds; noise of closing car door at distance; noise of car passing by (2x) and noise of light truck passing by (1x).
31	03:36 – 03:37 hrs.	Noise of light truck passing by (1x) and noise of bus passing by (1x).

Appendix 4 Photo report

Photo Report

Daytime Baseline Measurements (07:00- 22:00 hrs.)

1 February 2023



N1: At the SMS Pier complex, approx. 60 m away from the Waterkant and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.



N2: At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 m away from the edge of the road. The ground was paved with street tiles.



N3: At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.







N4: At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.



N5: Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.

Nighttime Baseline Measurements (22:00- 07:00 hrs.)

2 February 2023	
 <p>N1: At the SMS Pier complex, approx. 60 m away from the Waterkant straat and 3 m from the wooden Jetty in the Suriname River. Some boats were observed at the jetty.</p>	 <p>N2: At the junction of the Mr. Dr. J.C. De Miranda and the Waterkant, approx. 3 m away from the edge of the road. The ground was paved with street tiles.</p>
3 February 2023	
 <p>N3: At the Oud Vlaggenplein at the junction of the Waterkant and the Mr. F. H. R. Lim A Po straat and near the Onafhankelijkheidsplein. Approx. 15 m away from the edge of the road. The ground was covered with gravel.</p>	 <p>N4: At an open grass field, approx. 10 m away from the Zeelandiaweg and approx. 7 m in front of the wall from Fort Zeelandia. The location was surrounded by historical buildings and high trees.</p>



N5: Along the shore at Waterkant near the balcony over the Suriname River, approx. 30 m from the Waterkant and 3 m from the sheet pile wall. The ground was covered with a mix of gravel, sand and grass.

Appendix C

Air Quality Baseline Report

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023



ESIA for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure

Air Quality Baseline Report

Final



Paramaribo, 09 March 2023

Prepared by



ISO 9001:2015 certified

Project Title: ESIA for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure
Project Number: IS-425
Document: Air Quality Baseline Report

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Abbreviations

Abbreviation	Definition
ADI	Area of Direct Influence
AII	Area of Indirect Influence
CBvS	Centrale Bank van Suriname
°C	Degree Celsius
DNA	De Nationale Assemblée
E	East
ESIA	Environmental and Social Impact Assessment
ILACO	ILACO Suriname N.V.
ITCZ	Inter-Tropical Convergence Zone
m/s	meter per seconds
mm	millimeter
NIMOS	Nationaal Institute for Environment and Development in Suriname (Nationaal Instituut voor Milieu en Ontwikkeling in Suriname)
NE	North East
NO ₂	Nitrogen Dioxide
POF	Perspectives of Freedom Foundation
RH	Relative Humidity
SO ₂	Sulphur Dioxide
TSP	Total Suspended Particles
WHO	World Health Organization

Glossary

Term	Definition
Air pollution	This means any change in the composition of the air caused by smoke, soot, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, aerosols and odorous substances
Dust	Solid materials suspended in the atmosphere in the form of small irregular particles, many of which are microscopic in size
Particulate Matter (PM)	These comprise a mixture of organic and inorganic substances, ranging in size and shape. These can be divided into coarse and fine particulate matter.

Executive Summary

The Ministry of Education, Science and Culture is planning to redevelop the Waterfront and improve the surrounding mobility infrastructure as part of the Paramaribo Urban Rehabilitation Program. As per NIMOS guidelines a Category-B Environmental and Social Impact Assessment (ESIA) should be conducted for which the consultancy Perspectives of Freedom Foundation (POF) has been contracted. POF has contracted ILACO Suriname N.V. (ILACO) to execute three baseline studies for this ESIA, namely the water quality, air quality and noise baseline studies.

This report presents the methodology and results of the air quality baseline study.

Suriname does not have an air quality monitoring network as such no long-term ambient air quality data is available. For the current baseline study, a qualitative assessment is conducted using existing air quality data (measured within the project area), local climatological conditions and based on an observation of potential sources of air emissions within and near the project.

Existing air quality data of the ESIA study for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019) have been used for the current study. During these studies, direct air quality measurements were conducted at two locations within the inner city of Paramaribo, namely at the parking area of the parliament building (DNA) and of the Central Bank of Suriname (CBvS). In summary the following can be concluded from these studies:

- The air quality in the area was assumed to be suboptimal, due to human habitation and related activities. Sources of man-made air emissions that affect the air quality here included exhaust gasses from traffic along the roads and vehicles parked on the parking lots in the vicinity. These emissions occurred mainly during day time hours on weekdays.
- Dust could be experienced in particular during dry periods. The project area and immediate surrounding are almost completely paved with the result that the atmospheric dust originates from unpaved parts like the Palmentuin and narrow strips along the Waterfront and possibly from unpaved areas at further distance carried through the north-eastern air (wind) flows.
- The average of the measured air quality parameters (PM_{2.5}, PM₁₀, NO₂ and SO₂) were all below the applicable WHO guidelines, however peaks were observed as a result from traffic, moving vehicles and other commercial activities also upwind of the project area.
- The impact zone was mostly related to the dominating north-eastern winds at day-time. An impact of current air pollution only occurs where receptors are downwind and sufficiently close.
- All the measured values (average and peaks) of the parameters from location CBvS were higher than the measured values from location DNA. While the traffic that passed the parliament building site, along the Henck Arronstraat and Grote Combéweg was more than the amount of traffic that passed CBvS terrain along the Waterkant, measured NO₂ and SO₂ values were still lower on the parliament building site than on CBvS terrain. This could be accounted to the fact that the DNA location is a more open space close to the Palmentuin (more dilution by free-flowing winds). The terrain of the CBvS is enclosed by higher buildings with no free flow of the wind which could have resulted in accumulation of dust and gasses and thus the higher results. Furthermore, the CBvS location lies downwind of the parliament building site, so that all commercial activities and moving traffic upwind of CBvS location, including the activities on the parliament building site, may have contributed to the local air quality on CBvS terrain.

On the 26th of January 2023, a site visit was conducted to the project and the wider study area (the area of indirect influence (AII), a radius of 200 - 250 m from the project area), to verify if existing data could still be applied for the current study and to map any changes if observed. From the site visit it can be concluded that the sources of emission in the wider study area, being mainly human habitation and traffic, have not changed since 2018. As such no significant changes are expected in the air quality and thus the 2018 results may still be applied as baseline for the current study.

1. Introduction & Background

The Ministry of Education, Science and Culture is planning to redevelop the Waterfront and improve the surrounding mobility infrastructure as part of the Paramaribo Urban Rehabilitation Program. As per NIMOS guidelines a Category-B Environmental and Social Impact Assessment (ESIA) should be conducted for which the consultancy Perspectives of Freedom Foundation (POF) has been contracted. POF has contracted ILACO Suriname N.V. (ILACO) to execute three baseline studies for this ESIA, namely the water quality, air quality and noise baseline studies.

This report presents the methodology and results of the air quality baseline study.

1.1 Project Background

The redevelopment of the Waterfront and the improvement of the surrounding mobility infrastructure involves civil, landscaping, small structures and utilities works associated with the streetscape and includes activities such as:

- Mobilization of material and traffic
- Earthworks
- Paving and asphaltting work
- Drainage improvement
- Structural work (including buildings, craft market stall, etc.)
- Street furniture
- Landscaping etc.

The construction works are planned to start in the second half of 2023 with an execution period of 12 months.

The project area meaning the direct project footprint or area of direct influence (ADI), is part of Paramaribo's cultural heritage and central business district. The area can be reached via the one-way Waterkant and the Mirandastraat.

The project area comprises (see **Figure 1**):

- The Waterkant between the Henck Arronstraat and the Waag Building;
- The area in between the Waterkant and the Suriname River;
- The Kromme Elleboogstraat and Mr. Dr. J.C. De Mirandastraat till the Mr. F.H.R. Lim A Postraat
- The 'Vlaggenplein' and
- The Nationale Assemblee and five buildings along the Zeelandiaweg at the Fort Zeelandia complex.

For the air quality assessment, a wider study area (area of indirect influence (AII)) was considered to identify possible sources which can cause induced or cumulative changes in air quality in combination with the project activities. The area of indirect influence, a radius of 200 - 250 m from the project area, is bordered by the Suriname River, Kromme Elleboogstraat, Mr. F. H. R. Lim A Postraat, Mr. Dr. J.C. De Mirandastraat and Henck Aronstraat till Fort Zeelandia.



Figure 1: Overview of project area and Area of Indirect Influence

1.2 Objective & Scope of Works

The purpose of this study was to establish an air quality baseline for one season within the project and the wider study area (the area of indirect influence (AII), a radius of 200 - 250 m from the project area). The scope of this study included a qualitative assessment using existing air quality data (measured within the project area), local climatological conditions and based on an observation of potential sources of air emissions within and near the project.

The air quality baseline assessment included:

- Conducting a desktop study using existing and available data of the ESIA study for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019).
- Description of the climate and any site-specific atmospheric conditions that may influence the distribution of gaseous emissions (SO_x , NO_x) and particulate matter ($\text{PM}_{2.5}$, PM_{10} and Total Suspended Particles (TSP)).
- Conducting a site visit in order to identify and map potential sources of air emissions within the project area and surroundings, within a radius of 200 - 250m.

2. Baseline Climate Conditions

This section discusses the climate of the study area. The study area comprises the project site and the surrounding area where the nearest meteorological stations are found.

2.1 General Climate Conditions

The climate of Suriname is tropical with abundant rainfall, uniform temperature, and high humidity. Most of Northern Suriname has a Tropical Rainforest Climate (Af climate in Köppen's classification) (Amatali & Naipal, 1999). The average annual rainfall in the central part of northern Suriname predominantly ranges between 2,000 and 2,500 mm, but in a narrow coastal strip it is between 1,500 and 2,000 mm. Like in most parts of Suriname, consistently high temperatures and a high humidity characterize the study area with the main variation being rainfall and the associated cloud cover.

The mean annual air temperature at Paramaribo (Cultuurtuin) is 27.8°C, with a daily range of 9-13°C and an annual range of about 2°C.

The weather of Suriname is dictated mainly by the northeast and southeast trade wind system called the Inter-Tropical Convergence Zone ("ITCZ", also known as the "Equatorial Trough"). The ITCZ follows the sun in its movement to the north to about 15° latitude and to the south to about 10° latitude south of the Equator. The ITCZ passes over Suriname two times per year bringing heavy rainfall when it is overhead. This results in four seasons based upon rainfall distribution (Scherpenzeel, 1977).

Long Rainy Season	End April - Mid August
Long Dry Season	Mid-August - Early December
Short Rainy Season	Early December - Early February
Short Dry Season	Early February - End April

The above classification of the seasons is developed for Paramaribo, the capital of Suriname, using long-term rainfall data of station Cultuurtuin, but it is applicable for the whole northern part of the country.

2.2 Climate of the Study Area

For the description of the climate of the study area, baseline data have been acquired from published sources within Suriname, and from records held by the Meteorological Service. The meteorological stations Cultuurtuin and Zorg en Hoop are the nearest stations to the project site. Additional data of the stations Domburg, Lelydorp and Zanderij are also used for long term weather data.

2.2.1 Rainfall

Figure 2 shows the mean monthly rainfall for the four selected stations over a long period, namely between 1909 - 2008 (data from www.meteosur.sr). The stations show annual totals between 2,076 and 2.222 mm with a slight increase from north to south. Highest total average monthly rainfall is recorded during the months May, June and July, which are in the Long Rainy Season, and minimum values are found during the months September to November, which are in the Long Dry Season. All stations have the same seasonal distribution.

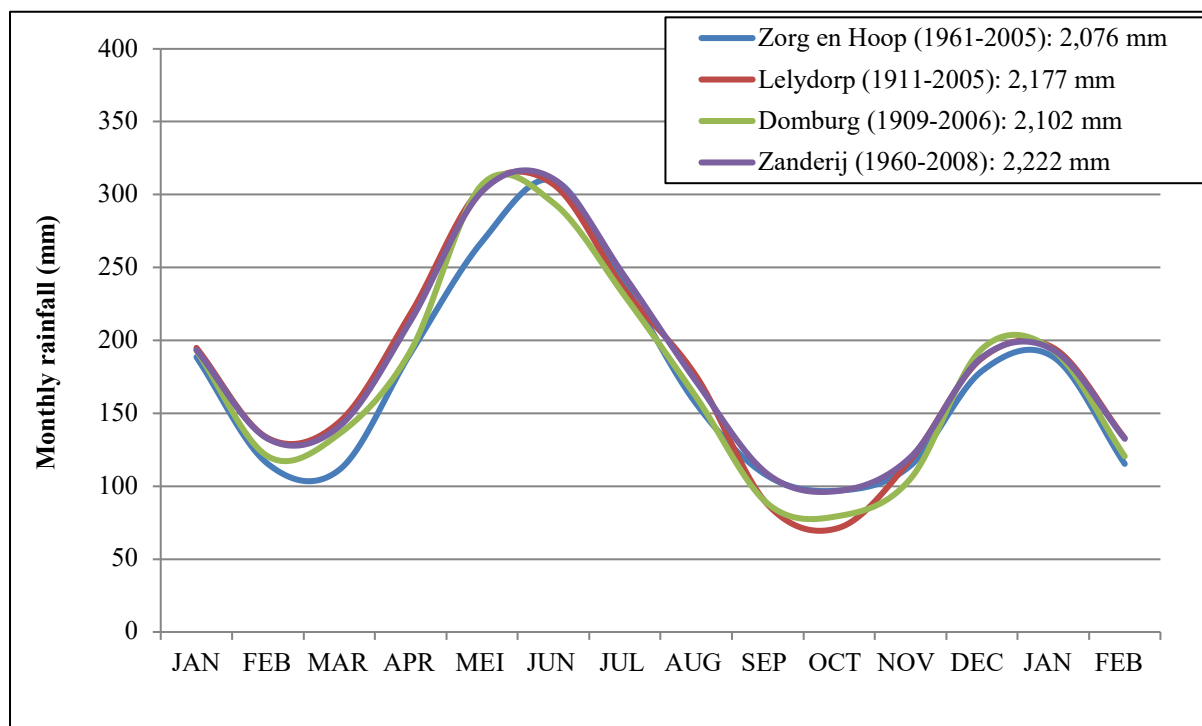


Figure 2: Long-term mean monthly and total annual precipitation for regional stations.

Recent mean monthly rainfall data (2017- 2022) from stations Cultuurtuin and Zorg en Hoop are presented in **Figure 3**. Overall, a similar pattern is observed in the mean rainfall data of 2017 - 2022 compared with the long term mean data. Highest total average monthly rainfall was recorded during the months May, June and July, and minimum values were found during the months September to October. In November higher rainfall (211 mm) was measured in 2017-2022 compared to the long-term data (114 mm).

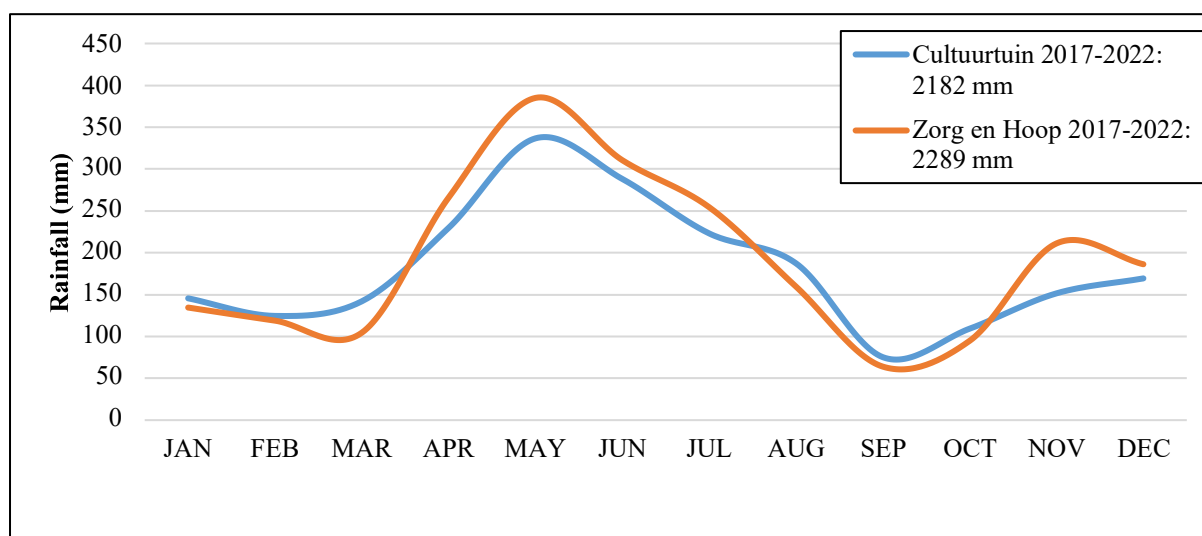


Figure 3: Recent mean monthly and total annual precipitation for regional stations

2.2.2 Temperature

The long-term mean monthly averages of the temperatures at station Cultuurtuin of 1975 – 2004 and 2005 – 2013 are presented in **Figure 4**. In general, the warmest months are August through November (Long Dry Season) with averages of 28.1 °C and 28.5 °C respectively for the two time periods. The coldest months are January and February (Short Rainy Season), when the mean monthly temperature is 26.5 °C – 26.6 °C. When the mean monthly temperatures of 1975 – 2004 are compared with temperatures of 2005 - 2013, it becomes clear that there has been a rise in temperature between the two periods.

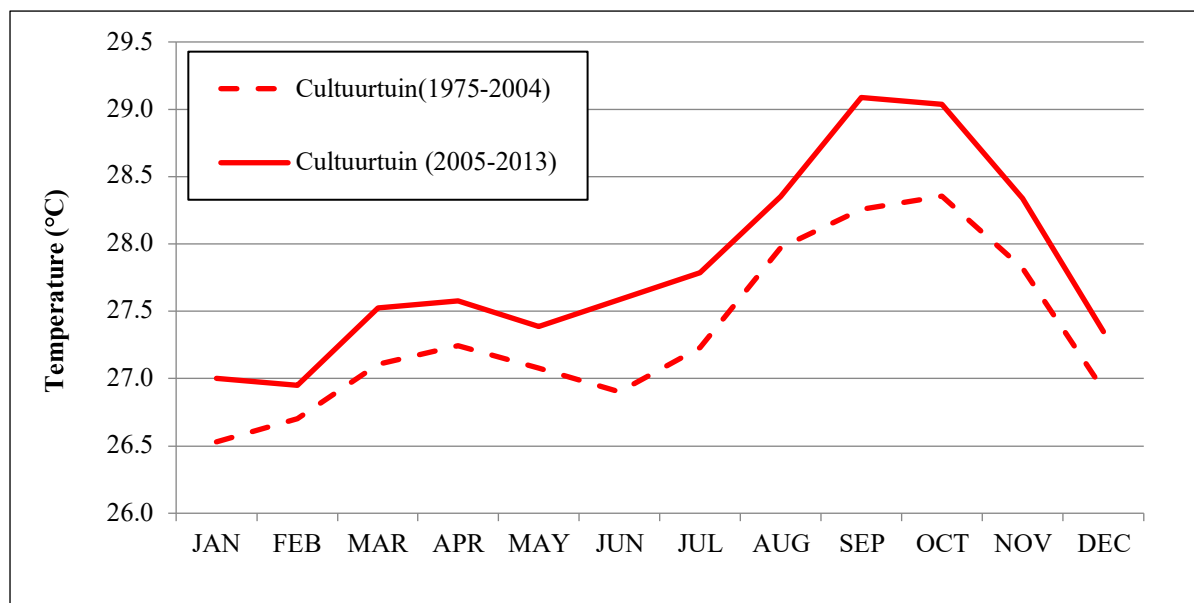


Figure 4: Mean monthly temperatures at station Cultuurtuin

The mean monthly averages of the temperatures at stations Cultuurtuin and Zorg en Hoop (2018 – 2022) are presented in **Figure 5**.

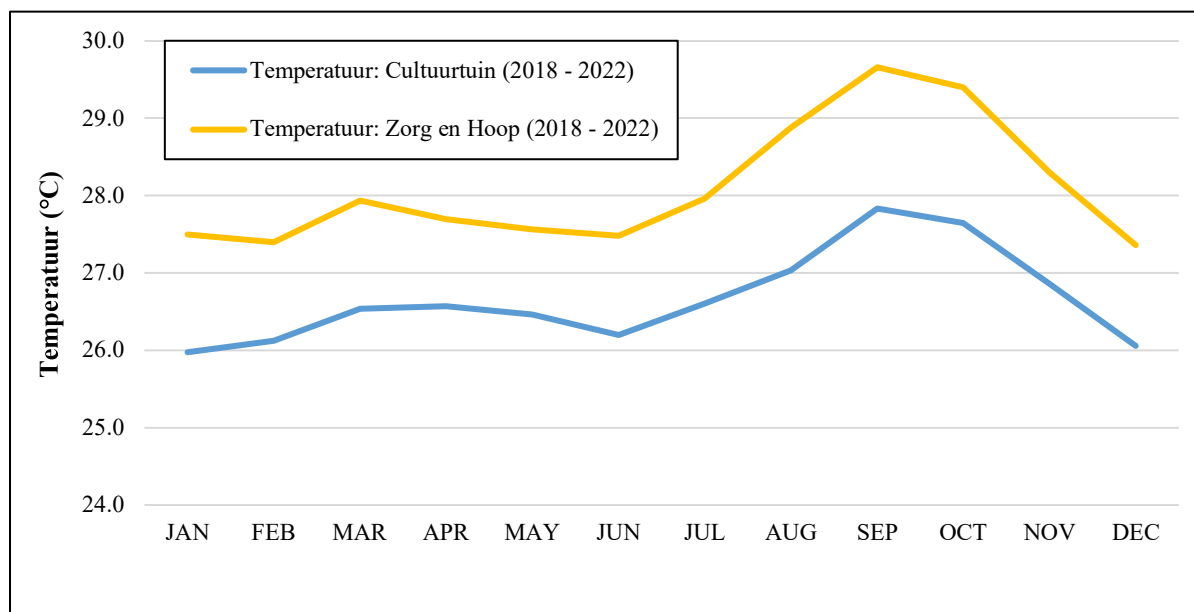


Figure 5: Mean monthly temperatures at stations Cultuurtuin and Zorg en Hoop (2018-2022)

Overall, a similar pattern is observed in the average temperatures at Cultuurtuin of 2018 - 2022 compared to the long-term data. The mean monthly temperatures of 2018 - 2022 varies between 27.4 and 29.7 °C and is in the same range as of 2005 – 2013 (27.0 – 29.1 °C).

Figure 6 presents the mean monthly temperatures and the maximum and minimum monthly means for Cultuurtuin over the period 2005 - 2013. Mean monthly maximum and minimum temperatures at Cultuurtuin follow the same trend as the mean monthly temperature, with higher maximum and minimum temperatures in the Long Dry Season and lower ones during the Short Rainy Season.

The highest mean monthly maximum occurs in October with 34.7 °C, while the lowest mean monthly minimum is recorded for December and February with 20.8 °C. The monthly mean temperature range is 8.8 °C - 12.6 °C and the annual range in the mean monthly temperature is 2.1° C.

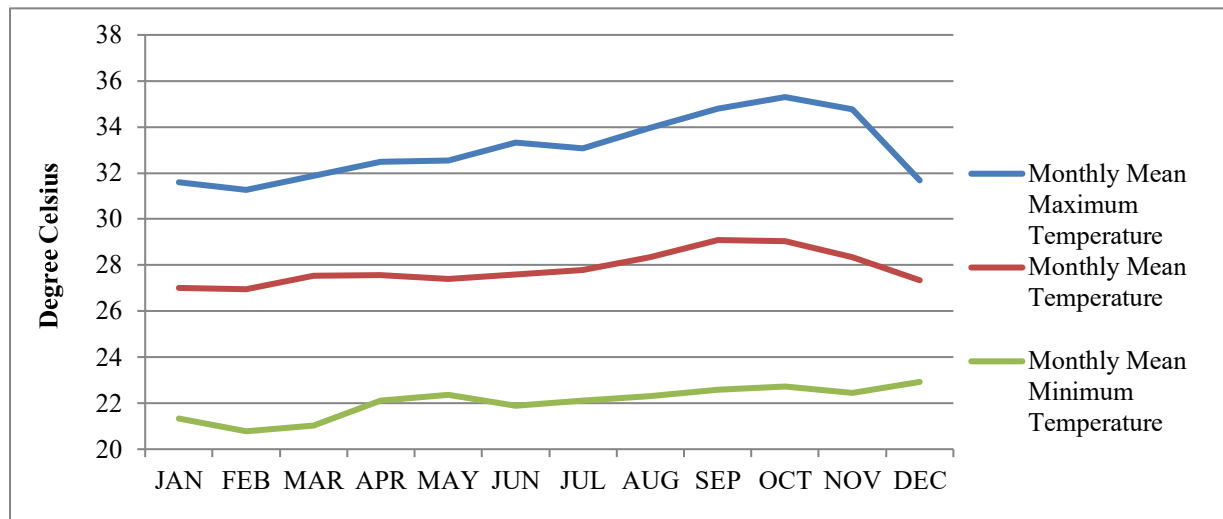


Figure 6: Monthly mean temperatures for Cultuurtuin (2005-2013).

2.2.3 Wind Speed

In **Figure 7** the monthly mean and maximum windspeed is presented for Zorg & Hoop. The average annual windspeed is 1.4-1.5 m/s. The highest mean windspeed is recorded in the February-April period, ranging between 1.6 and 1.8 m/s. The lowest ones are in June-August, ranging between 1.1 and 1.3 m/s. The windspeed is more or less correlated with the seasons, with higher windspeed in the dry seasons and lower ones during the rainy seasons. The wind velocities are relatively high at the sea border and decrease further inland. As illustrated in **Figure 7**, the strongest winds appear to occur in the short dry season, when temperature gradients are highest.

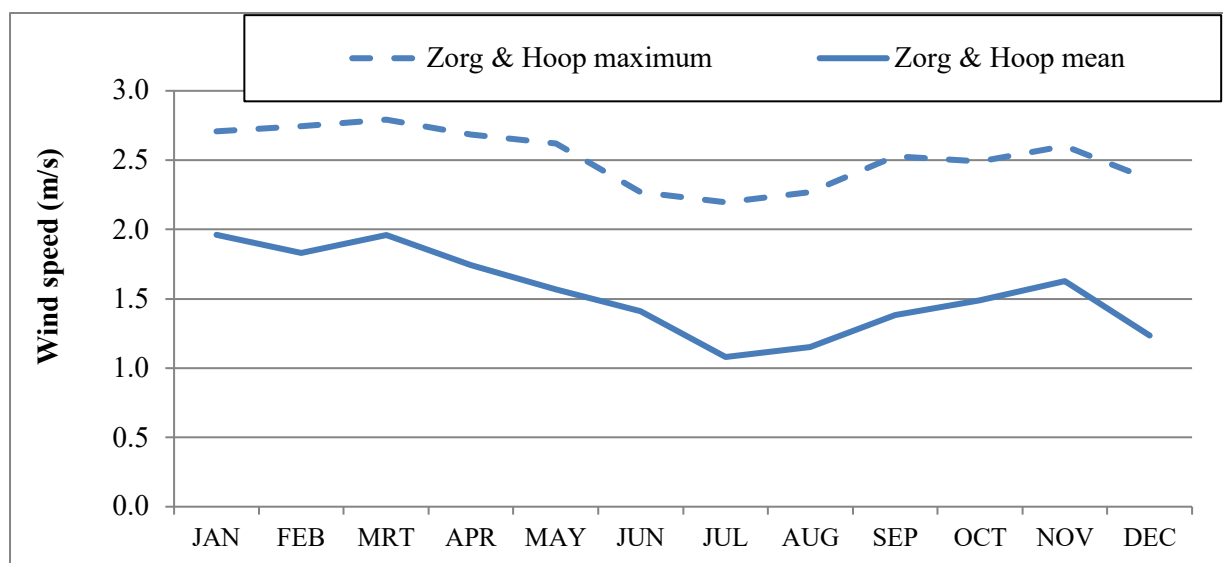


Figure 7: Mean monthly windspeed for Zorg & Hoop (1991-2017)

The mean monthly wind speed for Cultuurtuin for the period 2019 – 2020 is presented in **Figure 8**. The same pattern is observed as the long-term data for Zorg & Hoop.

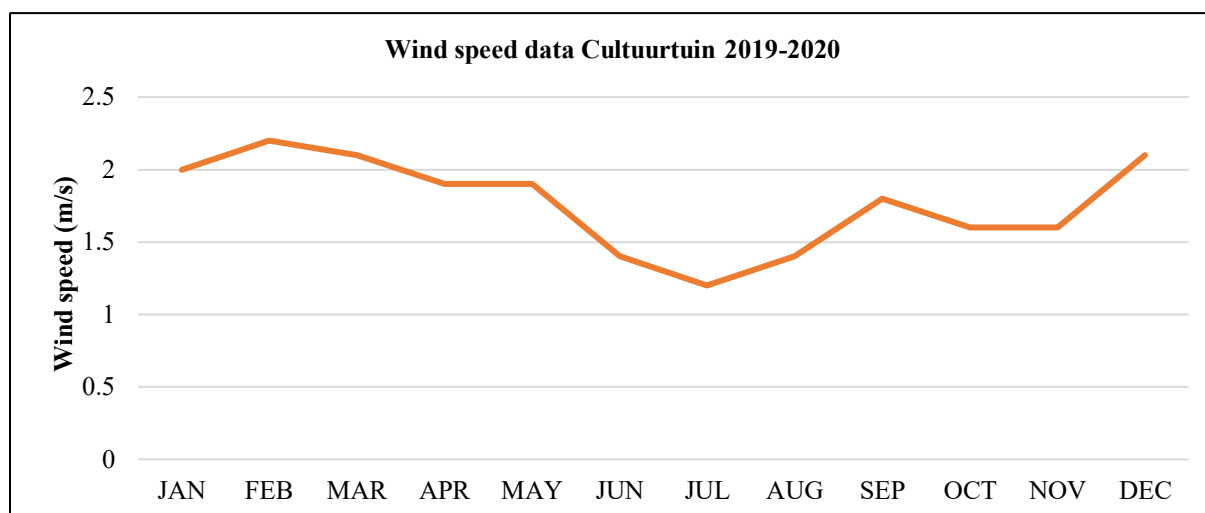


Figure 8: Mean monthly windspeed for Cultuurtuin 2019-2020

The course of the mean and maximum wind speed over the day is illustrated in **Figure 9** for Zorg & Hoop for the (extended) daytime period (06.00 - 21.00h).

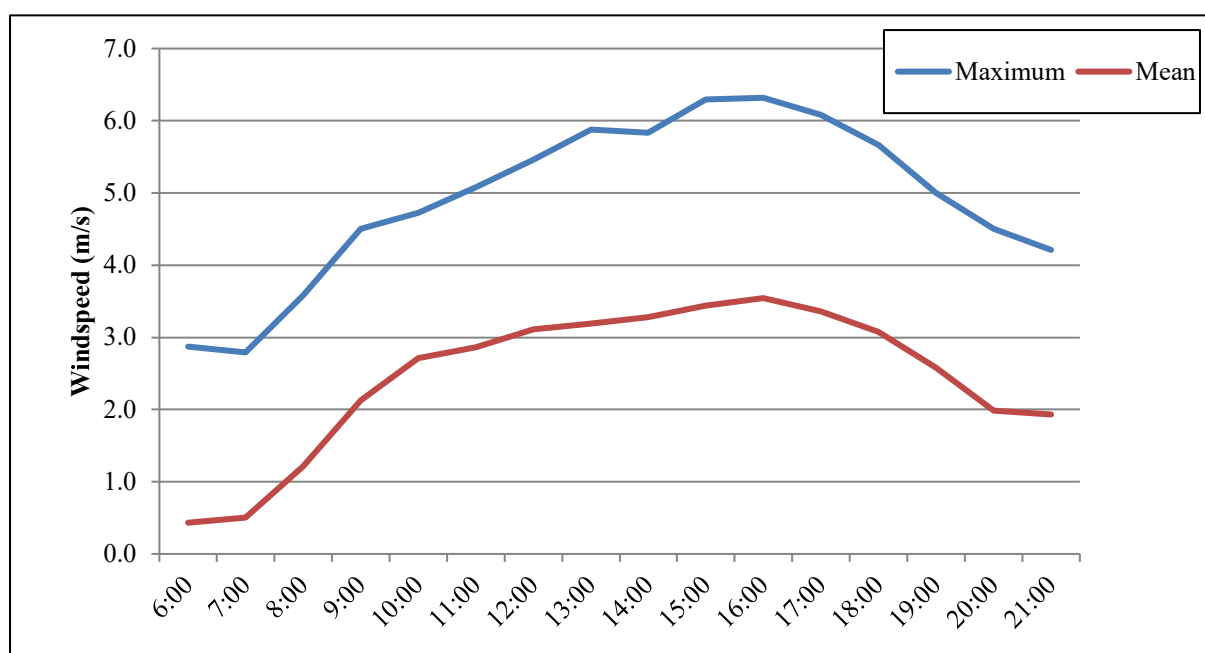


Figure 9: Average mean and maximum hourly windspeed for Zorg & Hoop (2017)

Calm winds, *i.e.*, winds with hourly speeds less than 0.5 m/s, are very frequent in Paramaribo and most of Suriname, and occur over 50% of the time, and even over 60% of the time in the June-July period (Scherpenzeel, 1977). During the night and early morning, it is usually calm. This is caused by the southerly land wind, which especially from May to December is well developed during the nights. This land wind dampens the effect of the trade winds, resulting in calm conditions during the night and the early morning. During the day, the windspeed may increase to about 5 m/s, and in some seasons to 5-8 m/s, in particular in the February - April period.

2.2.4 Wind Direction

The wind directions in Suriname are correlated to the position of the ITC-zone, whereby the directions northeast (NE) to east (E) usually have the highest frequencies.

Figure 10 presents the seasonal wind direction for Zorg & Hoop. In the Short Rainy and Dry Seasons, northeasterly winds dominate, while in the Long Rainy Season also more easterly and southeasterly winds occur. During the Long Dry Season winds range between northeast and southeast.

Daytime wind direction is presented in **Figure 11**. During the morning an easterly wind dominates, with variations between northeast and southeast. During the day, the winds shift to the northeast, with only few other directions. Calm winds (<0.5 m/s) are more frequent in the morning, become less during the midday and increase again towards the evening.

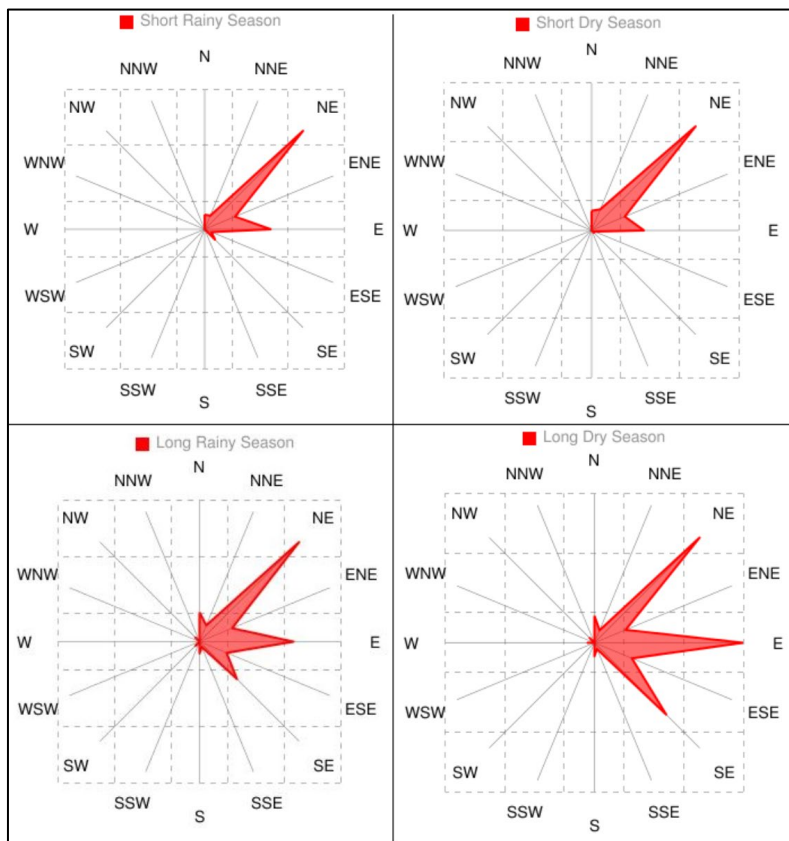


Figure 10: Wind roses presenting seasonal wind directions for Zorg & Hoop (1991-2017).

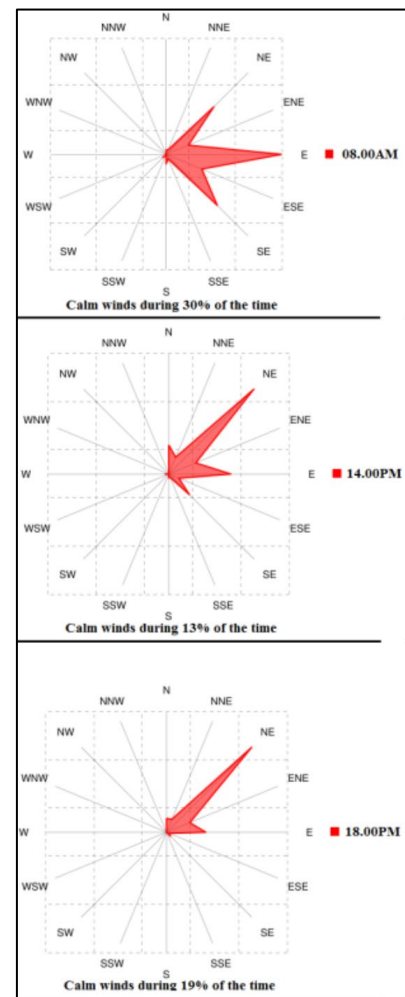


Figure 11: Wind direction during the day at Zorg en Hoop (1991-2017)

2.2.5 Relative Humidity

Relative humidity (RH) reflects the seasons described above, with the highest average daily humidity in the rainy seasons and lower values in the dry seasons. RH is typically very high at night (close to 100% from midnight until 06:00h), but after 06:00h the RH decreases, reaching its lowest value around 14:00h. The minimum RH is slightly above 50% in the driest months of the Long Dry Season and around 70% in the rainy seasons.

2.2.6 Sunshine

Average daily sunshine ranges from 6 hours per day (40 - 60%) from December to June, rising to 8 - 9 hours per day (70 - 80%) in September and October.

2.2.7 Atmospheric Stability

During the daytime, the atmosphere above Suriname is rather unstable due to thermal turbulence and moderate to high wind. During night-time, a much more stable atmosphere comes into existence due to calm wind conditions and cooling of the surface. According to Burger & von Reiche (2009), surface-based inversions in the study area may reach depths of 200 - 400 meter. During the night, a stable boundary layer with limited vertical mixing is present especially during nights with low or no wind.

3. Ambient Air Quality

Suriname does not have an air quality monitoring network as such no long-term ambient air quality data is available. For the current baseline study, a qualitative assessment is conducted using existing air quality data (measured within the project area), local climatological conditions and based on an observation of potential sources of air emissions within and near the project.

3.1 Desktop Study

Previous air quality measurements were conducted at two locations (see **Figure 12**), namely:

1. At the parliament building site (DNA) at the corner of the Henck Arronstraat and the Grote Combéweg (AQ1). The measurements were conducted in the period 22nd of October – 6th of November 2018.
2. On the terrain of the Centrale Bank van Suriname (CBvS) at Waterkant 20 (AQ2). The measurements were conducted in the period 9th of November – 23rd of November 2018.

Real-time ambient air quality measurements were conducted using an Aeroqual-AQS-1 Dust Profiler (AQS-1) with MET-ONE (weather) station and the Aeroqual S-500 series handheld (**Picture 1**). Measurements with the AQS-1 were conducted downwind of the current project site, approx. 1.5 m above ground level, and for two weeks continuously at each location. The parameters that were measured include particulate matter (TSP, PM_{1.0}, PM_{2.5}, PM₁₀), Nitrogen Dioxide (NO₂) and Sulfur Dioxide (SO₂).



Picture 1: AQ instruments



Figure 12: Overview project area and previous air quality measurement locations

The previous air quality results for PM_{2.5} and PM₁₀, NO₂ and SO₂ including applicable WHO guidelines are presented in **Table 1**. Graphs are included in **Appendix 1**. In summary the following can be concluded from these studies:

- The air quality in the area was assumed to be suboptimal, due to human habitation and related activities. Sources of man-made air emissions that affect the air quality here included exhaust gasses from traffic along the roads and vehicles parked on the parking lots in the vicinity. These emissions occurred mainly during day time hours on weekdays.
- Dust could be experienced in particular during dry periods. The project area and immediate surrounding are almost completely paved with the result that the atmospheric dust originates from unpaved parts like the Palmentuin and narrow strips along the Waterfront and possibly from unpaved areas at further distance carried through the north-eastern air (wind) flows.
- The average of the measured air quality parameters (PM_{2.5}, PM₁₀, NO₂ and SO₂) were all below the applicable WHO guidelines. However, peaks were observed as a result from traffic, moving vehicles and other commercial activities upwind of the project area.
- The impact zone was mostly related to the dominating north-eastern winds at day-time. An impact of current air pollution only occurs where receptors are downwind and sufficiently close.
- All the measured values (average and peaks) of the parameters from location CBvS were higher than the measured values from location DNA. While the traffic that passed the parliament building site, along the Henck Arronstraat and Grote Combéweg was more than the amount of traffic that passed CBvS terrain along the Waterkant, measured NO₂ and SO₂ values were still lower on the parliament building site than on CBvS terrain. This could be accounted to the fact that the DNA location is a more open space close to the Palmentuin (more dilution by free-flowing winds). The terrain of the CBvS is enclosed by higher buildings with no free flow of the wind which could have resulted in accumulation of dust and gasses and thus the higher results. Furthermore, the CBvS location lies downwind of the parliament building site, so that all commercial activities and moving traffic upwind of CBvS location, including the activities on the parliament building site, may have contributed to the local air quality on CBvS terrain.

Table 1: Overview previous air quality results against the WHO guidelines

Measured values (µg/m ³)	DNA terrain (µg/m ³) (22 nd October - 6 th of November 2018)	CBvS terrain (µg/m ³) (9 th November-23 rd of November 2018)	Average of DNA terrain and CBvS terrain (µg/m ³)	WHO guideline(µg/m ³) ¹	
				2005	2021
Average 24-hour mean PM _{2.5} of measuring period	2.7	3.2	3.0	25	15
Average 24-hour mean PM ₁₀ of measuring period	3.4	4.1	3.8	50	45
Highest 24 hour mean TSP	5.16	6.71	5.94		
Peak range of 1 hour mean cNO ₂ of measuring period	6.7 - 13.8	6.2 - 15.1			
Average 1 hour mean cNO ₂ of measuring period	4.33	5.31	4.82	200	200
Highest 1 hour mean cNO ₂	13.8	15.1	14.5	200	200
Average 24 hour mean SO ₂ of measuring period	0.08	0.17	0.13	20	40
Highest 24 hour mean SO ₂	0.17	0.32	0.25	20	40

¹ Data is compared with the WHO Air Quality Guidelines of 2005 (the then applicable guideline during the previous study) and with the new guidelines published in 2021 by the WHO.

3.2 Site visit

On the 26th of January 2023, a site visit was conducted to the project and the wider study area (the area of indirect influence (AII), a radius of 200 - 250 m from the project area), to verify if existing data could still be applied for the current study and to map any changes if observed.

The following emission sources, which may have an impact on the air quality, were observed:

- Traffic along main road,
- Vehicles at several parking areas, including along the roads,
- Nearby moored ships at the Suriname River and
- Commercial activities (restaurants)
- Other activities, such as construction works

The location of several observed commercial activities and parking areas, which may be a source of pollution are presented in **Figure 13**. Some pictures of emission sources are presented in **Table 2**.

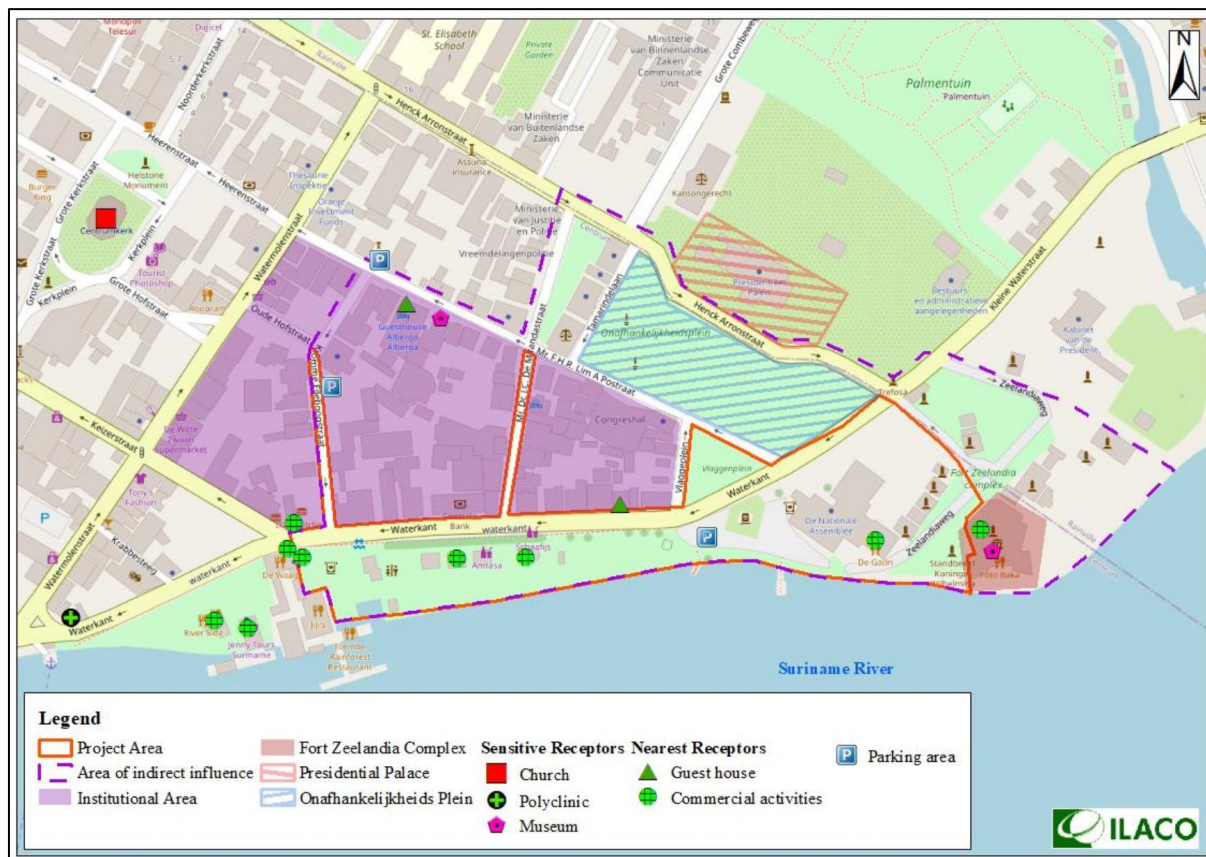







Figure 13: Overview commercial and parking areas within the project area

Table 2: Overview pictures of emissions sources

 <p>Vehicles at parking area along Waterkant</p>	 <p>Construction activities at Waterkant</p>
 <p>Traffic along the Mr. F.H.R. Lim A Postraat</p>	 <p>Ships moored at the SMS Pier at Waterkant</p>
 <p>Emissions from commercial activities (restaurant at Roseveltkade straat)</p>	

From the site visit it can be concluded that the sources of emission in the wider study area, being mainly human habitation and traffic, have not changed since 2018. As such no significant changes are expected in the air quality and thus the 2018 results may still be applied as baseline for the current study.

4. Conclusion

Suriname does not have an air quality monitoring network as such no long-term ambient air quality data is available. For the current baseline study, a qualitative assessment was conducted using existing air quality data (measured within the project area), local climatological conditions and based on an observation of potential sources of air emissions within and near the project.

From the existing data and a site visit conducted on the 26th of January 2023, it can be concluded that the air quality in the area is assumed to be suboptimal, due to human habitation and related activities. Sources of man-made air emissions that affect the air quality here include exhaust gasses from traffic along the roads and vehicles parked on the parking lots in the vicinity. These emissions occur mainly during day time hours on weekdays. Dust could be experienced in particular during dry periods. The project area and immediate surrounding are almost completely paved with the result that the atmospheric dust originates from unpaved parts like the Palmentuin and narrow strips along the Waterfront and possibly from unpaved areas at further distance carried through the north-eastern air (wind) flows. Measurement results (2018) show that air quality parameters (PM_{2.5}, PM₁₀, NO₂ and SO₂) were all below the applicable WHO guidelines, however peaks were observed as a result from traffic, moving vehicles and other commercial activities also upwind of the project area. The impact zone is mostly related to the dominating north-eastern winds at day-time. An impact of current air pollution only occurs where receptors are downwind and sufficiently close.

It should be noted that during the construction phase of the current project, activities such as mobilization and transportation, loading and unloading of material, material storage, earthworks, paving and asphaltting works, structural work and the use several construction equipment may be sources of dust and gaseous pollutants that may impact the current air quality. During the operational phase it is expected that the movement of persons and traffic may be sources of air pollution to be considered as well.

References

ILACO, 2019. Environmental and Social Impact Assessment for the Reconstruction of the Parliament Building.

ILACO, 2019. Environmental and Social Impact Assessment for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo.

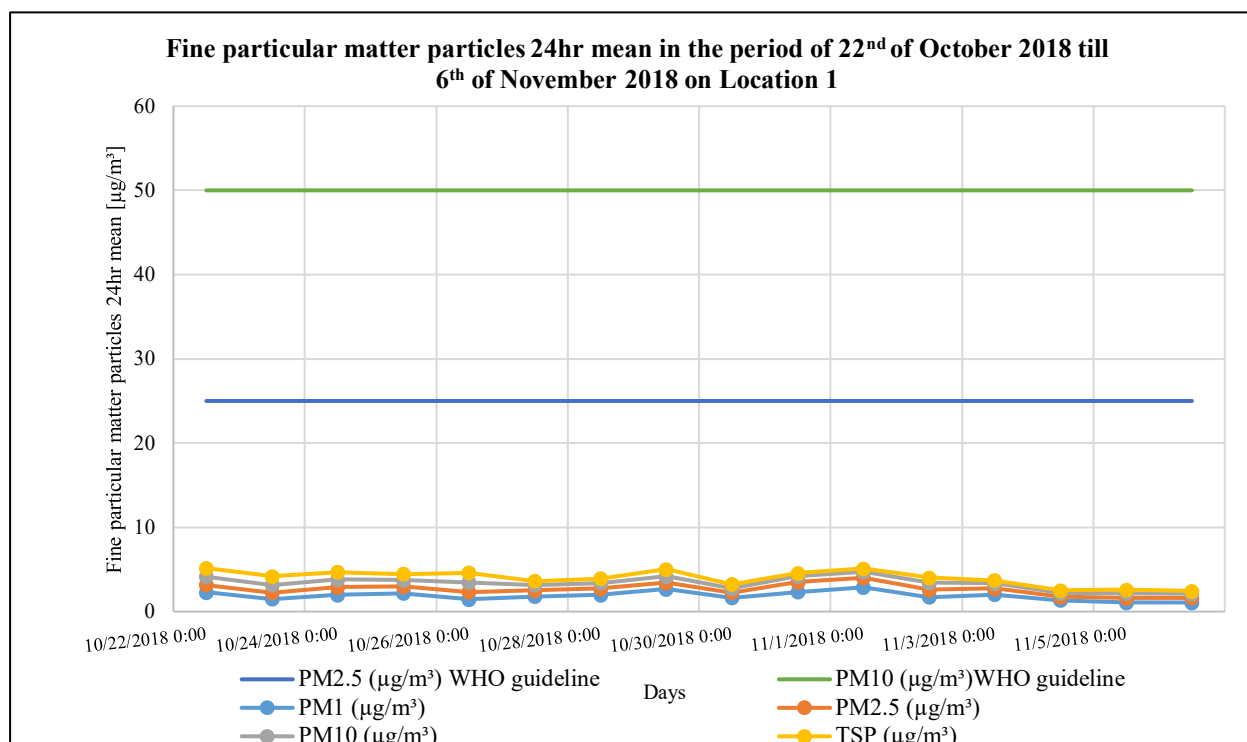
Scherpenzeel, C.W. (1977). Klimaat. In: C.F.A. Bruijning en J. Voorhoeve, eds. Encyclopedie van Suriname, p 338-347.

World Health Organization (2021). Global air quality guidelines. Particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide.

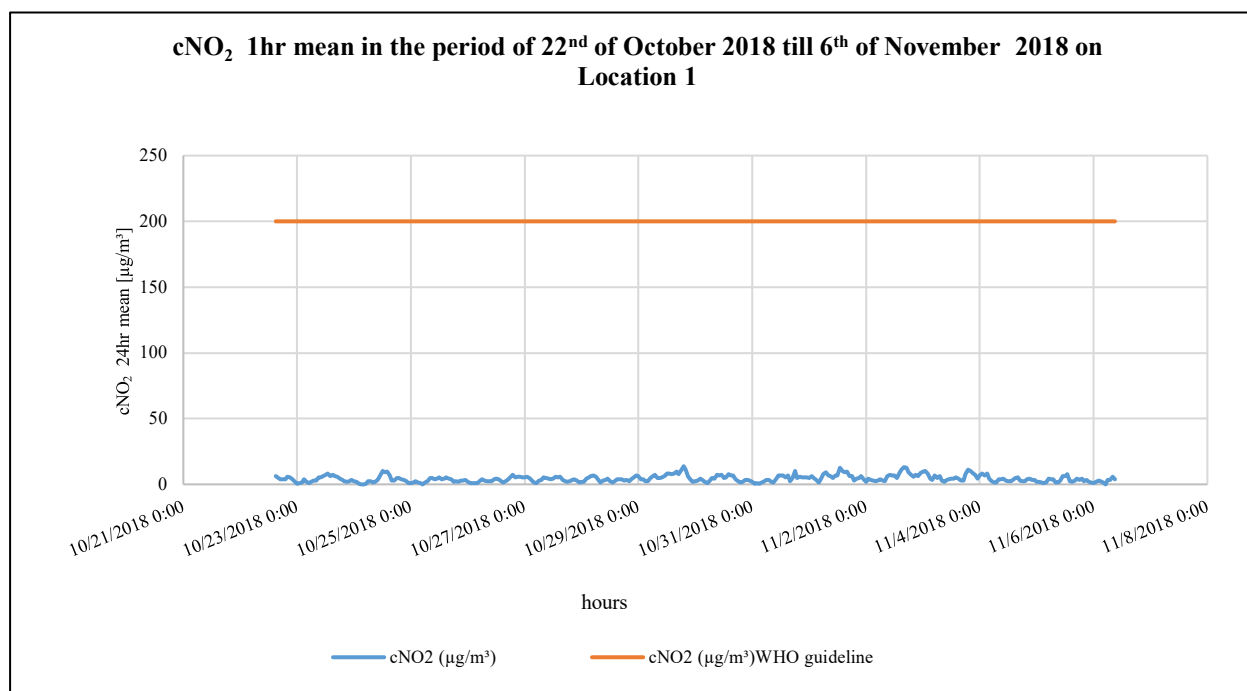
Appendices

Appendix 1: Air Quality Measurement Graphs (ILACO, 2019)

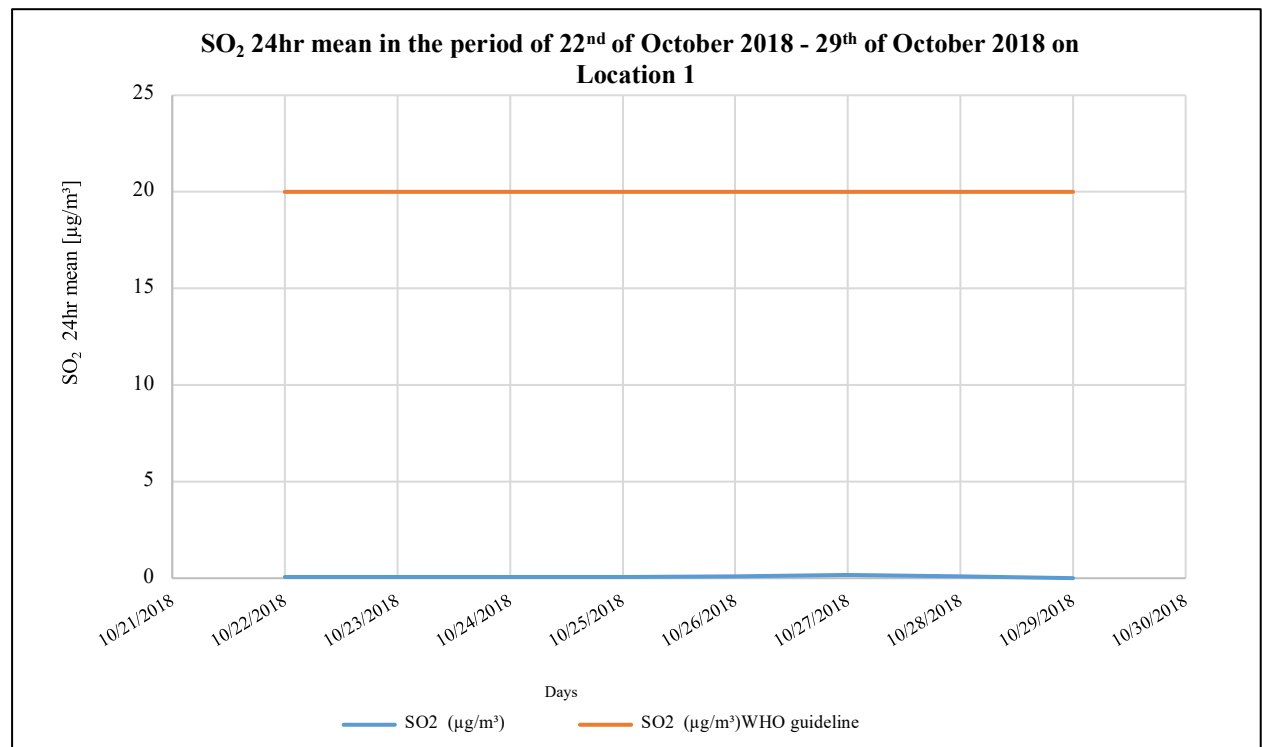
Air Quality Measurement at DNA terrain (Location 1)



Fine particular matter particles 24hr mean in the period of 22nd of October 2018 – 6th of November 2018 on Location 1

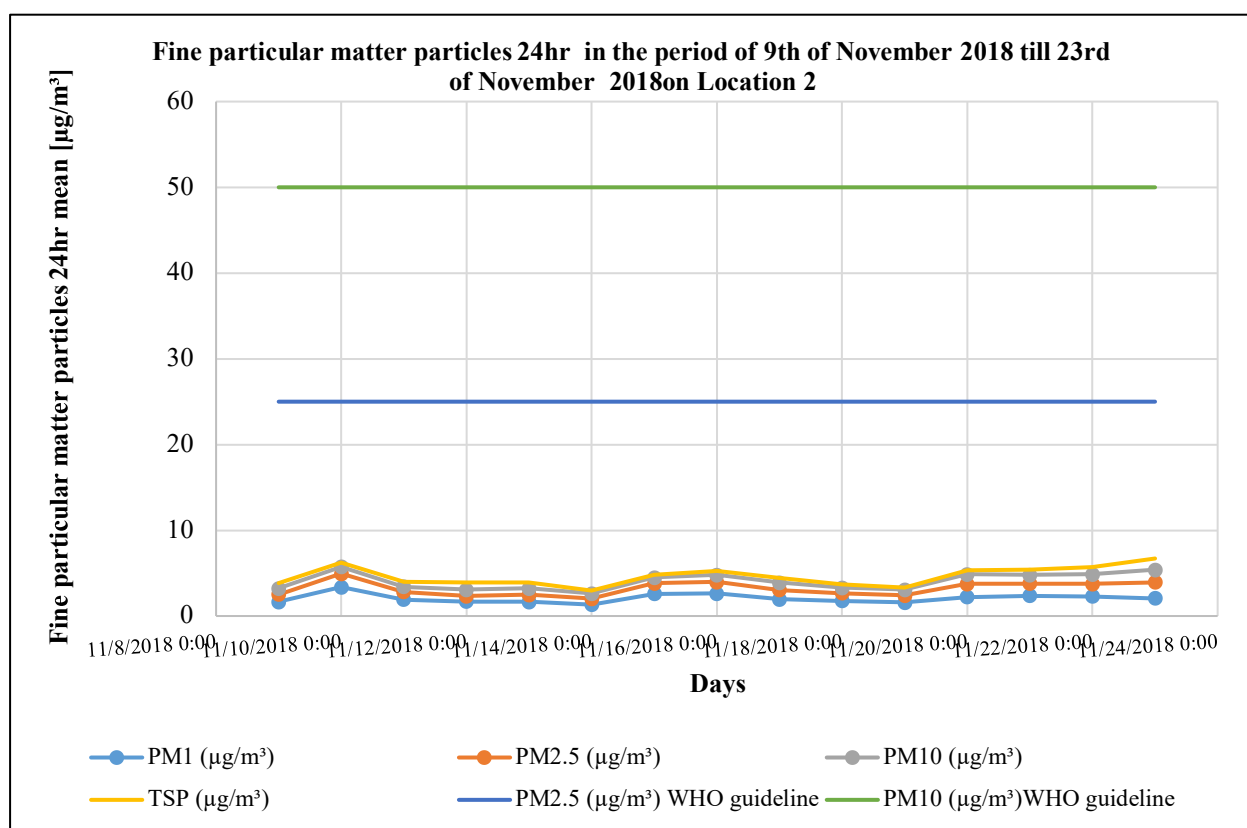


cNO₂ 1hr mean in the period of 22nd of October 2018- 6th November 2018 on Location 1

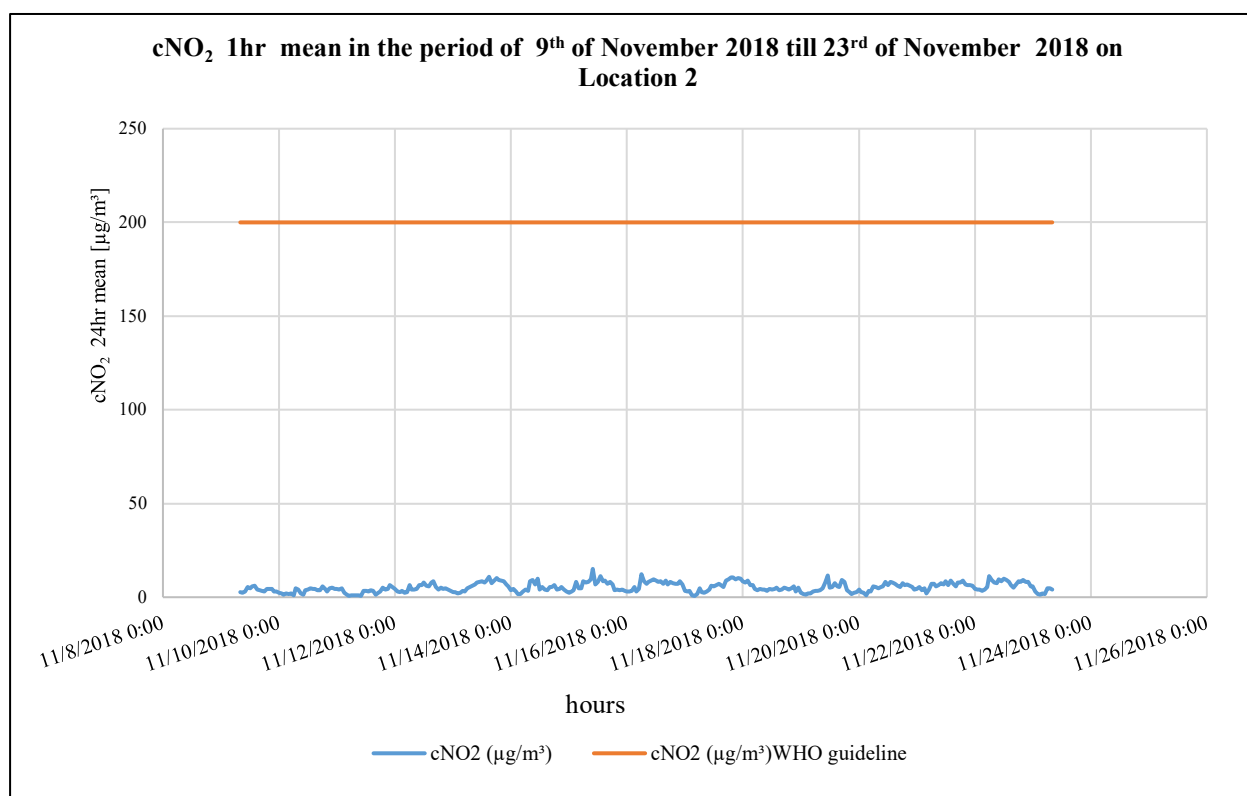


SO₂ 24hr mean in the period of 22nd of October 2018 - 29th of October 2018 on Location 1

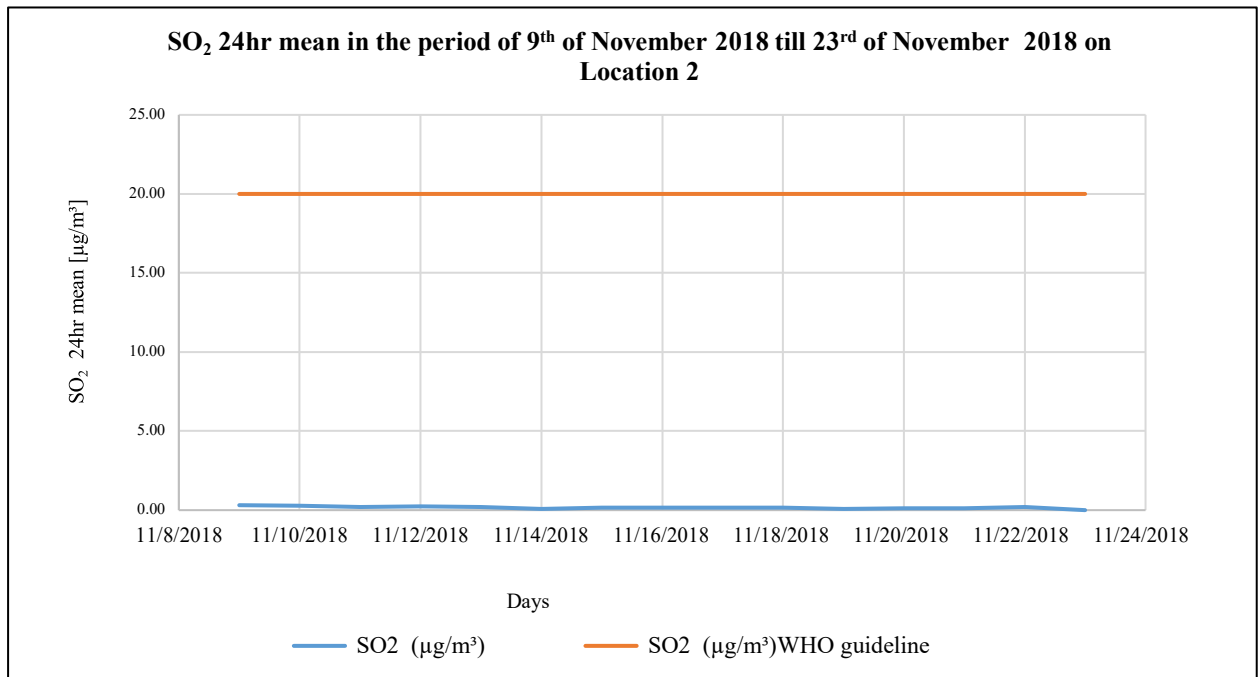
Air Quality Measurement at CBvS terrain (Location 2)



Fine particular matter particles 24hr mean in the period of 9th of November-23rd of November 2018 2018 on Location 2



cNO₂ 1hr mean in the period of 9th of November 2018 – 23rd of November 2018 on Location 2



SO₂ 24hr mean in the period of 9th of November 2018 – 23rd of November 2018 on Location 2

Appendix D

Water Quality Baseline Report

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

30 June 2023



ESIA for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure

Water Quality Baseline Report

Final



Paramaribo, 27 June 2023

Prepared by



ISO 9001:2015 certified

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Abbreviations

Abbreviation	Definition
ADI	Area of Direct Influence
DO	Dissolved Oxygen
EC	Electrical Conductivity
ESIA	Environmental and Social Impact Assessment
IFC	International Finance Corporation
ILACO	ILACO Suriname N.V.
NIMOS	National Institute for Environment and Development in Suriname
POF	Perspectives of Freedom Foundation
PURP	Paramaribo Urban Rehabilitation Plan
SRDP	Suriname River Dredging Project
TDS	Total Dissolved Salts
TSS	Total Suspended Solids

Executive Summary

The Ministry of Education, Science and Culture is planning to redevelop the Waterfront and improve the surrounding mobility infrastructure as part of the Paramaribo Urban Rehabilitation Program. As per NIMOS guidelines a Category-B Environmental and Social Impact Assessment (ESIA) should be conducted for which the consultancy Perspectives of Freedom Foundation (POF) has been contracted. POF has contracted ILACO Suriname N.V. (ILACO) to execute three baseline studies for this ESIA, namely the water quality, air quality and noise baseline studies.

This report presents the methodology and the results of the water quality baseline study.

For the water quality baseline study, a desktop study was conducted using existing and available data from the following previous studies:

- Sediment and Surface Water Sampling of the van Sommeldijkse Creek (ILACO, 2018);
- ESIA for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019);
- Environmental Monitoring for the Suriname River Dredging Project (SRDP- Phase I) (ILACO, 2020).

In addition, in-situ measurements (pH, Electrical Conductivity (EC in mS), Temperature (°C), Total Dissolved Salts (TDS in ppt), Dissolved Oxygen (DO in mg / l, Turbidity (NTU) and Salinity (ppt)) have been conducted for one season (short rainy season) in the Suriname River and in the van Sommeldijkse Creek, between the Mgr. Wulfinghstraat and the pumping station at the outlet of the van Sommeldijkse Creek to the Suriname River. These measurements have been conducted on the 1st and 2nd of February 2023 using a multi-parameter water quality meter (AQUAREED AP-2000).

The findings of the current in-situ measurements are more or less the same than previous collected data. In general, data is available for all four seasons. From this data the following can be concluded.

For the Suriname River:

- The pH of the Suriname River is circum-neutral to slightly basic and varies depending upon the degree of mixing of fresh and seawater.
- The EC and salinity values during the short rainy season (February 2023) are within the same range as measured during the long rainy season in 2020. Near the project area, higher EC and salinity values are measured during high tide and also during the dryer seasons. The EC and salinity values of the Suriname River near the Waterfront indicate fresh to slightly brackish water in the rainy season and brackish water in the long dry season.
- The measured turbidity values are relatively low as during the previous measurements.
- The DO values of the Suriname River indicate relative healthy water (levels above 6.5 mg/L).
- In 2020, the TSS value in the Suriname River varied between 2 and 1608 mg/L.

For the van Sommeldijkse Creek:

- The pH of the creek is circum-neutral to slightly basic.
- The EC and salinity values during the short rainy season (February 2023) are within the same range as measured during the long rainy season in 2018. The EC and salinity in the rainy seasons are relatively low, indicating fresh water. Higher EC and salinity values were measured during the dryer season in 2018. Current observed EC values can also be attributed to the discharge of waste water in the creek at the time of the measurements.

- The measured turbidity values are relatively low as during the previous measurements.
- At the outlet of the pumping station of the van Sommelsdijckse Creek to Suriname River, higher EC, DO and turbidity values can be measured due to influence from the Suriname River (high tide).
- The DO values of the creek indicate rather poor water quality (levels below 6.5 mg/L).
- In 2020, the Oil and Grease values varied between 4.67 and 22.22 mg/L in the van Sommelsdijckse Creek, respectively near the Grote Combeweg and near the pumping station.

1. Introduction & Background

The Ministry of Education, Science and Culture is planning to redevelop the Waterfront and improve the surrounding mobility infrastructure as part of the Paramaribo Urban Rehabilitation Program. As per NIMOS guidelines a Category-B Environmental and Social Impact Assessment (ESIA) should be conducted for which the consultancy Perspectives of Freedom Foundation (POF) has been contracted. POF has contracted ILACO Suriname N.V. (ILACO) to execute three baseline studies for this ESIA, namely the water quality, air quality and noise baseline studies.

This report presents the methodology and the results of the water quality baseline study.

1.1 Project Background

The redevelopment of the Waterfront and the improvement of the surrounding mobility infrastructure involves civil, landscaping, small structures and utilities works associated with the streetscape and includes activities such as:

- Mobilization of material and traffic
- Earthworks
- Paving and asphaltting work
- Drainage improvement
- Structural work (including buildings, craft market stall, etc.)
- Street furniture
- Landscaping etc.

The construction works are planned to start in the second half of 2023 with an execution period of 12 months.

The project area meaning the direct project footprint or area of direct influence (ADI), is part of Paramaribo's cultural heritage and central business district. The area can be reached via the one-way Waterkant and the Mirandastraat.

The project area comprises (see **Figure 1**):

- The Waterkant between the Henck Arronstraat and the Waag Building;
- The area in between the Waterkant and the Suriname River;
- The Kromme Elleboogstraat and Mr. Dr. J.C. De Mirandastraat till the Mr. F.H.R. Lim A Postraat
- The 'Vlaggenplein' and
- The Nationale Assemblee and five buildings along the Zeelandiaweg at the Fort Zeelandia complex.

For the water quality baseline, a wider study area was considered, which is based on drainage of the project area and surroundings. The Suriname River and the van Sommelsdijckse Creek are the ultimate surface water bodies where water are directly discharged into, as such selected for the water quality baseline study (**Figure 1**).



Figure 1: Overview of project area and immediate surroundings

1.2 Objective & Scope of Works

The purpose of the water quality baseline study is to determine the baseline conditions of the Suriname River (within the project area) and the van Sommelsdijckse Creek, between the Mgr. Wulfinghstraat and the pumping station at the outlet of the van Sommelsdijckse Creek to the Suriname River.

The water quality baseline included the following:

- Conducting a desktop study using existing data and available data from the following previous studies:
 - Sediment and Surface Water Sampling of the van Sommelsdijckse Creek (ILACO, 2018);
 - ESIA for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019);
 - Environmental Monitoring for the Suriname River Dredging Project (SRDP-Phase I) (ILACO, 2020).
- Conducting in-situ measurements for one season in the Suriname River (within the project area) and the van Sommelsdijckse Creek, between Mgr. Wulfinghstraat till the pumping station at the outlet of the van Sommelsdijckse Creek to the Suriname River.

2. Methodology

For the water quality baseline study, a desktop study was conducted using existing and available data (not older than 5 years). In addition, in-situ measurements have been conducted during the short rainy season (February 2023) in the Suriname River and in the van Sommelsdijckse Creek, between the Mgr. Wulfinghstraat and the pumping station at the outlet of the van Sommelsdijckse Creek to the Suriname River.

2.1 Desktop Study

Previous water quality measurements were conducted in 2018 and 2020 in the Suriname River and in 2018 in the van Sommelsdijckse Creek. A summary of the measurement method, procedure, locations and period for each study is outlined below:

1. Sediment and Surface Water Sampling of the van Sommelsdijckse Creek (ILACO, 2018): In-situ measurements and water sampling of the van Sommelsdijckse Creek were conducted in the long rainy season on the 27th of June 2018 using a water quality meter (AQUAREAD Multiparameter AP-2000). In addition, two samples WSC-1 and WSC-2, were collected for analysis on oil and grease, see **Figure 2**.
2. ESIA study for the Reconstruction of the Parliament Building and the ESIA study for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo (ILACO, 2019): In-situ measurements were conducted in the Suriname River (on the left bank) and the van Sommelsdijckse Creek in the long dry season on the 2nd of October 2018, using a water quality meter (AQUAREAD Multiparameter AP-2000). Four (4) locations were selected in the Suriname River (WS5-WS8) and four (4) locations in the van Sommelsdijckse Creek (WS1 – WS4) (**Figure 2**).
3. Environmental Monitoring for the Suriname River Dredging Project (SRDP- Phase I) (ILACO, 2020): In-situ measurements, using a water quality meter (AQUAREAD Multiparameter AP-2000) were conducted at several locations in the Suriname River (mostly in the navigation channel). These measurements were done in the short dry season (April 2020) and in the long rainy season (May, July and August 2020). In addition, water samples were collected at the three sampling locations (SW3 – SW5) for analysis on total suspended solids (TSS) (**Figure 2**).

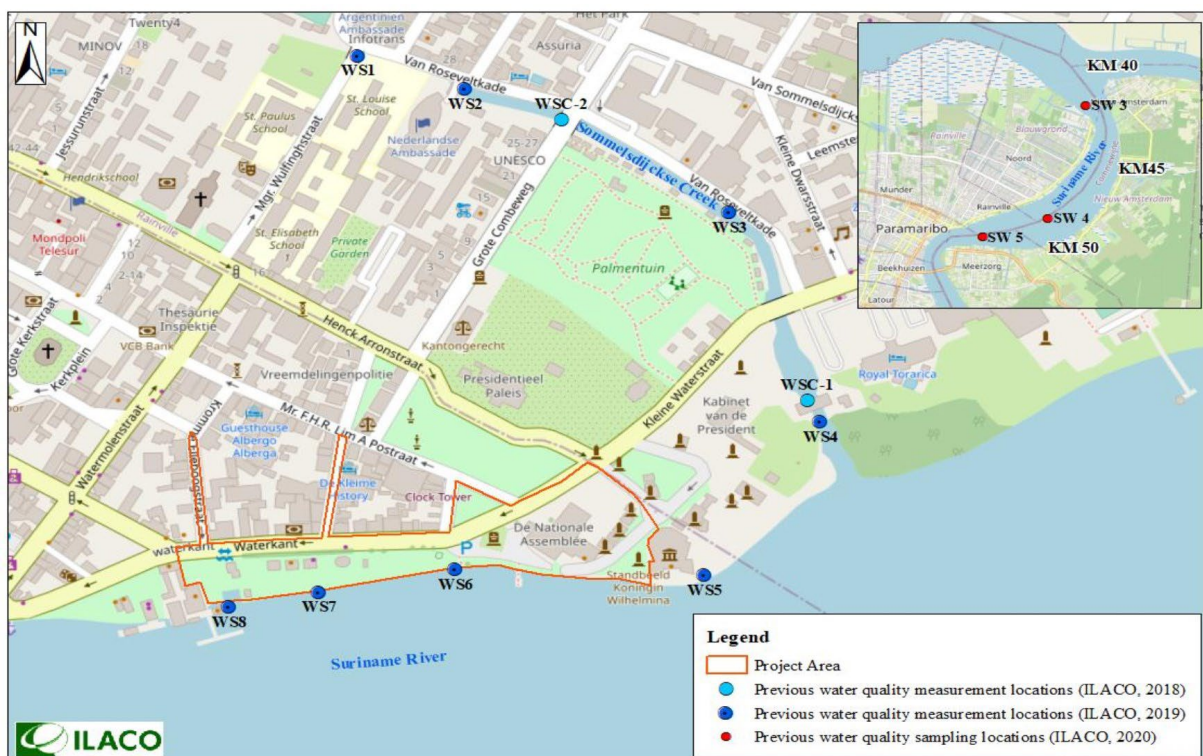


Figure 2: Overview previous water quality measurement locations

2.2 Current In-situ Measurements

As part of this project, in-situ measurements were carried out on the 1st and 2nd of February 2023 in the Suriname River and the van Sommelsdijkse Creek. The measurements were conducted at the previous measurement locations of 2018 (see **Figure 3**), namely at four (4) locations in the Suriname River and at six (6) locations in the van Sommelsdijkse Creek.

2.2.1 Measurement Locations

An overview of the current measurement locations is described in **Table 1** and presented in **Figure 3**.

Table 1: Description water quality measurement locations

Location ID	Location Description
WQ1	Suriname River – SMS Pier
WQ2	Suriname River – From a balcony located at the Waterfront
WQ3	Suriname River – Marine trap
WQ4	Suriname River – Outlet Fort Zeelandia
WQ5	van Sommelsdijkse Creek – Outlet pumping station of the van Sommelsdijkse Creek to Suriname River
WQ6	van Sommelsdijkse Creek – Inlet of the pumping station of van Sommelsdijkse Creek
WQ7	van Sommelsdijkse Creek – Cross section at Van Roseveltkade and the Kleine Waterstraat
WQ8	van Sommelsdijkse Creek – Cross section between Grote Combeweg and Van Roseveltkade
WQ9	van Sommelsdijkse Creek – Near the bridge of Embassy of the Netherlands
WQ10	van Sommelsdijkse Creek – Cross section between Mgr Wulfinghstraat and Van Roseveltkade



Figure 3: Overview current water quality measurement locations

2.2.2 Fieldworks

The timeline of the fieldworks is presented in the **Table 2** and the followed procedure for the in-situ measurement is described in the section below.

Table 2: Timeline of fieldworks

Activity	Location	Measurement date	Tide
In-situ measurements	Suriname River (WQ1 – WQ4)	1 st of February 2023	Rising from low to high tide
	van Sommelsdijkse Creek (WQ5 – WQ7)	1 st of February 2023	High tide in Suriname River
	van Sommelsdijkse Creek (WQ8 – WQ10)	2 nd of February 2023	

The following procedure was followed for the in-situ measurements:

1. In-situ testing have been carried out with a team of 2 people (buddy system) where one member was responsible for making all notes (including every action), photos and GPS coordinates, while the other member does the measurements.
2. General observations of the weather, water level, depth, flow direction of the water, visual characteristics of the collected water and the environment (visible pollution, waste material, odor, etc.) have been included in the field sheets and pictures have been taken and GPS coordinated recorded.
3. Water was collected in a 10L bucket. This bucket has been pre-rinsed three times before collecting the water for each location.
4. In-situ measurements of pH, Electrical Conductivity (EC in mS), Temperature (°C), Total Dissolved Salts (TDS in ppt), Dissolved Oxygen (DO in mg / l, Turbidity (NTU) and Salinity (ppt) were carried out with a water quality meter (AQUAREAD Multiparameter AP-2000), calibrated according to factory standards before the field measurements on the 31st of January 2023.
5. Field equipment was cleaned (using demi water) each time prior to the sampling. The probe of the AQUAREAD Multiparameter has been pre-rinsed with demi water and the collected water. Hereafter the measurements have been carried using the water in the bucket.
6. All results have been recorded in a field sheet.

3. Results

3.1 Desktop Study: In-situ Measurements

A summary of the minimum and maximum values of the measured water quality parameters in the Suriname River (in 2018 and 2020) and in the van Sommelsdijkse Creek (in 2018) are presented in the table below.

Table 3: Overview results Suriname River (km 40- km 50) and van Sommelsdijkse Creek

Location	Measurement period	pH	EC (µS/cm)	Temp (°C)	DO (mg/L)	Turbidity (NTU)	Salinity (ppt)	Source
Suriname River (Left bank)	Long dry season (October 2018)	6.90 – 7.32	5527 – 11864	31.2 – 32.6	6.50 – 7.40	82.9 – 222	2.98 – 6.75	ILACO, 2019
Suriname River (Navigation channel)	Short dry season (April 2020)	6.39- 7.93	15846 – 23925	29.2 – 30.9	6.99 – 8.03	41.6 – 609	9.24 – 14.47	ILACO, 2020
	Long rainy season (May, July and August 2020)	6.11- 7.55	191 – 28345	27.4 – 32.3	3.41– 7.43	0.0 – 1661	0.02 – 17.43	
van Sommelsdijkse Creek	Long rainy season (June 2018)	6.39 – 7.19	869 – 881	28.3 – 29.7	1.44 – 3.18	33.8 – 36.9	0.36 – 0.37	ILACO, 2018
	Long dry season (October 2018)	6.83 – 8.28	1223 – 4891	29.3 – 30.0	0.67 – 8.29	9.0 – 285	0.58 – 2.60	ILACO, 2019

The following can be concluded from the in-situ measurements:

Suriname River (km 40 - km50):

- pH varied between 6.11 and 7.93, which is circum-neutral to slightly basic. The pH decreases when going upstream. The pH varies depending upon the degree of mixing of fresh and seawater. There is no clear seasonal effect observed in the pH values.
- The EC values varied between 191 and 28345 µS/cm. The EC values are higher towards the river mouth. At low tide the EC is lower and decreases when going further upstream. Generally, the EC is higher in the dry season.
- DO values varied between 3.41 and 8.03 mg/L. The DO values are higher in the dry season than in the rainy season. This is possibly to be attributed to the increased wave action due to increased wind speeds during the dry season.
- Turbidity values are usually low. Elevated values were mostly associated with dredging activities at the time of the measurements in 2020 (e.g., on May 2020 when values up to 1661 NTU were recorded).

van Sommelsdijkse Creek:

- pH varied between 6.39 and 8.28, which is around neutral to slightly basic.
- The EC values varied between 869 and 4891 $\mu\text{S}/\text{cm}$, with higher values observed in the dry season.
- DO values varied between 1.44 and 3.18 mg/L in the long rainy season and between 0.67 and 8.29 mg/L in long dry season.
- Turbidity values was generally low, with measurements between 9 and 285 NTU. The highest value of 285 NTU was measured at the outlet of the van Sommelsdijkse Creek to the Suriname River.

The EC of the Suriname River is higher than the measured EC of the van Sommelsdijkse Creek. This is caused by the penetration of saltwater from the sea within the Suriname River. This can also be concluded from the higher measured salinity in the Suriname River.

3.2 Desktop study: Water Quality Sampling

Water sampling results of the van Sommelsdijkse Creek in 2018 shows that an oil and grease value (22.22 mg/L) higher than the International Finance Corporation (IFC, 2007) guideline of 10 mg/L was measured at WSC-1. At location WSC-2 an oil and grease value of 4.67 mg/L was measured.

Samples collected in the Suriname River in 2020 between km 40 and km 50 ((SW3-SW5), showed that the TSS values varied between 2 and 1608 mg/L. The TSS value without dredging activities varied between 2 and 158 mg/L and between 475 and 1608 mg/L during dredging activities on the day of measurements in the Suriname River.

3.3 Current In-situ Measurements

A summary of the results of the in-situ measurements of the Suriname River and the van Sommelsdijkse Creek is presented in **Table 4**. The detailed field observation sheet is presented in **Appendix 1** and a photo report in **Appendix 2**.

Table 4: Summary of in-situ measurements in the Suriname River and the van Sommelsdijkse Creek in February 2023

Location	pH	EC ($\mu\text{S}/\text{cm}$)	Temp ($^{\circ}\text{C}$)	DO (mg/L)	Turbidity (NTU)	Salinity (ppt)
WQ1- Suriname River	7.24	124	27.55	7.69	41.50	0.04
WQ2- Suriname River	7.46	134	27.60	7.89	47.80	0.04
WQ3- Suriname River	7.58	195	27.70	8.69	66.50	0.06
WQ4- Suriname River	7.29	163	27.90	7.99	54.20	0.05
WQ5- van Sommelsdijkse Creek	6.79	3378	26.90	8.41	42.30	1.75
WQ6- van Sommelsdijkse Creek	6.66	768	26.30	0.21	2.50	0.32
WQ7- van Sommelsdijkse Creek	7.06	775	26.50	0.64	0.00	0.33
WQ8- van Sommelsdijkse Creek	6.82	676	26.30	2.19	4.60	0.28
WQ9- van Sommelsdijkse Creek	6.95	700	26.10	0.85	5.90	0.29
WQ10- van Sommelsdijkse Creek	7.18	726	26.20	1.13	8.60	0.30

From the current in-situ measurements it can be concluded that:

Suriname River:

- The pH in the river is around 7, which is near neutral.
- The EC values, which were measured during rising from low to high tide, varied between 124 and 195 $\mu\text{S}/\text{cm}$.
- The DO value varied between 7.69 and 8.69 mg/L.
- The clarity of the water of the river was slightly turbid. The turbidity levels are therefore considered low.

van Sommeldijkse Creek:

- The pH varies between 6.66 and 7.18, which is near neutral.
- The EC values at WQ6 - WQ10 varied between 676 and 775 $\mu\text{S}/\text{cm}$. These values can be attributed to the discharge of wastewater in the creek at the time of measurements.
- A higher EC value (3378 $\mu\text{S}/\text{cm}$) was measured at the outlet pumping station of the van Sommeldijkse Creek to Suriname River (WQ5). At the time of the measurement, high tide was observed in the Suriname River; as such this high EC value may be attributed to penetration of river water into the creek.
- There was no flow observed within the creek. The DO values are considered low at WQ6 - WQ10. The higher DO at WQ5 may be due influence from the Suriname River, as also observed for the EC and salinity.
- Water from the creek was almost clear to slightly turbid. The turbidity levels are therefore considered low.

4. Conclusion

The findings of the current in-situ measurements are more or less the same than previous collected data. In general, data is available for all four seasons. From this data the following can be concluded.

For the Suriname River:

- The pH of the Suriname River is circum-neutral to slightly basic and varies depending upon the degree of mixing of fresh and seawater.
- The EC and salinity values during the short rainy season (February 2023) are within the same range as measured during the long rainy season in 2020. Near the project area, higher EC and salinity values are measured during high tide and also during the dryer seasons. The EC and salinity values of the Suriname River near the Waterfront indicate fresh to slightly brackish water in the rainy season and brackish water in the long dry season. The measured turbidity values are relatively low as during the previous measurements.
- The DO values of the Suriname River indicate relative healthy water (levels above 6.5 mg/L)

In 2020, the TSS value in the Suriname River varied between 2 and 1608 mg/L.

For the van Sommelsdijckse Creek:

- The pH of the creek is circum-neutral to slightly basic.
- The EC and salinity values during the short rainy season (February 2023) are within the same range as measured during the long rainy season in 2018. The EC and salinity in the rainy seasons are relatively low, indicating fresh water. Higher EC and salinity values were measured during the dryer season in 2018. Current observed EC values can also be attributed to the discharge of waste water in the creek at the time of the measurements.
- The measured turbidity values are relatively low as during the previous measurements.
- At the outlet of the pumping station of the van Sommelsdijckse Creek to Suriname River, higher EC, DO and turbidity values can be measured due to influence from the Suriname River (high tide).
- The DO values of the creek indicate rather poor water quality (levels below 6.5 mg/L).
- In 2020, the Oil and Grease values varied between 4.67 and 22.22 mg/L in the van Sommelsdijckse Creek, respectively near the Grote Combeweg and near the pumping station.

References

ILACO, 2018. Sampling and analysis of sediment for the canal rehabilitation project.

ILACO, 2019. Environmental and Social Impact Assessment for the Reconstruction of the Parliament Building.

ILACO, 2019. Environmental and Social Impact Assessment for the Rehabilitation and Operation of Historical Buildings in the inner city of Paramaribo.

ILACO, 2020. Environmental Monitoring for the Suriname River Dredging Project (SRDP-Phase I)-Turbidity Monitoring reports.

Appendices

Appendix 1: Field Observation Sheet

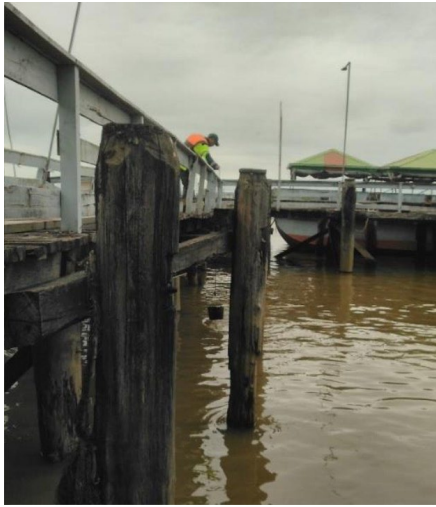
General											Comments			
Project	ESIA for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure- Water Quality Baseline Study										1	The sluice of pumping station at the van Sommelsdijkse Creek was closed at the time of measurement at WQ5 till WQ10.		
Requester:	Perspectives of Freedom Foundation (POF)													
Sampling date:	01 & 02 February 2023										2			
Number of measurements:	10													
Type of water body:	Surface water													
Measured by:	B. Welzijn/ A. Jainath/ C. Karijooetomo													
Sampling locations:	Suriname River & van Sommelsdijkse Creek										3			
Weather:	See Below													
Location Description	Coordinates (UTM/WGS84)		Date/ Sampling time/ Weather	Temp (°C)	pH	DO (mg/l)	EC (µS/cm)	TDS (mg/L)	Salinity (ppt)	Turbidity (NTU)	Color	Clarity	Tide / Flow direction	Other remarks
	Easting	Northing												
WQ1 - Suriname River The measurement was carried out in the Suriname River at the SMS Pier.	704837	644223	01-02-2023 11:59 AM No Sun/ Cloud cover	27.55	7.24	7.69	124	80	0.04	41.50	Milky brown	Slightly turbid	Rising from low to high tide / Incoming flow	Precipitated particles have been observed in the water. At the time of the measurement two fishing boats and two pontoons were moored at the SMS Pier. Aquatic plants were observed in the river.
WQ2 - Suriname River The measurement was carried out in the Suriname river from a balcony located at the Waterfront.	704519	644170	01-02-2023 11:36 AM No Sun/ Cloud cover	27.60	7.46	7.89	134	87	0.04	47.80	Milky brown	Slightly turbid	Rising from low to high tide / Incoming flow	Precipitated particles have been observed in the water. Aquatic plants were observed in the river.
WQ3 - Suriname River The measurement was carried out in the Suriname River at the Marine trap.	704655	644197	01-02-2023 11:17 AM No Sun/ Cloud cover	27.70	7.58	8.69	195	126	0.06	66.50	Milky brown	Slightly turbid	Rising from low to high tide / Incoming flow	Precipitated particles have been observed in the water. Aquatic plants, branches, leaves and a dead fish were observed in the river.
WQ4 - Suriname River The measurement was carried out in the Suriname River at a outlet near Fort Zeelandia.	704556	644183	01-02-2023 12:23 PM No Sun/ Cloud cover	27.90	7.29	7.99	163	105	0.05	54.20	Milky brown	Very slightly turbid	Rising from low to high tide / Incoming flow	Precipitated particles have been observed in the water. Aquatic plants have been observed in the river. Boat observed passing by during measurements.
WQ5 - van Sommelsdijkse Creek The measurement was carried out at the outlet pumping station of the van Sommelsdijkse Creek to Suriname River. The outlet is approx. 20 meters away from the pumping station van Sommelsdijkse Creek.	705019	644348	01-02-2023 6:07 PM No Sun/ Cloud cover	26.90	6.79	8.41	3378	2195	1.75	42.30	Milky brown	Slightly turbid	-	Precipitated particles have been observed in the water. Fishes were observed in the creek.
WQ6 - van Sommelsdijkse Creek The measurement was carried out in the van Sommelsdijkse Creek near the inlet of the pumping station van Sommelsdijkse Creek.	705000	644392	01-02-2023 9:58 AM No Sun/ Cloud cover	26.30	6.66	0.21	768	499	0.32	2.50	Very light brown	Almost clear	-	Floating and precipitated particles have been observed in the water. Fishes were observed in the creek. Drainage pipe draining water into the creek was observed at a distance of 25 meters away.
WQ7 - van Sommelsdijkse Creek The measurement was carried out in the van Sommelsdijkse Creek, approx. 100 meters from the cross section of the Van Roseveltkade and the Kleine Waterstraat.	704933	644579	01-02-2023 10:57 AM No Sun/ Cloud cover	26.50	7.06	0.64	775	503	0.33	0.00	Very light brown	Almost clear	-	Floating and precipitated particles have been observed in the water. Fishes were observed in the water. Drainage pipe draining water into the creek was observed at a distance of 5 meters away.
WQ8- van Sommelsdijkse Creek The measurement was carried out in the van Sommelsdijkse Creek at the cross section between Grote Combeweg and Van Rooseveltkade.	704759	644697	02-02-2023 11:04 AM No Sun/ Cloud cover	26.30	6.82	2.19	676	439	0.28	4.60	Very light brown	Almost clear	-	Floating particles have been observed in the water.

WQ9 - van Sommeldijkse Creek The measurement was carried out in the van Sommeldijkse Creek at a distance of 4 meters from the bridge of Embassy of the Netherlands.	704656	644733	02-02-202311:30 AMDrizzling	26.10	6.95	0.85	700	455	0.29	5.90	Very light brown	Almost clear	-	Floating and precipitated particles have been observed in the water.
WQ10 - van Sommeldijkse Creek The measurement was carried out at the cross section between the Monseigneur Wulfinghstraat and Van Rooseveltkade.	704555	644767	02-02-2023 11:49 AM No Sun/ Cloud cover	26.20	7.18	1.13	726	471	0.30	8.60	Very light brown	Almost clear	-	Floating and precipitated particles have been observed in the water. Fishes observed in the creek. The area is surrounded by grass and waste such as pet bottles

Appendix 2: Photo Reporting

Photo Report
Water Quality in-situ measurements Suriname River and van Sommelsdijckse Creek

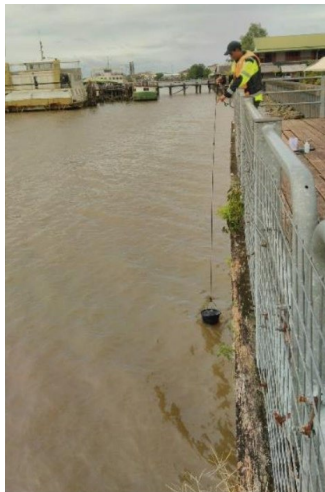
Date: 1st of February 2023



Location WQ1: Collecting water in the Suriname River at the SMS Pier. At the time of the measurement two fishing boats and two pontoons were moored at the SMS Pier.



Location WQ1: Color of the collected water is milky brown. Clarity of the water is slightly turbid.



Location WQ2: Collecting water in the Suriname river from a balcony located at the Waterfront.



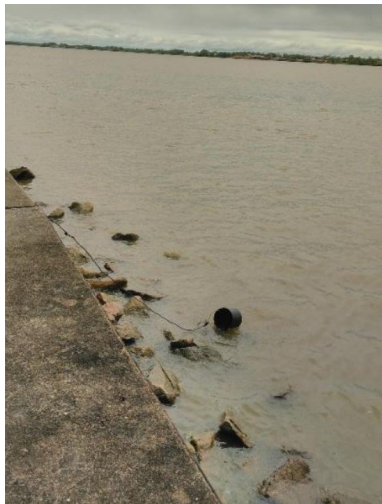
Location WQ2: Color of the collected water is milky brown. Clarity of the water is slightly turbid.



Location WQ3: Collecting water in the Suriname River at the Marine trap during the rising from low to high tide.



Location WQ3: Color of the collected water is milky brown. Clarity of the water is slightly turbid.



Location WQ4: Collected water in the Suriname River at an outlet near Fort Zeelandia during the rising from low to high tide.



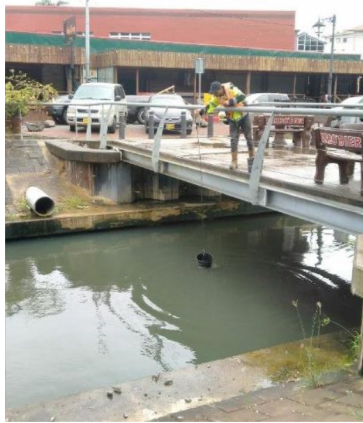
Location WQ4: Color of the collected water is milky brown. Clarity of the water is very slightly turbid.



Location WQ5: Collecting water at the outlet pumping station of the van Sommelsdijckse Creek to Suriname River. The outlet is approx. 20 meters away from the pumping station Sommelsdijckse Creek.



Location WQ5: Color of the collected water is milky brown. Clarity of the water is slightly turbid.

 <p>Location WQ6: Collecting water in the van Sommeldijkse Creek near the inlet of the pumping station.</p>	 <p>Location WQ6: Color of the collected water is very light brown. Clarity of the water is almost clear.</p>
 <p>Location WQ7: Collecting water in the van Sommeldijkse Creek, approx. 100 meters from the cross section of the Van Roseveltkade and the Kleine Waterstraat.</p>	 <p>Location WQ7: Color of the collected water is very light brown. Clarity of the water is almost clear.</p>
Date: 2nd of February 2023	
 <p>Location WQ8: Collected water from the van Sommeldijkse Creek between Grote Combeweg and Van Rooseveltkade. Color of the water is very light brown. Clarity of the water is almost clear.</p>	 <p>Location WQ8: Water quality measurement with the water quality meter (AQUAREAD Multiparameter AP-2000).</p>



Location WQ9: Collecting water in the van Sommeldijkse Creek at a distance of 4 meters from the bridge of Embassy of the Netherlands.



Location WQ9: Color of the collected water is very light brown. Clarity of the water is almost clear.



Location WQ10: Collecting water in the van Sommeldijkse Creek at the cross section between Monseigneur Wulfinghstraat and Van Rooseveltkade. The area is surrounded by grass and waste such as pet bottles.



Location WQ10: Color of the collected water is very light brown. Clarity of the water is almost clear.

Appendix E

Health, Safety and Environment Plan

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023

	HSE Plan	Doc. No:	
		Rev. No:	
		Date:	

Health, Safety and Environmental Plan

Prepared by
 Perspectives of Freedom Foundation Inc.
 43 South Powerline Road #232
 Pompano Beach
 Florida 33069, USA
 Email: info@pofteam.org

April, 2023

	HSE Plan	Doc. No:	
		Rev. No:	
		Date:	

Version	Prepared by	Date	Reviewed by	Date
1.0	Florence Sitaram-Tjin A Soe	8 May 2023	Gwendolyn Smith	8 May 2023
			Nancy del Prado	8 May 2023

	HSE Plan	Doc. No:	
		Rev. No:	
		Date:	

List of Abbreviations	
FAK	First Aid Kit
HSE	Health, Safety and Environment
PTW	Permit to Work
PURP	Paramaribo Urban Rehabilitation Program

	HSE Plan	Doc. No:	
		Rev. No:	
		Date:	

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	<h1 style="text-align: center;">HSE Plan</h1>	Doc. No:	
		Rev. No:	
		Date:	

1. General

The purpose of this Health, Safety and Environment (HSE) Plan is to promote and maintain maximum safety of all persons working at the Waterfront project and the immediate community, and to avoid any adverse impact on workers, surrounding environment and community.

2. Reference

- IFC World Bank Group. (2017). General Environmental, Health, and Safety (EHS) Guidelines: Construction and Decommissioning
- IFC World Bank Group. (2017). General Environmental, Health, and Safety (EHS) Guidelines: Community Health and Safety

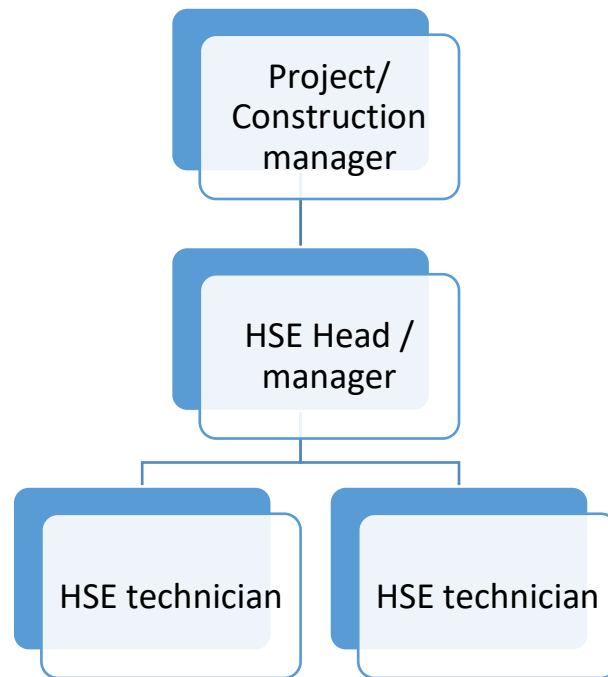
3. Roles and Responsibilities

The Management team has a critical role in implementing and maintaining the HSE Plan. During the construction phase of the project, PURP/ Contractor accepts the responsibility for impressing upon all employees that safety and injury prevention has a high priority at the Waterfront and that all rules and policies will be followed. Management is committed to:

- Provide leadership and guidance to all staff, contractors and on-site service providers for the acceptance, maintenance and enforcement of the HSE programs.
- Provide resources for training and monitoring the HSE programs.
- Periodically reviews the HSE records and reporting functions.
- Promote and attend HSE functionalities.
- Maintain open lines of communication between contractors, employees, supervisors and management relative to the free exchange of HSE suggestions and information.
- Monitors the follow-up on recommendations made to improve performance and prevent accidents.

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3.1 HSE Organizational Chart



3.2 Key responsibilities

Assigning responsibilities is a critical component of an HSE plan. It ensures that the necessary tasks are identified, and that individuals or groups are accountable for completing them. The key persons with responsibilities are defined as follows:

3.2.1 Project Manager

- Assists in the evaluation of approved subcontractors;
- Ensures that subcontractors agree with the HSE standards and requirements of the Waterfront;
- Complies with the HSE Plan, legal and other requirements applicable to the Waterfront;
- Ensures that disciplinary actions are implemented for non-compliance to HSE requirements.

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3.2.2 Construction Manager

- Has the overall accountability for construction at the project site;
- Is accountable for achieving HSE goals;
- Is responsible for ensuring that employees and contractors implement, administer, plan, and enforce the HSE plan;
- Is responsible for establishing the site HSE and Security Plan and their implementation before starting site activities;
- Develop and provide written instructions setting out the method of healthy and safe work in accordance with the policy on high-risk activities where necessary;
- Plans and maintains housekeeping to high standards;
- Investigates any incidents that occur on the construction site, including accidents, near-misses, and environmental incidents, and take appropriate corrective action to prevent similar incidents from occurring in the future;
- Informs PURP of any accidents, incidents, and near misses with the potential of injury and illness consequences immediately;
- Ceases all activities in the area of an identified HSE problem until it is resolved;
- Immediately removes from the site any person (staff, (sub)contractors, or third parties) unwilling to comply with the HSE requirements;
- Provides HSE training opportunities to all employees;
- Performs corrective actions for any identified unsafe conditions;
- Is responsible for setting up appropriate training including Refresher training, as needed, to enable managers and workers to assess hazards, and to familiarize themselves with the relevant requirements (legislation, regulation and company standards).

3.2.3 HSE Head

- Assists the Construction Manager in the management and execution of the HSE plan;
- Conducts regular site inspections and prepares reports for Construction Manager for corrective actions;
- Reviews and provides advice on each workplan or procedure for HSE prior to work commencement;
- Establishes and maintains a proper HSE administrative system;
- Investigates all incidents and accidents and submit reports including corrective actions to the Construction Manager;
- Ensures that HSE technicians conduct their HSE activities;
- If high-risk HSE aspects are identified, stop the work immediately as necessary.

3.2.4 HSE Technician

- Assists HSE Head and performs the HSE activities
- Patrols the construction site daily to check that all employee's and contractor's works are executed in accordance with the HSE procedures.

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- Reports immediately to the HSE Head on any incidents that may require work to be stopped.

4. HSE Control

4.1 Site Orientation and Induction Course

Each (group of) employee(s), and contractors of the Waterfront will be given a site orientation and induction course prior to starting any work. The employee shall not be deployed on the job unless an introductory briefing to locate project facilities, channels of communication relating to accident prevention & reporting, fire prevention & fire fighting, and personal responsibilities, amongst others is provided.

4.2 Toolbox talks

Toolbox talks will be conducted periodically in a group of workers for specific work as required to reach the required level of competency. During this meeting, the hazards related to the activity and preventive measures will be highlighted. All topics in connection with site activities will be covered in the meeting to create awareness among the workers regarding safe practices.

4.3 Training

Basic training for all employees to reach the required level of competency in:

- HSE requirements
- Use of PPE's
- Permit to Work System
- Heavy plant & equipment operations
- Fire Fighting & Control
- Emergency Response

In addition to the above, training in Electrical Safety, Scaffolding, First Aid, Material handling, etc. shall also be given to the employees as required.

4.4 Safety meeting

Objectives of the safety meeting are to:

- Ensure application of HSE norms, Rules & Regulations.
- Zero down the risk factors to avoid accidents.
- Enforce to wear Personal Protective Equipment by all employees in the workforce.

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- Meet the emergency requirements.
- Carry out periodic HSE inspections, discuss the shortcomings & action to set it right.
- Carry out an investigation of all the accidents, review & recommend preventive measures to avoid such recurrence.
- Discuss & resolve HSE observations at site.
- Keep records of HSE Meetings and Training Program

4.5 Safety Inspections, Patrol and Audit

In order to monitor the effective implementation of HSE requirements at site the following periodic inspections, audits and reviews shall be carried out.

➤ **Daily site inspection**

Inspections of the Waterfront project site shall be carried out regularly, prior to the commencement of daily activity, while executing a new activity or during any time of the day by the site Engineers/ supervisors, safety technicians and all other personnel. The high potential HSE deficiencies shall be recorded and forwarded to the Construction Manager for immediate action.

➤ **Weekly Site safety patrol**

Weekly site HSE patrolling shall be carried out by the HSE Head and Technicians. The Construction Manager can join, depending upon the requirement/site situation. The findings will be recorded and forwarded to all concerned for corrective action.

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4.6 Permit to Work (PTW) System

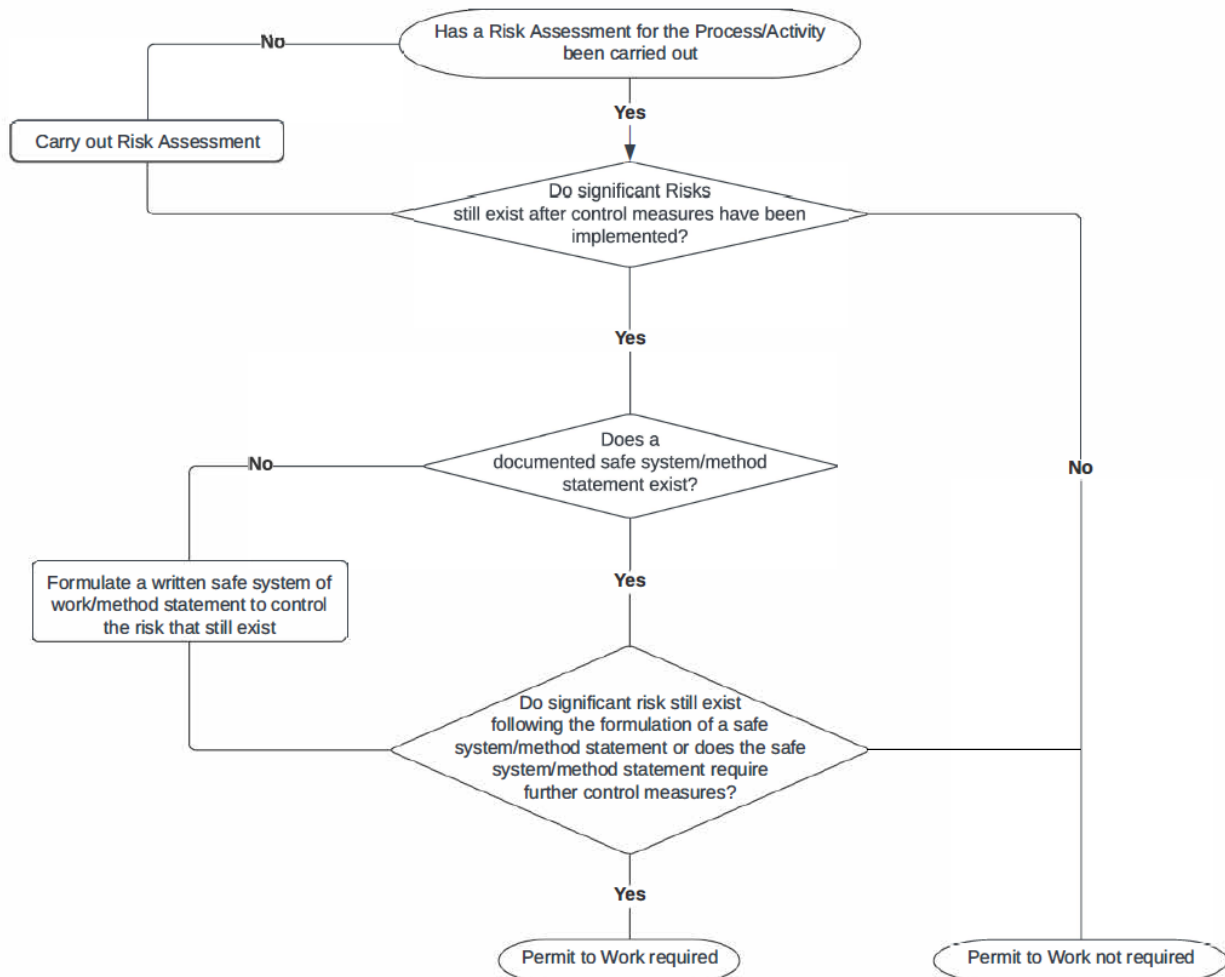
The required work permit shall be obtained for specific work as required in the documents of PURP/ Contractor. Employees and (sub)contractors at the site will be made aware of the basic acquirement of the work permit system.

The permit shall be kept at the work site during the execution of work. The following are the permits, which shall be obtained as per the standard rules and job requirements.

- **Hot Work Permit:** A hot work permit is required to carry out any work involving the use of a local source of ignition capable of igniting flammable of gases, liquids or any other materials in a restricted hazardous area. For example: Welding, burning, grinding, blasting, soldering, open fire, and opening up of electrical equipment in gaseous area.
- **Working at Height permit:** Working at height permit is required to work at the height above 1.8 meters.
- **Electrical Permit:** An electrical permit is required for any work on an energized electrical system.
- **Excavation Permit:** Within a restricted area, excavation authorization is required for all excavations regardless of depth. In addition to that other appropriate work permits shall be obtained prior to the start of excavation.

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PTW Flowchart



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4.7 Health

4.7.1 Water Supply and Sanitation

- Adequate supplies of potable water that meet drinking water quality standards should be available.
- Adequate sanitation facilities (toilets and washing areas) with running water, and soap for hand washing should be available for the number of people expected to work on the project.
- Sanitation facilities including toilets should be kept maintained in clean and hygienic conditions.
- In case, workers may be exposed to substances poisonous by ingestion and skin contamination may occur, facilities for showering and changing into and out of the street and work clothes should be provided.
- Suitable arrangements of clean areas for eating purposes for workers should be provided.

4.7.2 Medical and First Aid

First aid is medical attention that is typically administered immediately after an injury or illness occurs. It usually consists of one-time, short-term treatment, such as cleaning minor cuts, treatment of minor burns, applying bandages, and using non-prescription medicine.

The main goals of first aid are to:

- Keep the victim alive;
- Prevent the victim's condition from worsening;
- Give first aid until help arrives;
- Ensure that the victim receives needed medical care.

The following requirements should be in place:

- Sufficient First Aid Kits (FAK) in a weatherproof metal/plastic box for initial medical care;
- FAKs shall be checked monthly;
- Whenever a FAK is used for whatever reason, it should be reported to the HSE department.

4.8 Vehicle and Road Safety

All vehicles entering the project site at the Waterfront should have the necessary documents and necessary details will be registered at the entrance/security gate.

PURP/Contractor shall stipulate site traffic regulations:

- Displayed speed limits must comply with all national traffic rules.

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- The speed Limits for all vehicles within the Waterfront project shall be 20 km/hour or as specified.
- Vehicles should be parked in reverse and only at the designated parking area.
- Vehicles may not be loaded beyond their load capacity.
- Overhanging loads should not be transported without authorization. Such loads shall be marked with red flags during daylight and illuminated at night.
- Drivers must posses' license while driving.
- Trucks & trailers will not be used for transportation of personnel at site.

Note:

- A vehicle and trailer are to be considered as one vehicle.
- All accidents must be reported and investigated.
- Seat belts must be worn at all times.
- Use of mobile phones by drivers is prohibited.

5. Housekeeping

- Good housekeeping must be practiced at all times while within the construction site to prevent slips, trips, falls amongst others. During and after completion of the work, they are to ensure that their work area is kept clean and tidy. Flammable materials shall not be scattered over and shall be collected and disposed of frequently.
- Wooden planks with protruding nails, and sharp objects rising above ground should be removed immediately from the work area where people are likely to step on them.
- Temporary electrical cables shall be installed so as not to cause a tripping hazard to personnel, nor be liable to mechanical damage by equipment.
- Elevated cables shall be installed at such height as to allow unrestricted movement of construction, equipment and vehicles.
- Particular emphasis shall be placed on maintaining platforms, scaffolding, stairways, or other elevated places free of construction debris.
- Platforms or scaffolding segments should be kept in an orderly manner before use as well as after dismantling so that they do not cause hindrance to the movement of man and materials.
- Ensure that all materials, tools, and equipment are properly stored when not in use, to prevent tripping hazards and damage to equipment.
- Equipment or materials stored at the site shall not obstruct essential facilities and/or equipment such as fire extinguishers, fire hydrants, valve gauges, emergency exits, etc.
- Ensure proper disposal of waste and debris, including hazardous materials, to prevent environmental contamination and fire hazards. (Waste Management Plan)
- Separate manpower should be designated for daily housekeeping at the site.

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6. Security Introduction

Construction sites are subject to a number of threats, against which the site operator should secure the construction site. These include theft, vandalism and deliberate damage.

Control of Visitors:

1. Policy Statement

The Construction Site Access Policy is to help ensure a safe and productive work environment and to prevent or minimize any adverse impact on the environment.

2. Reason for Policy

The personal safety of all employees, contractors and the public, is of the highest priority. Accident prevention should be considered of primary importance in all phases of construction and operation. It is the intent to always maintain effective standards that will guard against injuries and illnesses occurring on the job. The prevention of occupationally induced injuries and illnesses is of such consequence that it will be given precedence over operational productivity whenever necessary. A safe work site requires open communication between management and employees on matters pertaining to safety. All employees are encouraged to express their concerns or suggestions to help promote safe work practices and conditions. **The policy is for distribution to all employees, contractors and visitors that will be entering the construction site.**

3. Safety Training is Required

Employees and contractors are required to be trained prior (Induction training) to entering the construction site.

Visitor Access Procedures

- All visitors must report to the guard upon entering the project site.
- Access to the site shall be denied to any individual who does not have a justifiable business on the job site.

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7. Accident and Incident

All accidents causing injury and/or property damage should be thoroughly investigated and reported on the standard accident investigation forms. "Near misses" should also be investigated and reported on the same form.

The main purpose of these investigations and reports is to determine the root causes of the accident or near-miss and to provide for corrective measures in order to avoid recurrence as well as the occurrence of a similar incident. In addition, it is important to determine who/ what is responsibility for the incident and disciplinary measures to be taken if required.

Procedure

- Injured person or the first-aider shall report the accident to the HSE department giving all relevant details.
- HSE personnel shall record all details in the accident log and investigate what exactly happened.
- Injuries that require the first aid official to refer the injured person to a hospital or to their doctor should be immediately notified to the HSE Head and as well as to the Construction manager by telephone.
- In such cases the HSE Technician(s) must investigate all the circumstances on how the injury was sustained and complete an accident investigation report.
- The findings of the investigation will be examined by the HSE Head and the Construction Manager with the objective of identifying measures to avoid repetition.
- These control measures will be introduced after consultation with the HSE Head.
- The accident location should be barricaded off pending an investigation into the circumstances of the incident, which led to the injuries. This investigation should include statements from all witnesses and any equipment/ material involved in the incident should not be touched nor moved until the investigation has been concluded.
- The investigators will discuss their findings with the Construction Manager to identify measures needed to avoid repetition. These measures will be introduced as soon as possible after consultation with the construction workers.

8. Remarks

This HSE Plan is an initiative to ensure the Health and Safety of all employees, contractors and visitors at the project site are secured, and that any adverse impact on the environment is prevented or controlled. This plan shall be updated as necessary in order to manage all risks related to the project activities.


Appendix F

Waste Management Plan

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023



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		Date:	

Waste Management Plan for the Waterfront

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April, 2023

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Document control

Version	Prepared by	Date	Reviewed by	Date
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Description	Approval Organization/ dept.	Name	Date

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List of abbreviations

PURP	Paramaribo Urban Rehabilitation Program
WMP	Waste Management Plan
HSE	Health, Safety and Environment
NMA	National Environment Authority
SSB	Suriname Standard Bureau

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1. Introduction

Waste management is the collection, transport and processing of residual or waste materials in order to prevent or minimize environmental pollution. Proper waste management is crucial for sustainable development and protecting public health and the environment. The Waterfront is a public area to attract visitors and tourists and should be kept clean all time and avoid negative impacts on the environment and people as much as possible. Hence, this waste management plan (WMP) is to ensure that all users of the Waterfront will comply with local regulations, international standards and best practices to manage all waste types it generates or accepts. The Waste Management System of the Waterfront is based on the waste management hierarchy as presented in **Figure 1**.

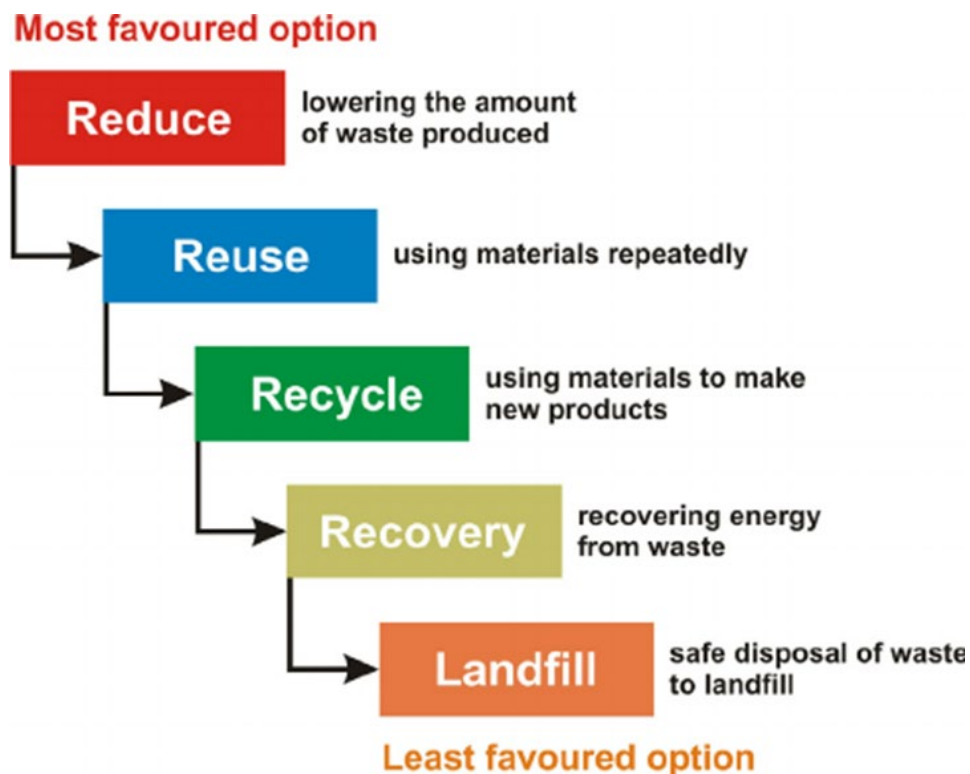


Figure 1: Waste Management Hierarchy¹

The purpose of a waste management plan is to provide a structured and systematic approach to managing waste in an efficient, cost-effective, and environmentally sound manner. This WMP outlines the principles, procedures and management of all waste generated at the Waterfront during both the construction and operational phase. The plan is developed to ensure that all waste is

¹ https://www.researchgate.net/figure/The-Waste-Hierarchy-EU-Waste-Framework-Directive-2008_fig1_262975083

reduced, reused and recycled wherever possible. Accordingly, the WMP outlines measures to manage and mitigate waste generation and resource consumption during both construction and operation of the Waterfront. The Waste Management Plan is designed to support an ecological based management approach underpinned by adaptive management principles. Surplus of waste materials arise from either the materials imported to the site or from those generated on the site. Imported materials are those which are brought to the site for use or inclusion onsite. Generated materials are those that are produced during daily operations at the site.

2. Location

The plan is applicable during both the construction- and operational activities that will take place at the Waterfront. In the construction phase, waste will be mainly produced from construction and demolition activities at the Waterfront project area. During the operational phase waste will be mainly generated by visitors, food- and craft vendors and other workers and users of the Waterfront.

3. Legislative requirements

It is the responsibility of the PURP/ Waterfront Management Board to ensure that all waste produced at the Waterfront is appropriately handled or disposed of, while complying with the relevant local laws and regulations. In accordance with the Environmental Framework Act, the National Environment Authority (NMA) should determine the standards and procedures for handling of waste (collection, transportation, storage, and transfer). However, these procedures are missing at the time of formulating this Waste Management Plan. **It is the intention that this WMP is regularly updated, incorporating all newly approved waste regulations.**

In addition to the Environmental Framework Act, there are a few of other laws and license requirements that must be part of this waste management plan and it is the task of the PURP/Waterfront Management Board to ensure that they are observed by the companies in charge of construction and other service providers of the Waterfront, as well by the exhibitors and visitors.

Table 1 contains an overview of the current applicable regulations with which the Waterfront must comply. Where local legislation is lacking, international laws, guidelines and conventions will be used (Table 2).

Table 1: Overview of National regulations applicable to the Waterfront

Title	Relevant provision
The Police Criminal Code (Politiestrafwet) (G.B. 1915 no.77, lastly amended in S.B. 1990 no.121)	it is prohibited to dump waste on public roads and terrains or in public parks, gardens and drainage canals.
Decree Ecological conditions residential areas (Decreet Ecologische omstandigheden woongebieden) (S.B. 1980 no. 68, lastly amended in S.B. 1980 no.121):	Dumping garbage or waste on a road open to public traffic and the associated footpaths or in a garden or park accessible to the public and even in a waterway intended for drainage or plot is punishable. The law also gives the government (District Commissioner) the option, if the involved fails to fulfil its obligation in this regard, to counter the pollution with its own resources at the expense of the involved parties.
Standard for waste collection and processing. Part 1: Collection of Household, Medical, Industrial, Separated and Bulky waste. (SSB 010: 2019 Standaard voor vuilophaal en -verwerking. Deel 1: Collectie van Huishoudelijk, Medisch, Industrieel, Gescheiden en Grof afval	In the absence of legislation on waste management, the Ministry of Public Works has requested the Suriname Standards Bureau (SSB) to develop a Standard on Waste. In response the SSB initiated the process to set up the standard on garbage collection and processing. Part one of the Standard was published on January 23, 2019. It covers household, medical, industrial and bulky waste and provides a procedure for packaging, offering and pickup, including the frequency of waste pickup.
Environmental Framework Act (Milieu Raamwet, S.B. 2020 no.79)	Article 9 Duty of Care Everyone in the territory of the State of Suriname must take sufficient care of the environment. The care means that everyone who knows or who can reasonably suspect that his or her actions or omissions, can have adverse consequences for the environment, is obliged to refrain from such acts insofar as this can be reasonably required from them. One should refrain from littering and improper waste disposal.
License for drinking and eating establishments issued by the District Commissioner of Paramaribo North East	The yard and the sewer in the immediate vicinity of the building must be kept clean. A grease trap must be constructed according to guidelines of the Public Health Office (Bureau voor Openbare Gezondheid (BOG)). The license holder is obliged to place 2 garbage cans with a capacity of 240 L with a tight-fitting lid, namely 1 at the entrance of the building and one at the sidewalk, and must be emptied in time. The license holder must ensure that the sidewalk is swept

	every day after closing time. The license holder must ensure that the plot where the business is carried on, as well as the adjoining part of the footpath, belonging to the public road, is cleared of car wrecks, discarded furniture, machines and household materials, weed, garbage or waste and no waste substances harmful to public health and the environment are placed or dumped.
--	--

Table 2: International legislative requirements applicable to the Waterfront

Legislation requirement	Title	Purpose
International Best Practice	IFC Performance Standards (PS) 3 Pollution Prevention and Abatement	Application of the principles of the World Bank's Pollution Prevention and Abatement Handbook at Policy level is addressed by this standard which aims to avoid or minimize pollution from project activities. Key issues addressed include resource conservation and Energy Efficiency, hazardous materials, waste management, emergency preparedness and Response, ambient and cumulative considerations, greenhouse gas emissions, pesticide use and management.
Convention	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal 1989	The treaty aims to protect the human health and the environment through minimization of the generation of hazardous waste and other materials where possible. The Convention also aims to further remove the waste as close to the source of origin or process to minimize the amount of hazardous substances and their danger and to limit their movement across international borders.
Convention	Stockholm Convention on Persistent Organic Pollutants 2001	To protect human health and the environment from Persistent Organic Pollutants (POPs) are not or poorly biodegradable and accumulate in the fat of living organisms and are toxic to humans and animals. By implementing this treaty, countries will take measures to eliminate or reduce the spread of POPs in the environment.

4. Responsibilities

Arranging responsibilities in a Waste Management Plan helps ensure that waste is properly handled, disposed of, and managed in a safe and environmentally responsible manner. It also helps to minimize the company's impact on the environment, comply with regulations, and promote accountability and continuous improvement. The key persons with responsibilities are defined as follow:

4.1 Project Manager PURP/ Waterfront Management Board

- Approval and implementation of the waste management plan for the construction and operation of the Waterfront.

4.2 Health, Safety, and Environment (HSE) officer

- Development of the waste management plan for the construction and operation of the Waterfront;
- Management and monitoring of the implementation of the waste management plan;
- Directs waste allocation sites in the required format for management, storage and presentation of waste management data;
- Initiates Non-Conformance processes if any non-conformances are indicated; and
- Arranges waste storage, transport, and disposal;
- The revision of the plan, as needed.

4.3 Waste Contractor

- Removes on a regular basis construction or demolition waste from the project area according to the WMP as included in the contract.
- Disposes of waste at waste accumulation point(s) considering local regulations.
- Maintains working areas clean and orderly.
- Reports of any incidents, calamities, pollution or shortcomings of the plan.

5. Identification of waste types

During both construction and operational phases at the Waterfront, several types of waste will be generated. A distinction is made between non-hazardous and hazardous waste. Non-hazardous solid waste generated at construction and decommissioning sites includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills. Other non-hazardous solid wastes include office, kitchen, and dormitory wastes when these types of operations are part of construction project activities.

Hazardous solid waste includes contaminated soils, which could potentially be encountered on-site due to previous land use activities, or small amounts of machinery maintenance materials, such as oily rags, used oil filters, and used oil, as well as spill cleanup materials from oil and fuel spills². Hence, hazardous waste includes properties that are dangerous or capable of having a harmful effect on human health or the environment³.

The tables below provide an overview of waste generated during the construction phase (Table 3) and operational phase (Table 4).

Table 3: Types of waste generation and disposal methods during construction

Construction phase: Non-hazardous waste			
Waste type	Description of waste	Method of disposal	Procedure handling
General waste	Waste appropriate for landfill disposal generated by employees and contractors (engineering), e.g., household waste, food waste, paper, plastics, aluminum, glass.	<ul style="list-style-type: none">• Public landfill• Recycle e.g., plastic, glass, aluminum• Composting of biological waste (preferably collected by Openbaar Groen)	<ul style="list-style-type: none">• All general waste shall be disposed of at the public landfill (Ornamibo) at least twice a week by contracted truck or recycling company• All employees and other workers are responsible for disposing of non-hazardous waste in appropriate waste containers and/ or recycling bins

² Final - General EHS Guidelines_APRIL 29.doc (ifc.org)

³ <https://www.epa.gov/hw/learn-basics-hazardous-waste#hwid>

Construction waste	Scrap of wood, concrete, metal, pipes, cables, concrete, cement residues	<ul style="list-style-type: none"> Temporarily designated location on site Recycle e.g., scrap metal Public landfill 	All construction waste is disposed of at Ornamibo by contracted truck or recycling company
Vegetation	Stumps, trunks, leaves, roots, grass plant, tree residues from necessary vegetation clearing	<ul style="list-style-type: none"> Compost or re-use (preferably collected by Openbaar Groen) Temporarily designate a location on site prior to disposal Burning at site is prohibited and is not to be used as a method of vegetation disposal 	<ul style="list-style-type: none"> The heap of vegetation waste should not exceed a height of 2m in order to prevent huge flames in case of accidental fire, and to minimize visual pollution Coordinate with Openbaar Groen (Dept. at the Ministry of Public Works) to regularly collect biowaste for composting purposes
Other waste or disposal materials	Non-hazardous waste that cannot be predicted in advance but is identified on the spot	<ul style="list-style-type: none"> Temporarily designated location on site Public landfill 	Waste must be collected and disposed of to pre-designated area, depending on the type of waste
Construction phase: Hazardous waste			
Waste type	Description of waste	Method of disposal	Procedure handling
Petroleum-based waste	Used oil, fuel, lubricants, greases, oil, filters, and solvents from use and maintenance of heavy equipment/machines	Collected by contractors/companies for reuse	Petroleum-based waste must be collected separately and disposed of off-site according to agreement with contracted waste collectors
Paint and related waste	Paint residues and empty paint cans	Collected by contractors/companies for responsible disposal	Paint-based waste must be collected separately and disposed of off-site according to the method that is agreed with the waste collector

Contaminated soil	Contaminated soil and by poor waste management (spills, leakage)	<ul style="list-style-type: none"> ● Excavation of contaminated soil and store temporarily prior to transport to disposal site ● Landfarming 	Contaminated soil must be collected and sent to a pre-designated area
Other waste disposal material	Hazardous waste that cannot be predicted in advance but are identified on the spot	<ul style="list-style-type: none"> ● Temporarily designated location on site ● Collected by contractors/ companies for responsible disposal 	Waste should be safely stored on site with the necessary warning signs until it is collected for final disposal

Table 4: Types of waste generation and disposal methods during operations

Operational phase: Non-hazardous waste			
Waste type	Description of waste	Method of disposal	Procedure handling
General waste	Waste appropriate for landfill disposal, generated by Waterfront users, office personnel, workers, and visitors, tourists e.g., domestic waste, food waste, cooking oil, paper, plastics.	<ul style="list-style-type: none"> Public landfill Recycle e.g., plastic, glass, aluminum Composting of biowaste (preferably collected by Openbaar Groen) 	<ul style="list-style-type: none"> All general waste shall be disposed of at a public landfill (Ornamibo) at least twice a week by contracted truck or recycling company All Waterfront users are responsible for disposing of non-hazardous waste in appropriate waste containers (recycling bins) Place waste containers at convenient locations where they are highly visible from a distance (use clear and simple signage) Choose outdoor waste containers/ bins that the public will use properly and are maintenance friendly and robust finish such as stainless steel Coordinate with Openbaar Groen (Dept. at the Ministry of Public Works) to regularly collect bio waste for composting purposes
Other waste or disposal material	Other waste that cannot be predicted in advance but are identified on the spot	<ul style="list-style-type: none"> Temporarily designated location on site Public landfill 	Waste must be collected and disposed of to pre- designated area, depending on the type of waste
Vegetation	Leaves, grass, plant, tree residues and vegetation generated	<ul style="list-style-type: none"> Compost or re-use (preferably collected by Openbaar Groen) 	The heap of vegetation waste should not exceed a height of 2m in order to prevent huge

	during necessary maintenance of greenery	(Ministry of Public Works, Dept. Public Green) <ul style="list-style-type: none"> Temporarily designate a location on site prior to disposal 	flames in case of accidental fire, and to minimize visual pollution
Operational phase: Hazardous waste			
Waste type	Description of waste	Method of disposal	Procedure handling
Packing material	<ul style="list-style-type: none"> Empty/ used bottles (chemicals used for rodenticides and herbicides Empty/ used bottles/ cans of household cleaners that can catch fire, react or explode, or become corrosive or toxic. 	Collected by contractors/ companies for responsible disposal/reuse	Hazardous packing materials must be collected separately and disposed of off-site according to agreement with contracted waste collectors

6. Actions and guidelines to be implemented

Guidelines for the daily activities:

- Good housekeeping is required.
- The location should be free from street litter and household waste.

7. Waste monitoring

PURP/ Waterfront Management Board is committed to minimizing the risks associated with the generation of all waste at the Waterfront. The following monitoring activities will be conducted:

- Monitoring of the quantity and types of wastes being generated at the Waterfront during construction will be recorded on a waste disposal inventory sheet (Appendix 1) and will be kept in a logbook on site at all times so that regular reviews can be undertaken.
- All products that are considered to be of concern in relation to the waste being generated shall, where possible, be replaced with products that are less wasteful and/ or considered environmentally friendly.
- All waste storage containers will be inspected weekly to ensure that they are maintained in a condition appropriate for their use and containment of the specific waste.
- The Waste Management Plan and its importance will be communicated to all workers and food stalls/ craft owners.

8. Document control

For this project, document control is managed through the document control table found at the front of this document. All changes to documents must be reviewed and approved by the HSE Head. All records will be legible and stored in hard copy or electronically at the HSE office.

Appendix 1 Waste Disposal Inventory

Project Name	
Project Owner	
Operational Management	
Project Type	
Site/ Construction manager	

Type of Waste	Quantity (kg)	Location of Storage	Transportation method	Final destination of waste disposal (Name Contractor)
Removed vegetation				
Soil				
Polluted soil				
Residues of concrete and cement				
Residues of wood				
Petroleum containing waste				
Residues of Preservatives				
Paint waste				
Packing material				
Glass				
Metal scrap				
Iron scrap				
Copper scrap				
Aluminum scrap				
Mix metal scrap				
Household waste (Food residues)				
Other waste disposal material on the proposed area.				

Approved by:
Date:

Appendix G

Emergency Response Plan

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023



Emergency Response Plan

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of the Surrounding Mobility Infrastructure

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April, 2023

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1. Introduction

An emergency response plan is a crucial document that outlines procedures and protocols for responding to unexpected events or situations that could potentially harm people, property, or the environment. Emergencies may be natural or man-made and may include floods, fires, chemical spills, transportation accidents and many other hazards. Many types of emergencies can be anticipated in the planning process, which can help employers and workers plan for other unpredictable situations.¹

This Emergency Response Plan (ERP) addresses potential natural and man-made disasters at the Waterfront that pose a risk to people, property and the potential for environmental damage. Due to the unknown nature of emergencies and how they can develop this plan focuses on those events foreseen as most likely to occur.

The ERP should be used as a guiding document on how to act in the event of an emergency at the Waterfront and its premises. It addresses the necessary actions and protocols to ensure a coordinated and effective response to emergencies. The ERP also forms a basis for training and exercising preparedness. Where applicable this emergency response plan will link to other successive and interacting emergency response plans.

Measures to manage operations at Waterfront supports:

- The safe use of the Waterfront by all occupants (i.e. employees and contractors) and visitors;
- The implementation of an effective Health, Safety and Environment Plan (HSE).

To achieve these aims, PURP/ Waterfront Management Council shall be in close contact with the contractors/ vendors and all relevant stakeholders to keep them informed of all rules.

During construction, the Construction Contractor should develop a **Construction Emergency Response Plan** that describes procedures to be implemented in forecasted or unanticipated events. This would involve securing equipment and materials, stabilizing disturbed areas, and similar actions.

During operations, the Waterfront operator should also coordinate with the Suriname Red Cross (SRC) and the National Coordination Centre for Disaster Management (NCCR) actions regarding the emergency responses to be implemented in the event of forecasted and unanticipated natural and man-made disasters.

¹ [Emergency Preparedness and Response: Getting Started | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha.gov)

2. Scope

The Emergency Response Plan applies to the construction and operational phase of the Waterfront.

The order of protection priority is to:

- Protect human life, save life and relieve suffering;
- Minimize damage to the environment, equipment and property;
- Control the incident and prevent escalation;
- Restore normality as soon as possible.

3. Roles and Responsibilities

Management (PURP Construction Contractor/ Waterfront Management Council) should assign an Emergency Management Team and make sure that all persons assigned to the response team are present, reliable, and able to react quickly in the face of an emergency. In case of an emergency, the responsible persons should be in charge of activating the ERP, answering important questions, and ordering an evacuation from the Waterfront and premises if needed. The following are the main roles to consider:

3.1 Incident Commander

The incident commander has overall responsibility for an emergency, including planning and preparation at the Waterfront premises. The incident commander is in charge of emergency response plan activation and is the one all critical decisions should go through.

3.2 Communication Commander

The Communication Commander should use the mass alert system to notify all persons present at the Waterfront premises and who may be affected (employees/ visitors), liaise with emergency services such as the police, fire department, and ambulance service, and arrange for an on-going record keeping of emergency response. Consider using an emergency communication system.

3.3 Scene Supervisor

The Scene Supervisor should control access to the emergency scene and should keep people away from unsafe areas. The Scene Supervisors' responsibility is as follows:

- to ensure that access to emergency services is not restricted and;
- to ensure that emergency services are guided to the location of the incident.
- ensure that during an emergency, persons are permitted to evacuate site freely;
- direct persons to designated muster point.

3.4 First Aider

The First Aider is an individual(s) who is/are capable of administering first aid to injured persons. The HSE Head will normally function as the site first aider; if they are not available, the HSE Technician will take on this role until relieved by the HSE Head.

The responsibility of the first aider is to provide immediate, lifesaving, medical care before the arrival of further medical help. Before administering first aid, the first aider must ensure it is safe to do so. This could include performing procedures such as:

- Placing an unconscious casualty into the recovery position;
- Performing Cardiopulmonary resuscitation (CPR);
- Stopping bleeding using pressure and elevation;
- Keeping a fractured limb still;
- Prevent the worsening of the patient's condition and promoting recovery.

3.5 Building (offices, food-and craft stands) Utility Manager

The Building Utility Manager needs to be familiar with the locations and functions of controls for building utility and life safety and protection systems, specifically during the Operation. These systems include electrical shutoffs, ventilation, water and sanitary systems, emergency power supplies, and alarm systems.

3.6 Route guide(s)

The Route Guide(s) play an important role in ensuring that routes and signage are clear and evacuation is orderly and calm in the event of an evacuation. They also help clear evacuation routes and assist those with mobility issues.

In case of emergencies, the following hierarchy of responsibility in figure 1 must be followed.

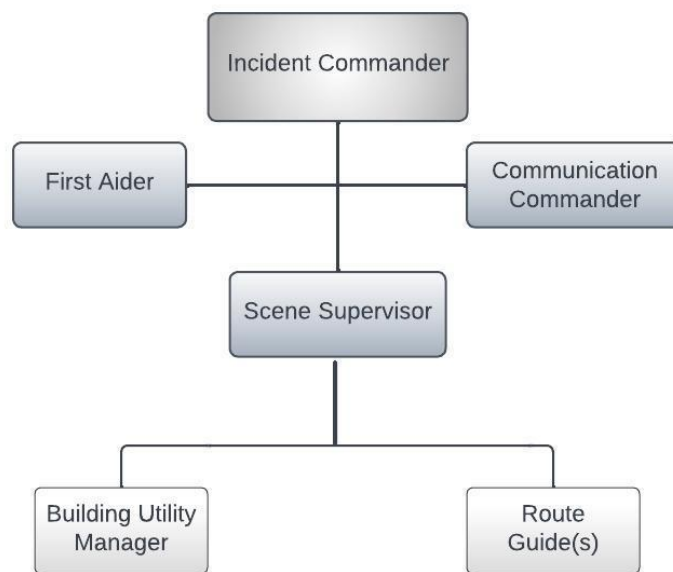


Figure 1 Hierarchy of responsibility

4. Documentation of Contact information

All emergency contact information should be documented for every person working or at stake at the Waterfront. Table 1 shows an overview of relevant agencies/institutions and corresponding numbers that should be readily available:

Table 1 Relevant Agencies/Institutions and contact information

Agency/Institutions	Contact
National Coordination Centre of Disaster Management (NCCR)	144 / 520840 / 426416
Police Department	115
Police Department Keizer straat	477777
Fire Department	110
Red Cross Suriname	498520 / 498410
District Commissioner Paramaribo North-East	473111 / 476184
Marine Authority Suriname (MAS)	476733
National Institute of Environment and Development in Suriname (NIMOS)	490-044
Healthcare Providers	
Emergency medical services	117
Emergency Assistance Academic Hospital	113 / 442222
Emergency Assistance Sint Vincentius Hospital (R.K.Z.)	471212
Public Health Bureau (BOG)	178
Other relevant agencies/institutions/organizations	
Suriname Built Heritage Foundation (SGES)	xxxxxxx
Waterfront Management Council (Waterkant Beheersraad)	xxxxxxx
MDS/ WLA/ MinOW	TBD
<i>Note: It is important to acknowledge that these were the contact numbers at the time of creating the plan, however, alterations may have occurred since then.</i>	

5. Access and Exit routes

Figure 2 shows the main access and exit routes to the Waterfront area. The access roads to the Waterfront are from the Kleine Combeweg (two-way roadway indicated in red) which enters into the Waterkant straat (one-way roadway indicated in blue). Furthermore, the Waterfront can also be reached by the Mr.J.C. De Miranda straat (2-way roadway indicated in yellow) and the Kromme Elleboog straat (one-way roadway indicated in black).

To exit the Waterfront area, three (3) different routes can be taken currently: Mr. F.H.R. Lim A Po straat (a one-way road marked in white) or Mr. J.C. De Miranda straat (a two-way road marked in yellow), or simply continuing on the Waterkant street.

In coordination with local authorities and emergency services muster point(s) should be designated and unobstructed access/passage of emergency transport should be considered.

To improve road traffic safety, have at least one roadway open for special traffic (residents, bank, emergency) as often as possible during construction. In addition, emergency services/ first responders might be authorized to drive against the flow of traffic on one-way roads during an emergency.

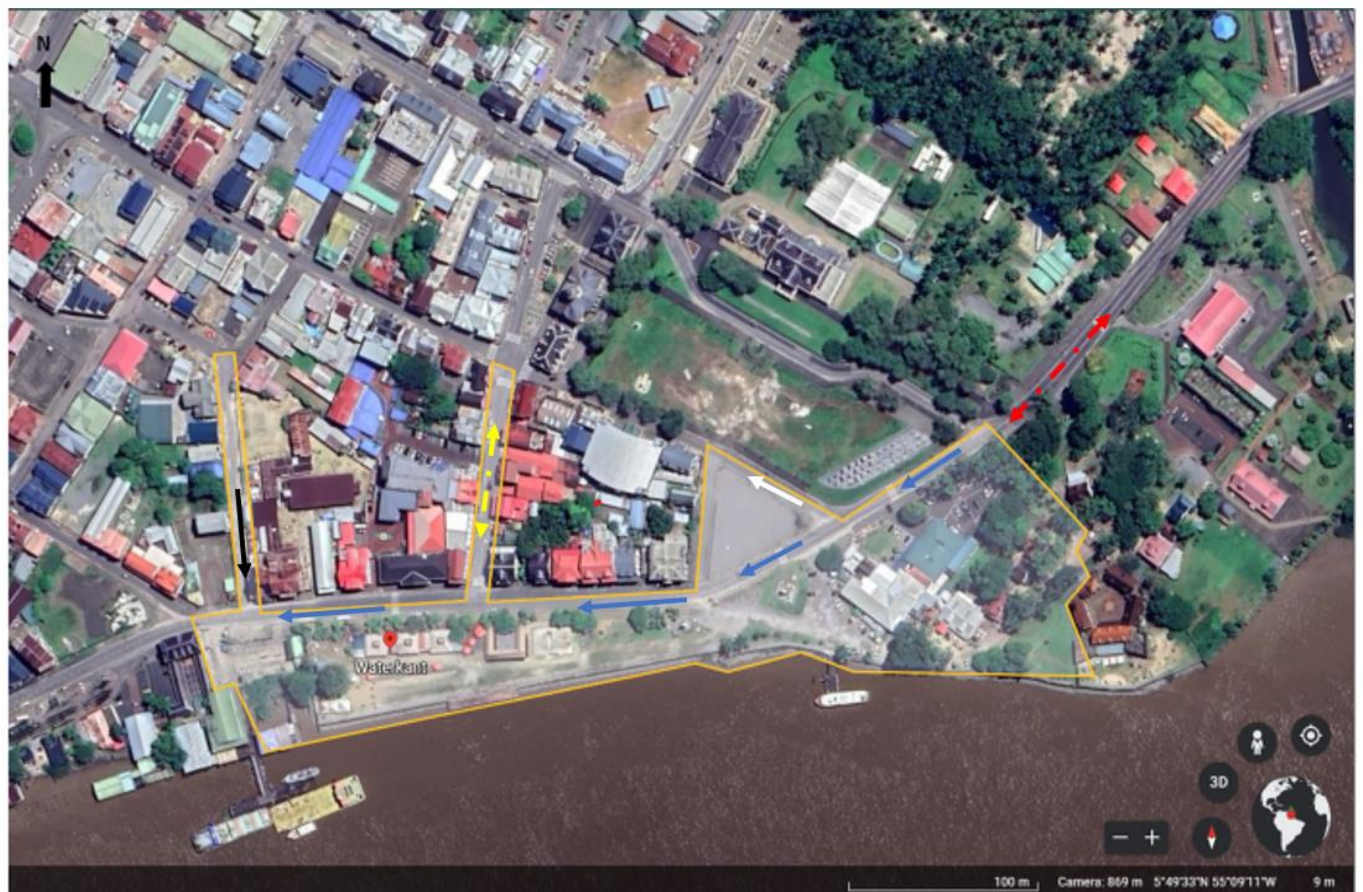


Figure 2 Access and exit routes to the Waterfront area

6. Potential Emergencies

This section serves as a critical component in identifying and preparing for potential disasters. Therefore the ERP has been developed with inherent flexibility to allow it to be extended and to deal with extremely unlikely consequences which may arise through combinations of accidental circumstances and weather conditions. The potential disasters/hazards that have been identified can be divided into natural and man-made.

The Construction Contractor/ Waterfront Management Council will identify all possible emergencies that may occur in the area and prepare the respective emergency response checklists. These checklists will be included in the ERP. Management is committed to regularly conducting desktop and field exercises to ensure a timely, appropriate and decisive response is achieved to any foreseeable emergency.

6.1 Natural disasters

For the Waterfront area, Amatali & Naipal (2023) have identified the following potential natural hazard risks:

- Risk of erosion of riverbank due to waterflow in the river
- Risk of pluvial flooding (rain) and heavy winds as a result of Climate Change.
- Excessive precipitation may result in erosion with exposure/ damage to river banks and/ or facilities
- Risk of flooding by intrusion of river water/ riverine flooding with or without sea level rise
- Storm surge/ sea level rise may result in high water levels and overland flow exposures or damages

6.1.2 Flooding due to high river water

Flooding of the study area due to intrusion of river water depends mainly on the earth surface elevation of the area and the water level in the Suriname river. In figure 3, the ridge on which the Henck Arron street is constructed can be seen. The area enclosed by the Henck Arronstraat, Grote Combeweg and Heerenstraat is relatively high, ranging from about 3.00m NSP to 3.70m NSP, with a peak higher than 3.70m NSP. The Northeast and Southwest of this area has generally low elevation, with some spots lower than 1.80m NSP. Outside the project area, at the Northeast side there are zones with soil surface elevation lower than 1.50 m NSP. Along the river, there is a fringe with elevation lower than 1.50 m NSP.

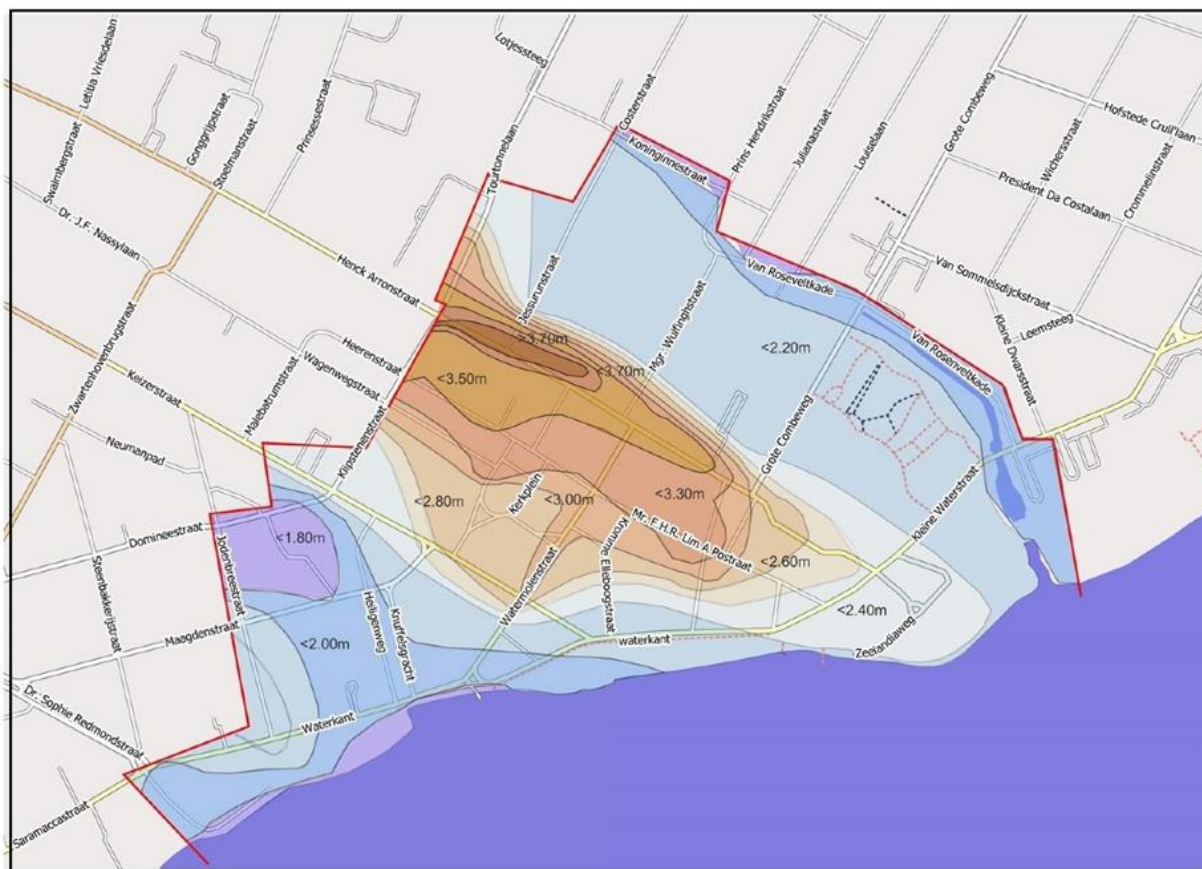


Table 2 Probability of High-Water Level in Paramaribo and Related Areas at risk without Sea Level Rise (Amatali & Naipal, 2023)

Return period (years)	Water level (m NSP)	Inundated Area (m ²)	% of study area	Remarks
2.5	1.91	At least 14434,12	2,6	Zones with earth's elevation 1.80 m NSP or lower.
5	2.05	At least 111313,4	20,2	Zones with earth's elevation 2.00 m NSP or lower.
10	2.17	At least 111313,4	20,2	Zones with earth's elevation 2.00 m NSP or lower.
25	2.32	At least 314850,9	57,2	Zones with earth's elevation 2.20 m NSP or lower.
50	2.43	At least 389743,9	70,8	Zones with earth's elevation 2.40 m NSP or lower.
75	2.50	At Least 389743,9	70,8	Zones with earth's elevation 2.40 m NSP or lower.
100	2.54	At Least 389743,9	70,8	Zones with earth's elevation 2.40 m NSP or lower.

6.1.3 Flooding due to high river water level and sea level rise

In table 3, the total area at risk for inundation by river water is presented, related to the statistical occurrence of high river water level and 1.00 m sea level rise by the year of 2100. Amatali and Naipal (2023) made the assumption that for the coming 75 years, the sea level will rise with 1 m.

Table 3 Total area at risk for Riverine Flooding Related to Statistical Occurrence of High River Water and 1.00m Sea Level Rise by the Year 2100 (Amatali & Naipal, 2023)

Return period (years)	Water level (m NSP)	Sea Level Rise (m)	Total Water Level (m)	Inundated Area (m²)	% of study area	Remarks
25	2.32	0,33	2,65	414288,6	75,3	Zones with earth's elevation 2.60 m NSP or lower.
50	2.43	0,66	3.09	483960,7	87,9	Zones with earth's elevation 3.00 m NSP or lower.
75	2.50	1.00	3.50	541625,7	98,4	Zones with earth's elevation 3.50 m NSP or lower.

6.2 Man-made disasters

Other potential hazards may be caused by emergencies that can arise from a variety of man-made sources or other unforeseen events that can affect the safety at the Waterfront and the build heritage. These hazards can include but are not limited to:

- Fires destroying monumental buildings and affecting the Historic Inner-City status;
- Mass casualty incident during mass activities/ public event;
- Traffic accidents;
- Civil unrest that can lead to casualties or damage to monumental buildings.

7. Management Measures

This section discusses measures that could be implemented into the design/ construction and related management plans to help reduce risks caused by natural and man-made disasters.

Flooding

- Implement stormwater management activities. These activities must be synchronized with urban development and existing stormwater management plans for Paramaribo;
- Design and implement measures that entail the infrastructural capacity to occasionally endure water excess from periodic flood events;
- Reinforce existing and new flood control infrastructure with green infrastructure measures;
- Conduct regular inspections and provide routine maintenance of all existing river defenses;
- Keep monitoring sea levels and river water levels;
- Create and/or reinforce capacity building on urban flood-risk management including the dissemination of hazard maps, evacuation actions and routes, and community post-disaster recovery strategies.

In addition to these measures, there are a variety of other paths for increasing riverine climate resilience, including preparing for extreme events through developing plans for evacuation, emergency response, and recovery, and adapting infrastructure systems to the impacts of climate change. All these combined strategies can be part of a multilayered approach to reducing risks. However, it would be impossible to fully eliminate all risks because there could always be a storm larger than or different from what was planned for, and there is potential for failure in any strategy.

Traffic incidents/Road obstruction

The proposed construction activities will increase the use of (heavy) vehicles bringing equipment and large volumes of material to the project site. Construction activities will block/ limit the passage through the main road, and therefore obstruct health emergency transport and special transport (bank) during construction, and limit access to residences during construction, and limit the availability of parking places at /around the project site during construction and operations.

- Develop and implement a traffic management- and an emergency plan to manage the risk of traffic-related accidents and injuries. These measures should ensure safety on the roads, alternative routes, bypassing the project site and alternative parking within 100 m radius of the project site.
- The emergency plan should cover the unobstructed access for emergency - and special transport using clear signage and barriers to prevent unauthorized access to the site and ensuring that construction equipment and materials are stored in designated areas.

Fires

- Develop a fire prevention plan and implement fire prevention measures, such as regular maintenance and inspection of electrical and heating systems, installation of smoke detectors and fire alarms, enforcing no smoking policies, and maintaining proper security to prevent arson and vandalism.

Mass events/ public activities

- Develop an event management plan that should include measures to control crowd density, protect fragile areas of the heritage site, establish appropriate access and exit routes, and address emergency situations.

Civil unrest

- Develop and implement a comprehensive security plan that should include measures such as increasing security patrols, installing surveillance cameras, and identifying and securing vulnerable areas;
- Monitoring social media.

8. Emergency Preparedness and Response

As part of, and in addition to, risk prevention measures, there should be preparedness and response activities in case an emergency occurs. These activities should be coordinated with Suriname Red Cross (SRC) and the National Coordination Centre for Disaster Relief (NCCR) which lead activities included in the Emergency Response Plan for Suriname.

Muster point should be designated in ERP.

9. Drills and Training

Drills and training can help to keep the emergency response plan fresh in the minds of individuals involved and ensure that everyone is prepared to respond quickly and appropriately in the event of an emergency. Therefore, regular drills and training will be conducted with the Emergency Management Team and individuals (such as contractors) who may not be directly involved in the response plan. Some of these drills and training can include:

- Tabletop exercises where a group discussion of a simulated emergency scenario takes place to test the emergency response plan and identify potential issues or areas for improvement.
- Fire drills involving a fire emergency simulation and practicing the procedures for evacuating the building and using fire extinguishers.
- First aid and medical training

These exercises will be a combination of desktop and field exercises. For incidents that cannot be safely replicated, desktop exercises will be held.

10. Remark

This ERP is an initiative to ensure that basic emergency situations are addressed during construction and operations. It is recommended to improve this ERP prior the operational phase commences.

Management (PURP/ Construction Contractor/ Waterfront Management Council) has overall responsibility for this plan. The Emergency Response Plan should be reviewed annually.

Appendix H

Natural Disaster Risk Report

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023



Update of Environmental and Social Impact Assessment for the Paramaribo Urban Revitalization Program

Final Report

Analysis Natural Disasters

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S.Naipal Ph.D.
Paramaribo April 2023**

Prepared for PURP

Summary

According to GFDRR (2020), for Paramaribo, the risk for natural hazards is as follow:

High risk

- Coastal flooding
It is expected that the occurrence of potentially-damaging waves to flood the coast is at least once in 10 years. There is a high probability that extremes in sea level will increase with the rise of mean sea level.
- Urban flooding (due to rainfall and decreased space for water to store)
It is expected that occurrence of potentially damaging and life-threatening urban floods is at least once in the next 10 years
- River flooding
It is expected that the occurrence of potentially damaging and life-threatening river floods is at least once in the next 10 years.

Medium risk

- Tsunami
There is more than a 10% chance that a potentially-damaging tsunami will occur in the next 50 years
- Extreme Heat
There is more than a 25% chance that at least one period of prolonged exposure to extreme heat, resulting in heat stress, will occur in the next five years

Very Low risk

- Landslide
Localized landslides are uncommon hazard phenomena in Paramaribo
- Earthquake
The chance that potentially-damaging earthquake shake in Paramaribo in the next 50 years is less than a 2% chance
- Water scarcity
Is non-existent in Paramaribo. In the future, the hazard level may increase due to the effects of climate change
- Cyclone
The chance that potentially-damaging cyclone-strength wind in the next 10 years will occur is less than 1%. It is likely that global average tropical cyclone wind speed and rainfall will increase in the future.

Additional to the classification of GFDRR the risk for natural hazards in Paramaribo currently storms with heavy winds occur in the study area. Risk for river erosion is present. Strong winds, resulting in swell of the Ocean, and hence the extra rise of the tide, consequently flooding is expected due to climate change. Drying out of water resources is already an issue (see results of the 12-18 December 2022 online stakeholder survey)

According to data from the General Bureau of Statistics (GBS, 2022), the registered natural disasters that occurred in Suriname in the period 2017 – 2022 were on 39 different days, which were not consecutive. All the hazards were related to rainfall and in about 71.8% of the days it was accompanied by heavy wind, whereby roofs were torn away. In total 283 households were affected. On 30 of these days (76%) these hazards occurred in Paramaribo (GBS, 2022). During the period January – September 2022 there was severe one and 3,810 persons were affected, mainly in the interior

According to data from the General Bureau of Statistics (GBS, 2014), the recorded natural disasters that occurred in Suriname in the period 2007 – 2014 were on 16 different days, of which 12 days (75%) were in Paramaribo. All the hazards were flooding due to rainfall. In 14 of the days it was accompanied by heavy winds, and in 14 of the day roofs of buildings were torn.

During the period 12-18 December 2022 an online survey was conducted on threats on Water Resources in the context of the Execution of the Third National Communication of Suriname on Climate Change. The main results were as follows (Amatali, 2023):

For Paramaribo and Wanica the highest scores for the identified threats were:

- Drying out of water resources during the dry season was scored as severe for Paramaribo & Wanica for drinking water purposes.
- Salinization of the water resources during the dry season was scored as severe for Paramaribo & Wanica for drinking water supply purposes
- Pollution of the water resources was scored as severe in Wanica & Paramaribo due to domestic and industrial wastewater
- Pluvial flooding was scored highly severe

The Study area is low elevated. The area bordered by the Henck Arronstraat, Grote Combeweg, and Herenstraat is relatively high, ranging from about 3.00m NSP to 3.70m NSP, with a measured peak of 3.695m NSP. The total study area is about 550,502 m². About 2.6% of the area has a ground level equal to or lower than 1.80m NSP and about 57.2 % equal or lower than 2.20m NSP. About 75% equal or lower than 2.60m NSP and 98.4% equal or lower than 3.30m NSP.

Taking the statistical probability of the occurrence of high river water into account without sea level rise, once in 2.5 years at least 2.6% of the study area is at risk for inundation, once in 5 years at least 20.2%, once in 25 years at least 27.2% and once in 50 years 70.8%.

There are still uncertainties in the rate of climate change and sea level rise, which are already ongoing and the upper limit of sea level rise is still unknown. Accelerated sea level rise is ongoing and it is expected to increase.

When the 1.00 m sea level rise by the year 2100 scenario is taken into account, combined with the statistical probability for the occurrence of high water, once in 25 years 75,3% of the study area is at risk for inundation, once in 50 years 87,9% and once in 75 years 98,4 %.

When 2.00 m sea level rise by the year 2100 scenario is taken into account combined with the statistical probability for the occurrence of high water, once in 25 years 87,9% of the study area is at risk for inundation, once in 50 years 98,4% and once in 75 years the whole study area

Bathymetric data of MAS 2022, which are referred to in the chart datum (1.28 m below NSP) show that there is a zone in the riverbed of which the depth is equal to or deeper than 10 m in the vicinity of the wreck of Goslar, to the vicinity of the Heilige weg, which

is the deepest zone. The maximum depth of the river bed near the study area decreases towards the downstream direction. The 10m depth contour line is close to the river bank at the vicinity of the Jodenbree street, and the 8m depth contour line is near the Keizerstreet and Fort Zeelandia, indicating a stability threat to the river bank.

When the bathymetric data of 2022 is compared with bathymetric data of 1993, it is obvious that the depth of the river bed has increased significantly towards the downstream direction during the last 3 decades. This indicates that the river bed and river bank are not stable and are subjected to erosion. Moreover, the study area is located along the outer bend of the river bend which increases the probability of erosion.

The study area is drained by two pumping stations and two sluices. About 64% of the study area is drained by the pumping station at the outfall of the van Sommelsdijck Creek, about 32% by the pumping station at Knuffels gracht and the sluice near the Central Market.

In the study area there are two zones where flooding occurs frequently, namely a small narrow one close to the riverbank, at the junction of the Mr. J.C. de Miranda street and Waterkant (ground level equal to or lower than 2.20m), and a larger one located at the Western part of the study area, near de junctions Maagdenstreet, Dominee street, Jodenbree street and Neuman pad (ground level lower than 2.00m), of which half is within the study area.

Under the current conditions, there is no flooding on the road in the project area (the total study area is larger than the project area). It happened that water sometimes remains on the street due to poor inflow into the sewer.

The update of the Master Plan for the drainage of Great Paramaribo is currently in execution. In the new Master Plan a new set of standards and guidelines is being prepared. This includes climate change influences on precipitation and sea level rise. A new set of guidelines will be developed.

Conclusion and Recommendations

Conclusions

1. The study area is prone to natural hazards and the severity will increase in the future. Currently, in Paramaribo which includes the study area, pluvial flooding is dominant. Due to climate change and sea level rise, which are already ongoing, in the future, the severity of pluvial flooding will increase together with river flooding and riverbank erosion.
2. Rainfall with heavy winds ripping roofs off houses happened only rarely in the past in Paramaribo. The frequency of events of heavy rainfall accompanied by

heavy winds resulting in ripping roofs off houses in Paramaribo, which includes the study area, has increased since 2007.

3. Climate change and accelerated sea level rise are already ongoing.
4. The study area is low-lying and is highly prone to the impact of sea level rise and climate change. The ground level of more than 50% of the study area is 2.20 m NSP or lower, which is just about 1.80m above the current mean sea level. Even when there is no sea level rise, once in 25 years more than 50% of the area is at risk for flooding from the river. Combined with sea level rise this will become worst, about 75% respectively about 90% of the total study area will be at risk when a sea level rise of 1.00m and 2.00m occur by the year 2100, with the same probability. The base year of the projection is 2008.
5. Apart from the increase of rainfall intensity in the future due to climate change, the increase of river water level will increase the risk of pluvial flooding, since an increase of river water level will decrease the capacity of drainage by means of gravity.
6. Long-term sustainable measures, including natural/green measures are necessary to cope with the impact of sea level rise. This phenomenon is already ongoing and will remain an unknown factor for the future, remaining a future concern, for low-lying areas in the coastal plain close to the river
7. There is a potential risk for river bank erosion within the study area, since the depth of this area has increased at all sections near the river bank during the last 3 decades.
8. The drainage infrastructure is outdated and maintenance is overdue. The main sewage system dates from the plantation period and has not been expanded while urbanization has increased strongly.

Recommendations

River Flooding and riverbank erosion

1. Develop and implement a strategy for long-term planning for the study area to cope with the negative impact of climate change and sea level rise, and take the necessary measures.
2. Consider green measures for river bank stabilization and prevention of river flooding as much as possible for long term planning, especially related to climate change and sea level rise. Promote mangrove growth along the river bank between Fort Zeelandia and Central Market and protect the existing mangrove plants, to prevent erosion and river overflow.

3. Conduct a study on river erosion within the section Fort Zeelandia to Nieuwe Haven, including a pilot project to stabilize the riverbank using natural riverbank protection
4. Monitor the water level in the river and evaluate the highest high water during spring tide. Supply the data for research and planning, and early warning purposes.
5. Regular maintenance and inspection of the riverbank protection
6. Design the zone near the riverbank as an eco-walking park, combined with the existing and future mangrove vegetation.

Pluvial Flooding

7. Ensure the drainage system, the sluices and pumping facilities are in good condition and functioning properly. Prevent leakages of river water into the sewer system through the sluices.
8. Improve the existing drainage infrastructure and establish new sustainable measures against pluvial flooding, among others by catching excessive stormwater and temporarily storing in water reservoirs identified in the surrounding area, to reduce the risk of pluvial flooding.
9. Promote flood-resistant buildings (elevated floors and electrical system, usage of water-resistant materials)
10. Include strong roof construction of buildings, resistant to heavy winds during storms in the building codes.
11. Include climate change and sea level rise, and the increase of river water level due to spilling of excess water from the van Blommenstein lake in the planning and design of the drainage system.
12. Include climate change and sea level rise in the new standards for the design of the drainage system as part of the update of the Masterplan for drainage of Great Paramaribo
13. Implement the recommendations in the Masterplan drainage of Great Paramaribo

Overall

14. Conduct awareness programs on climate change, sea level rise and natural hazards for policy makers and stakeholders.

15. Develop and implement an emergency management system in areas prone to natural hazards including forecasting, warning and evacuation.
16. Consider flood insurance to protect property at the Waterfront from potential damage
17. Establish a (water) board for the project area in charge with the following in cooperation with the relevant governmental organization:
 - Integrated Water Management
 - Integrated planning and use of the land resources
 - Waste and wastewater management
 - Early Warning for flooding and heavy rainfall with heavy winds
 - Awareness programs for police makers and stakeholders

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ABBREVIATIONS AND ACRONYMS

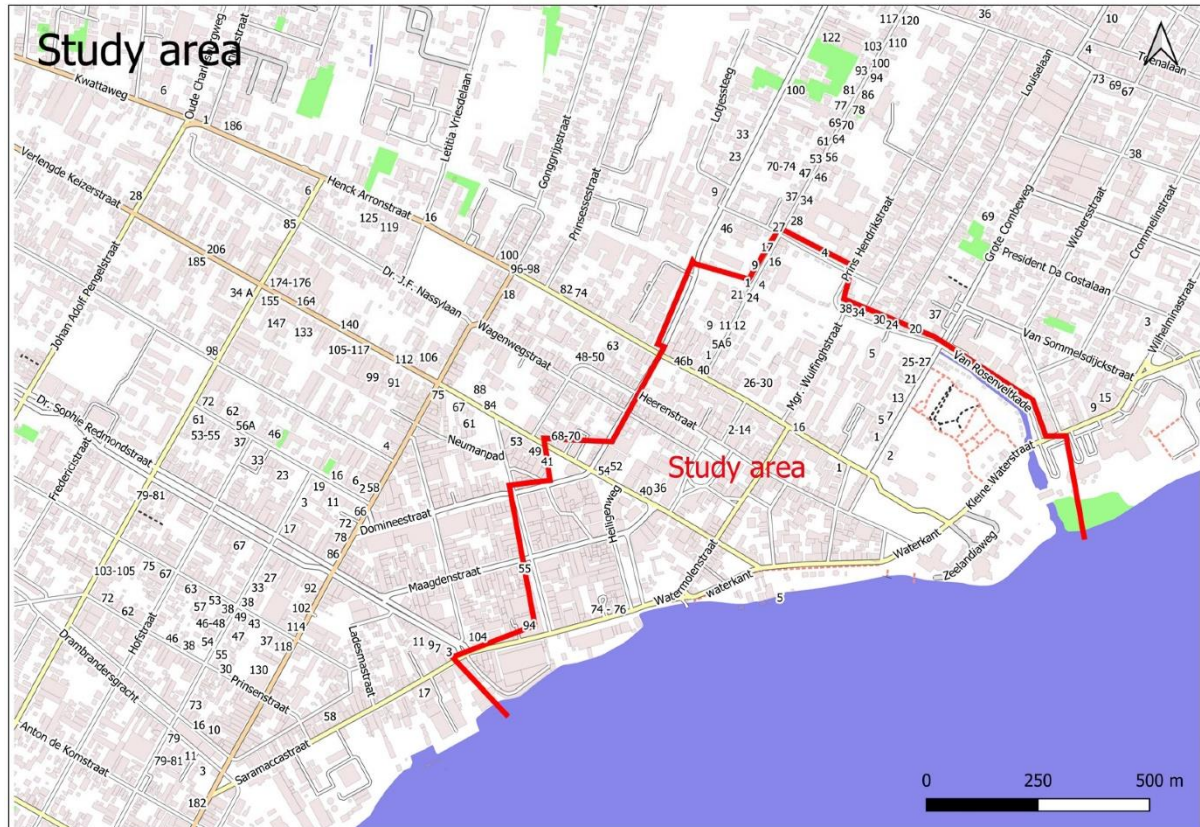
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
AR5	Fifth Assessment Report of the Intergovernmental Panel on Climate Change
CZM	Coastal Zone Management
EWS	Early Warning System
FNC	Initial National Communication to the UNFCCC
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse Gas

GIS	Geographical Information System
GLIS	Institute for management of Land registration and Land information systems (Instituut beheer van Grondregistratie en Land Informatie systemen)
GoS	Government of Suriname
ICZM	Integrated Coastal Zone Management
IPCC	Inter-Governmental Panel on Climate Change
ITCZ	Inter-Tropical Convergence Zone
MAS	Maritime Authority in Suriname (Maritieme Autoriteit van Suriname)
MDS	Meteorological Service Suriname (Meteorologische Dienst van Suriname)
MOGP	Masterplan Urban Drainage Greater Paramaribo 2001 (Masterplan Ontwatering Groot Paramaribo 2001)
MSL	Mean Sea Level
NAP	National Adaptation Plan 2019-2029
NC2	Second National Communication to the UNFCCC
NC3	Third National Communication to the UNFCCC
NCCR	National Coordination Centre for Emergency (Nationaal Coördinatie Centrum voor Rampenbeheersing)
NDC	Nature Conservation Division (Natuurbeheer)
NSP	National datum (Normaal Surinaamse Peil)
OW	Ministry of Public Works (Ministerie van Openbare Werken)
ROM	Ministry of Spatial Planning and Environment (Ministerie van Ruimtelijke Ordering en Milieu)
ROS	Ministry of Regional Development and Sport (Ministerie van Regionale Ontwikkeling en Sport)
SLR	Sea Level Rise
SNC	Second National Communication to the United Nations Framework Convention on Climate Change
SOC	State of Climate Report: Suriname
UNFCCC	United Nations Framework Convention on Climate Change
WLA	Hydraulic Research Division (Waterloopkundige Dienst)

I Introduction

The study area is located along the Left Bank of the Suriname River and is within the city of Paramaribo, about 20 km upstream of the outfall, measured along the thalweg¹, and about 8 km South of the coastline. The total area is about 0.550 km².² The South-Western part is within the administrative Resort “City Centre”, which is about 55% of the total area, and the remaining North-Eastern part within Resort Rainville, see Figure 1.

Figure 1. Study Area



¹ The thalweg is a line drawn to join the lowest points along the entire length of a stream bed or valley in its downward slope, defining its deepest channel

² Compared with real measured distances and areas, it appeared that measurements by means of Google Earth are greater than the real values. Measurements by means of GIS tools give results, closer to the measured values. A possible reason is that the measurements with Google Earth are not along a straight line. The measurements are along an arc

II. Baseline

II.1 Climate

The climate of Suriname is tropical with sufficient rainfall, uniform temperature, and high humidity. The migration of the Inter Tropical Convergence Zone (ITCZ) over Suriname is responsible for the seasons. Suriname has two wet and two dry seasons. The beginning and the end of the seasons are not simultaneous for all areas. During the rainy season the ITCZ is above our country. Most of the precipitation is measured during the rainy seasons. Local and regional disturbances are also responsible for the amount of rainfall (GBS, 2022).

Suriname has four seasons, namely (GBS, 2022);

1. The short rainy season, (early December to early February)
2. The short dry season, (early February to mid-April)
3. The long rainy season, (mid-April to mid-August)
4. The long dry season, (mid-August to early December).

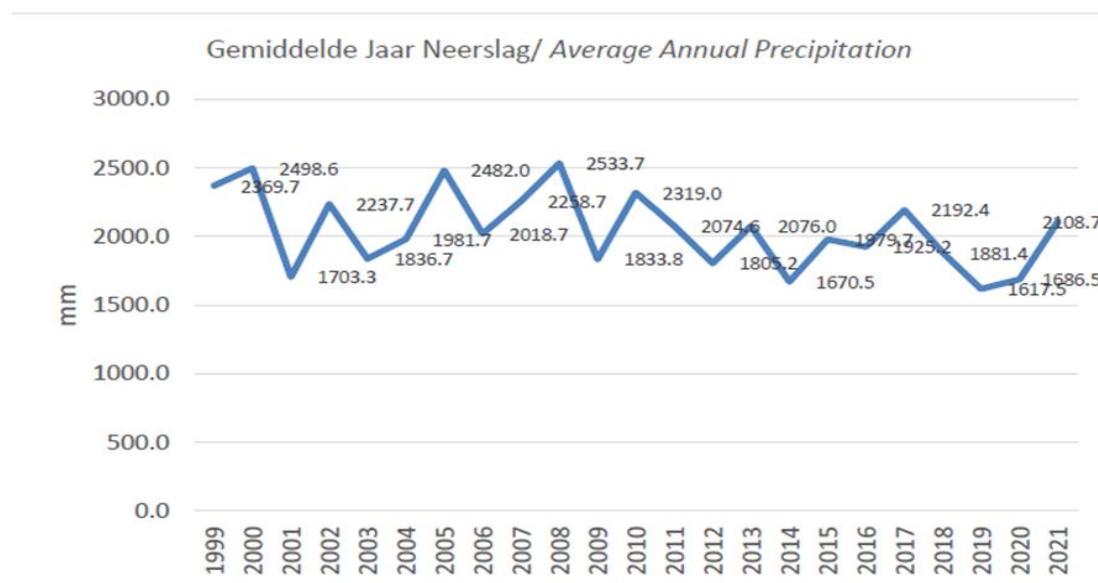
During the dry seasons there is relatively less precipitation. The months with the lowest amount of precipitation are September and October and the months with the highest amount of precipitation are May and June.

Precipitation

During the period 2017-2021, the average yearly precipitation was 1,897.30 mm (GBS, 2022)

In Figure 2 the variations of the average annual precipitation over the period 1999 – 2021 are presented. A decreasing trend can be recognized.

Figure 2. Average Annual Precipitation (GBS, 2022)

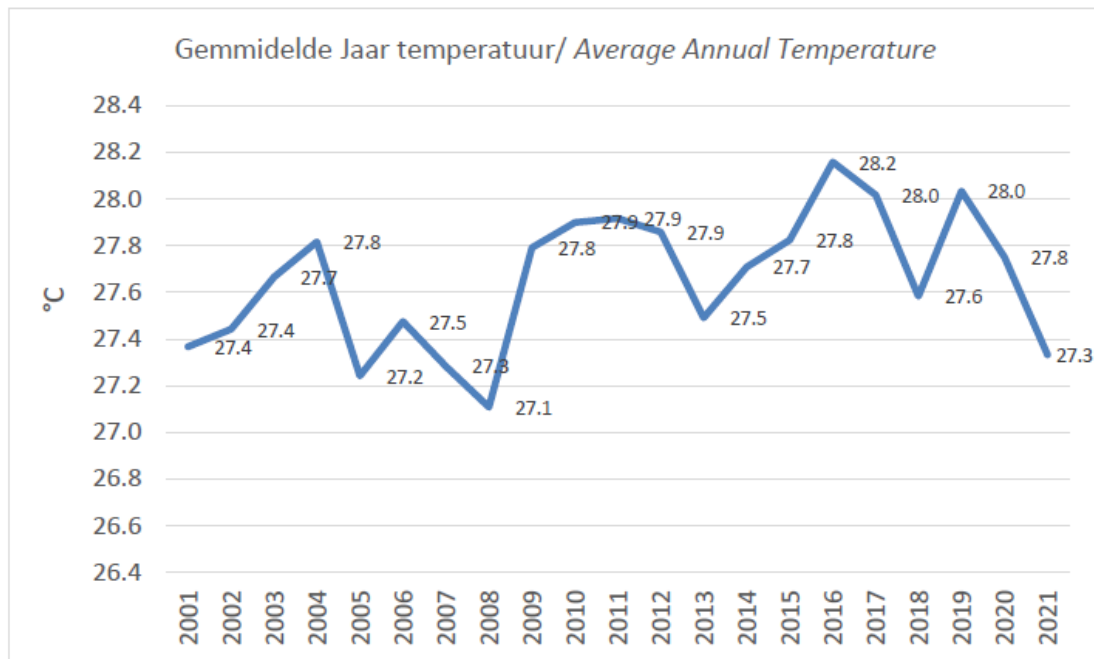


Grafiek 2.2: Gemiddelde neerslagtotalen (mm) in Suriname, 1999-2021
Graph 2.2: Average Precipitation Totals (mm) in Suriname, 1999-2021

Temperature

During the period 2017-2021 the average annual temperature was 27.8 °C. The average minimum temperature was 24.0 °C and the average of the maximum temperature was 31.1 °C. In Figure 3 the variations of the average annual temperature over the period 1999 – 2021 are presented (GBS, 2022). An increasing trend can be recognized.

Figure 3. Average Annual Temperature (GBS, 2022)



Grafiek 2.3: Gemiddelde jaarlijkse temperatuur (°C) in Suriname, 2001-2021
Graph 2.3: Average Annual Temperature (°C) in Suriname, 2001-2021

Bron/ Source: Meteorologische Dienst Suriname / Meteorological Service Suriname

Winds

The trade winds, the northeast, and southeast trades, blow throughout the year over Suriname. The winds are fairly constant, from the East. The average wind speed during the period 2017 – 2021 was 1.68 Beaufort.

II.2 Suriname River

The study area is located on the Left Bank of the Suriname River, about 20 km from the outfall. The river flow is tidal, with two tides a day. The extreme water level in the Suriname River during the period from 2016 to 2021 was as follows:

Water level Suriname River at Paramaribo (Data Source MAS)

Year	Annual maximum water level (m NSP)	Annual minimum water level (m NSP)
2021	2.16	-0.77
2020	2.20	-0.80
2019	2.19	-0.88
2018	--	--
2017	2.10	-1.08
2016	2.20	-0.93

The study area is located just downstream of the Paramaribo River Bend, near the outer bend. In the river near the river bend there is a wreck of the Goslar, a ship dated from the Second World War. Since the project area is close to the outer bend it is expected that the velocity of the water flow velocity close to the riverbank is high. Combined with the presence of the Goslar the water flow near the river bend becomes more turbulent. Under such conditions the maximum water flow velocity close to the river bank may be as high as 1.25 to 1.50 m/s (Amatali, 2021), which was the case at Suzanna's Daal, located about 8 km downstream, at the right bank on the outer bend of the next river bend.

In August 2021 the water quality measurements were conducted in the Suriname River at Suzanna's Daal at about 5 meters from the riverbank, during a complete tidal cycle. The results were as follows (Amatali, 2021):

- Conductivity ranged from 0.252 to 26.320 mS
- Salinity ranged from 0.40 to 16.6 ppt
- TDS (Total Dissolved Solids) ranged from 0.305 to 17.010 g/l
- Water temperature ranged from 29.2 to 30.3 °C

II.3 Climate Scenarios

Research has been done as part of the Third National Communication to the UNFCCC (NC3) project and it is estimated that since 1956 the sea level in Suriname has risen about 40 cm. When a linear extrapolation is done the sea level rise is estimated at 51.3 cm by the year 2100, with 2008 as the base year (Amatali, 2023). In the Second National Communication to the UNFCCC (NC2) a projection of sea level rise of 1.00m by the year 2100 the projections from AR4 were taken into account, based on the A2 and B2 scenarios with the statistical probability of occurrence of high-water level, future storm surges, soil subsidence and local conditions. (Government of the Republic of Suriname, 2023). The projections for the B2 scenario (moderate emission scenario) range from 0.23 to 0.43 m, and for the A2 scenario (worst emission scenario) range from 0.23-0.51m. In the AR5, which is the most recent, the projections for the RCP 4.5 scenario (moderate) range between 0.32 to 0.63m, with a median of 0.47m and for the RCP 8.5 scenario (worst case) from 0.45 to 0.82m, with a median of 0.63m. It should be noted that the analysis of the IPCC is based on peer reviewed publication. The process of peer reviewing up to the publication may take time, whilst in the meantime more recent research is conducted.

Referring to the aforementioned projections the estimated sea level rise of 0.513m by the year 2100 is close upper limit of the A2 scenario (0.51m) from the AR4 and the

median for the RCP 8.5 scenario from the AR5. Still as in the NC2 including the statistical probability of occurrence of high water levels, future storm surges, soil subsidence and local conditions, the total sea level rise is estimated at 1.00m by the year 2100.

In the AR4 the rapid dynamical changes of ice flow have not been taken into account. These are still unknown factors which will accelerate the sea level rise. Sea level rise and accelerated sea level rise are already ongoing. When an exponential extrapolation is employed taking acceleration of the sea level rise into account, the sea level is estimated at 2.11m by the year 2100 with 2008 as base year (Amatali, 2023).

The climate projections for the NC3 are based on the A2 and B2 IPCC scenarios by the year 2100, as follows (GoS, 2023).

1. The overall annual mean air temperature in Suriname will increase with 2-3°C by the year 2100;
2. The overall annual mean precipitation will decrease with 10% by the year 2100;
3. While precipitation will decrease, the intensity of rains will increase and become rarer;
4. The duration of the dry seasons will increase;
5. Increase in weather extremes, including high winds;
6. Maximum wind speed is expected to increase moderately;
7. Sea level will rise by 1.0 m by the year 2100

III Natural Hazards

II.1 Introduction

According to Global Facility for Disaster Reduction and Recovery (GFDRR, 2020), existing natural hazards are: wildfire, coastal flood, urban flood, river flood, tsunami, extreme heat, landslide, earthquake, water scarcity and cyclone. A classification of the occurrence of these hazards in the Surinamese territory is presented in Table 1 below.

Table 1. Overview Natural Hazard Suriname

Source: GFDRR (2020)

Type of Hazard	Overall classification Suriname	Classification Paramaribo District	Method of classification and remarks.
Wildfire	High	Low	According to the information currently available.
Coastal flood	High	High	According to the information that is currently available. High: Potentially-damaging waves are expected to flood the coast at least once in the next 10

			years. The impact of coastal flood must be considered in different phases of projects for any activities located near the coast. Project planning decisions, project design, and construction methods must take into account the level of coastal flood hazard.
Urban flood	High	High	Based on modeled flood information currently available. High: Potentially damaging and life-threatening urban floods are expected to occur at least once in the next 10 years. Project planning decisions, project design, and construction methods must take into account the level of urban flood hazard
River flood	High	High	Based on modeled flood information currently available High: Potentially damaging and life-threatening river floods are expected to occur at least once in the next 10 years. Project planning decisions, project design, and construction methods must take into account the level of river flood hazard
Tsunami	Medium	Medium	According to the information that currently is available. Medium: More than a 10% chance of a potentially-damaging tsunami occurring in the next 50 years. Project planning decisions, project design, and construction methods should take into account the level of tsunami hazard.
Extreme heat	Medium	Medium	Based on modeled heat information currently available. Medium: More than a 25% chance that at least one period of prolonged exposure to extreme heat, resulting in heat stress, will occur in the next five years. Project planning decisions, project design, and construction methods should take into account the level of extreme hazards.
Landslide	Low	Very low	According to the information currently available. Low: Localized landslides uncommon hazard phenomenon. Climate change is likely to alter slope and bedrock stability through changes in precipitation and/or temperature.
Earthquake	Very low	Very low	According to the information currently available. Very low:

			Less than a 2% chance of potentially damaging earthquake shaking in the next 50 years. Earthquakes need not be considered in different phases of projects.
Water scarcity	Very low	Very low	According to the information available. Very low or non-existent: Additional information may show some level of hazard. Further research or additional information sources are needed. If local or additional information sources suggest that there is a drought hazard. Hazard level may increase in the future due to the effects of climate change. Design projects need to be robust to increased drought hazard and water scarcity in the long-term.
Cyclone	Very low	Very low	According to the information that is currently available. Very low: Less than a 1% chance of potentially-damaging cyclone-strength wind in the next 10 years. Due to climate change global average tropical cyclone wind speed and rainfall are likely to increase in the future.

Additional to the classification of GDR the risk for natural hazards in Paramaribo currently storms with heavy winds occur in the study area (GBS, 2022). There is a risk for river erosion already (see III.3.1). Strong winds, resulting in swell of the Ocean, extra rise of the tide and flooding already occur at Weg naar Zee, North of Paramaribo more than once in 10 years. Drying out of water resources is already an issue, see results 12-18 December 2022 online stakeholder survey (Amatali, 2023b)

Additionally, data from GFDRR (2020) statistical data from the General Bureau of Statistics Suriname (GBS) give a clear overview of the current actual condition. In Table 2 to 6 an overview is presented of the registered natural disasters of 2017, 2018, 2019, 2020 and 2021 respectively, which occurred in Suriname. According to this data during the period 2017 to 2021 the registered natural disasters occurred in total 39 days, which were not in subsequent days, whereby a total of 283 households were affected. All of the disasters were rainfall related, of which in 28 of the 39 days the rainfall events (71.8 %) were accompanied by heavy wind. In at least 20 of days with heavy rainfall and heavy winds, the roofs of houses and buildings were torn away. During 29 of the 39 days (74.4%) when the rainfall related hazard occurred, these hazards occurred in Paramaribo

In 2022 severe flooding occurred during the period January to September 2022, which was pluvial flooding combined with river ones. The flooding mostly affected the interior of the country (District Sipaliwini and Brokopondo). Totally 3,810 persons were affected, 3,253 in Sipaliwini and 557 in Brokopondo (GBS, 2022).

Table 2. Overview of natural disasters in 2017 in Suriname. Source: GBS, 2022

Type	Total duration days	Location	Area mostly effected	Number Household effected
Severe flooding. Pluvial and river flooding	3	Interior	Villages were flooded	--) ¹
Heavy Rainfall with heavy winds. Pluvial flooding	5	Paramaribo, Wanica, Commewijne	Roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.	79
Tail of a heavy tropical storm (heavy rainfall)	1	Paramaribo, Wanica, Commewijne	Roofs torn away	30
Total	9			109

¹ = zero

Table 3. Overview of natural disasters in 2018 in Suriname. Source: GBS, 2022

Type	Total duration (days)	Location	Area mostly effected	Number Household effected
Heavy Rainfall with heavy winds.	7	Paramaribo, Commewijne, Marowijne, Saramacca	Roofs torn away Partly Flooded	22
Heavy rainfall with flooding	1	East of Suriname	Due to poor drainage, there is a lot of flooding and the schools have been closed for some time.	--) ¹
Total	8			22

¹ = zero

Table 4. Overview of natural disasters in 2019 in Suriname. Source: GBS, 2022

Type	Total duration (days)	Location	Area mostly effected	Number Household effected
Heavy Rainfall with heavy winds.	10	Paramaribo, Wanica, Commewijne	were flooded. Roofs torn away. trees uprooted and damaged power poles, advertising signs and street lighting at some location	68
	2	Paramaribo not included	Roofs torn away	6
Heavy rainfall with flooding				
Total	12			74

Table 5 Overview of natural disasters in 2020 in Suriname. Source: GBS, 2022

Type	Total duration (days)	Location	Area mostly effected	Number Household effected
------	-----------------------	----------	----------------------	---------------------------

Heavy Rainfall with heavy winds.	1	Paramaribo, Nickerie	Roofs torn away.	--) ¹
	2	Paramaribo not included	Roofs torn away	3
Heavy rainfall with flooding				
Total	3			3

¹ = zero

Table.6 Overview of natural disasters in 2021 in Suriname

Type	Total duration (days)	Location	Area mostly effected	Number Household effected
Heavy Rainfall with heavy winds.	5	Paramaribo, Wanica, Para.	Roofs torn away Fire and heavy wind at some location.	47
	2	Paramaribo not included	Roofs torn away and in some case collapsed	18
Total	7			75

According to data from the General Bureau of Statistics (GBS, 2014), the recorded natural disasters that occurred in Suriname in the period 2007 – 2014 were on 16 different days, of which 12 days (75%) were in Paramaribo. All the hazards were flooding due to rainfall. In 14 of the days it was accompanied by heavy winds, and in 14 of the day roofs of buildings were torn.

Rainfall with heavy winds ripping roofs off houses happened only rarely in the past in Paramaribo. The frequency of events of heavy rainfall accompanied by heavy winds resulting in ripping roofs off houses in Paramaribo, which includes the study area, has increased since 2007.

Although according to the data of GBS, natural disasters in Suriname during the period 2019-2022 was only rainfall related, attention will also be paid in this report on flooding due to intrusion of river water and sea level rise, and riverbank erosion. Suriname is highly vulnerable to sea level rise, and these hazards will become much more severe as climate change and sea level rise progress.

During the period 12-18 December 2022 an online survey was conducted for relevant stakeholders in the Water Resources in the context of the execution of the Third National Communication of Suriname on Climate Change (Amatali, 2023b). The most important threats related to water resources and climate change, which emerged from the Baseline Study, were scored for severity by the participating stakeholders. These threats are:

- Drying out of the water resources in the dry season
- Pollution of the water resources
- Salinization of the water resources in the dry season
- Flooding

A summary of the results of the survey is as follows.

The impacts of the threats on the sectors and the type of wastewater and flooding are:

- Drying out of water resources during the dry period has the most severe impact on drinking water supply and in the agricultural sector
- Salinization of the water resources during the dry period has the most impact on drinking water supply and in the agricultural sector
- Pollution of water resources is mainly caused by domestic and industrial wastewater
- In all districts pluvial flooding during the wet season is severe. Depending on the location this may be combined with the intrusion of river or ocean water

For Paramaribo and Wanica the highest score for the identified threats were:

- Drying out of water resources during the dry season was scored as severe in Paramaribo & Wanica for drinking water purposes.
- Salinization of the water resources during the dry season was scored as severe in Paramaribo & Wanica for drinking water supply purposes
- Pollution of the water resources was scored as severe in Wanica & Paramaribo due to domestic and industrial wastewater
- Pluvial flooding was scored as highly severe in Paramaribo

III.2 Flooding

Paramaribo, including the study area, is low-lying and flat. These low-lying areas are threatened by the high-water level in the river and erosion, causing river and coastal flooding. Due to the low ground level gravity drainage becomes difficult. During periods of heavy rainfall, flooding can worsen when it occurs simultaneously with high river water levels.

III.2.1 Flooding by Intrusion of River Water

Flooding of the study area due to the intrusion of river water depends mainly on the topography of the area and the water level in the river. There is only limited data on the topography of the study area. On request of the consultant the topography has been measured by surveying company NV ENSUR in January 2023.

The probability of the water level in the Suriname River at Paramaribo was estimated in 1999 (Amatali and Naipal, 1999). This probability has been updated in the context of this study. Water level data of the Suriname River at Paramaribo has been provided by the Hydraulic Research Division (WLA) (1962-2016) and the Maritime Authority Suriname (MAS) (2013-2022).

II.2.1.1 Ground Level

The ground level has been measured by Surveying company NV ENSUR, using the RTK method. The ground level within the study area and vicinity have been measured

at about 300 selected locations in- and outside of the study area (see Appendix 3). Contour lines were constructed for 1.80m, 2.00m, 2.20m, 2.40m, 2.60m, 2.80m, 3.00m, 3.30m, 3.50m and 3.60m with reference to NSP (Normaal Surinaamse Peil, the national datum), based on the measured ground levels. In Figure 5 ground level zones within the study area are presented, using the abovementioned contour lines.

In figure 5 the ridge on which the Henck Arron street is constructed can be recognized. The section bordered by the Henck Arronstraat, Grote Combe'weg and Herenstraat is relatively high, ranging from about 3.00m NSP to 3.70m NSP, with a measured peak of 3.695 m NSP. At the North-East and South-West of this section, it is lower elevated, with some spots lower than 1.80m NSP. Outside of the study area, at the North-East there are zones in which the ground level is lower than 1.50 m NSP. Along the river, there is a fringe of which the elevation is lower than 1.50 m NSP.

Table 7. Areas within ground-level ranges

Elevation range (m NSP)	Total area (m ²)	% of study area
Equal or less than 1.80	14,434.12	2.6
Higher than 1.80 to 2.00	96,879.25	17.6
Higher than 2.00 to 2.20	203,537.5	37.0
Higher than 2.20 to 2.40	74,893.04	13.6
Higher than 2.40 to 2.60	24,544.66	4.4
Higher than 2.60 to 2.80	42,306.23	7.7
Higher than 2.80 to 3.00	27,365.88	5.0
Higher than 3.00 to 3.30	28,663.93	5.2
Higher than 3.30 to 3.50	29,001.12	5.3
Higher than 3.50 to 3.60	47,80.27	0.9
Higher than 3.60	4,096.24	0.7
Total Area of the study area	550502,2	100

In Table 7 the total areas of zones within different ground level intervals are presented, and in Figure 4 a graphical presentation of the percentages of the ground-level zones related to the total area of the project. In Figure 5 the different ground-level zones are presented.

In Figure 7 to 15 the areas for which the ground level is equal or less than the constructed contour lines are presented, namely the contour lines 1.80m, 2.00m, 2.20m, 2.40m, 2.60m, 2.80m, 3.00m, 3.30m, 3.50m and 3.60m, with reference to NSP. The size of these areas is presented in Table 8, with its percentage compared to the total area of the study area. In Figure 6 this is presented graphically. The total study area is about 550,502.20 m², which is measured by means of a GIS³ tool.

³ Compared with real measured distances and areas, it appeared that measurements by means of Google Earth are greater than the real values. Measurements by means of GIS tools give results, closer to the measured values. A possible reason is that the measurements with Google Earth are not along a straight line. The measurements are along an arc.

Figure 4. Distribution of the Elevation Zones

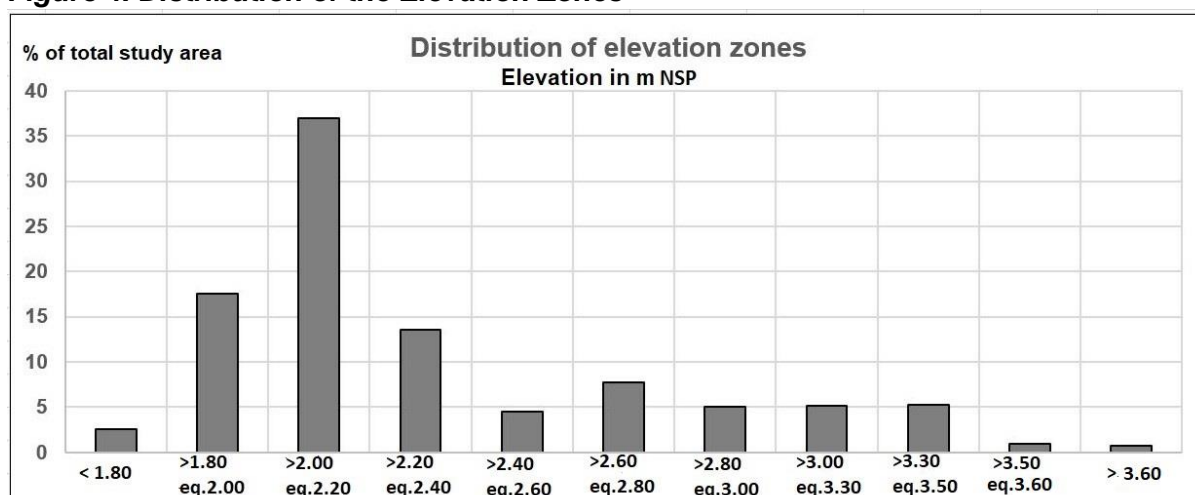


Table 8. Zones with ground level equal or lower than selected elevations

Elevation range (m NSP)	Area (m2)	% of the study area
Equal or less than 1.80	14434,12	2,6
Equal or less than 2.00	111313,4	20,2
Equal or less than 2.20	314850,9	57,2
Equal or less than 2.40	389743,9	70,8
Equal or less than 2.60	414288,6	75,3
Equal or less than 2.80	456594,8	82,9
Equal or less than 3.00	483960,7	87,9
Equal or less than 3.30	512624,6	93,1
Equal or less than 3.50	541625,7	98,4
Equal or less than 3.60	546406	99,3
Total Area of the study area	550502,2	100.0

Figure 5. Ground level zones study area

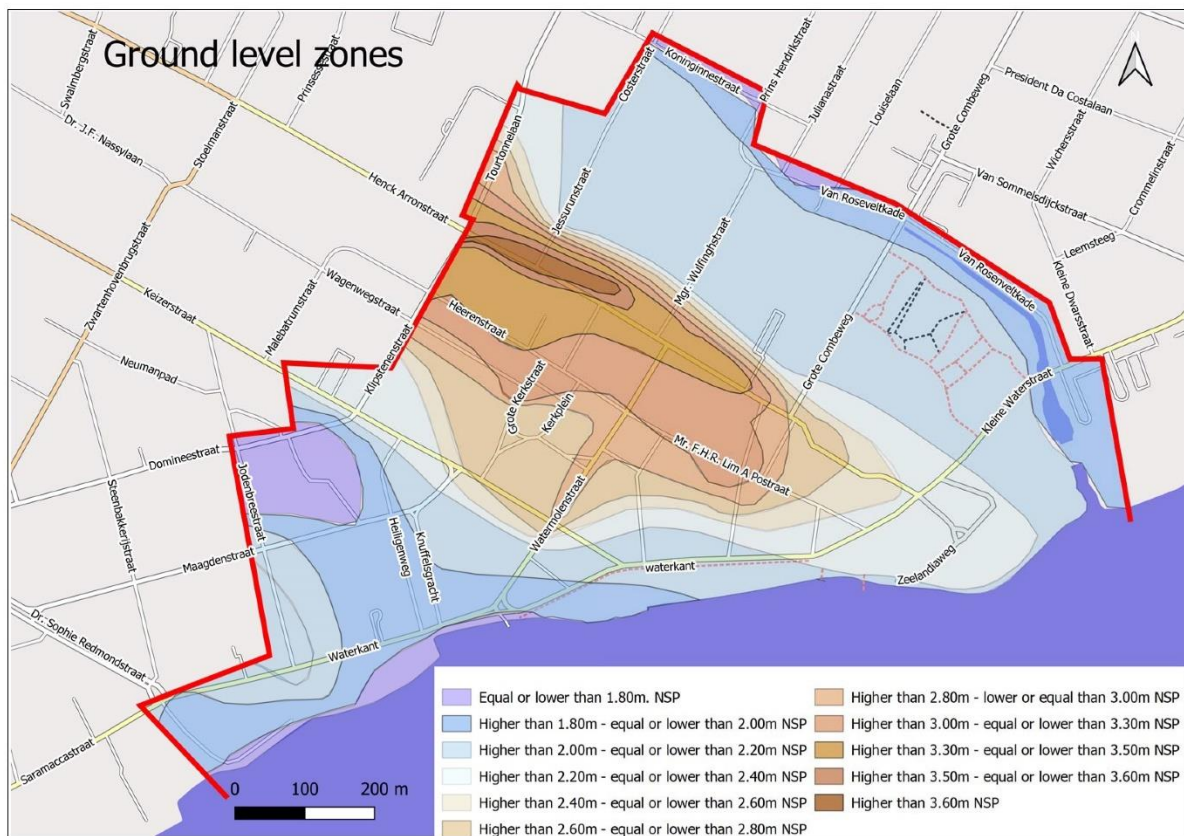


Figure 6. Relationship Area and ground level in the Study Area.

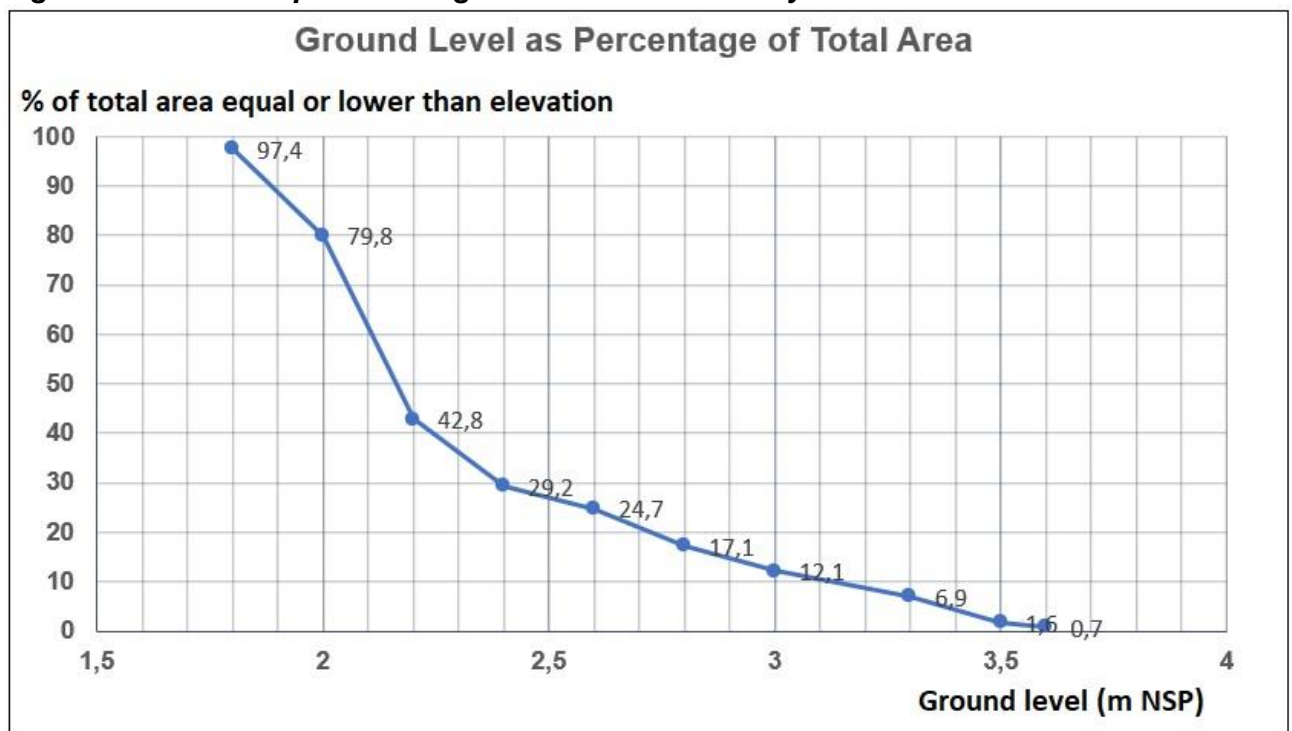


Fig 7. Areas with ground level of 1.80m NSP or lower



Fig 8. Areas with ground level of 2.00 m NSP or lower



Fig 9. Areas with ground level of 2.20 m NSP or lower

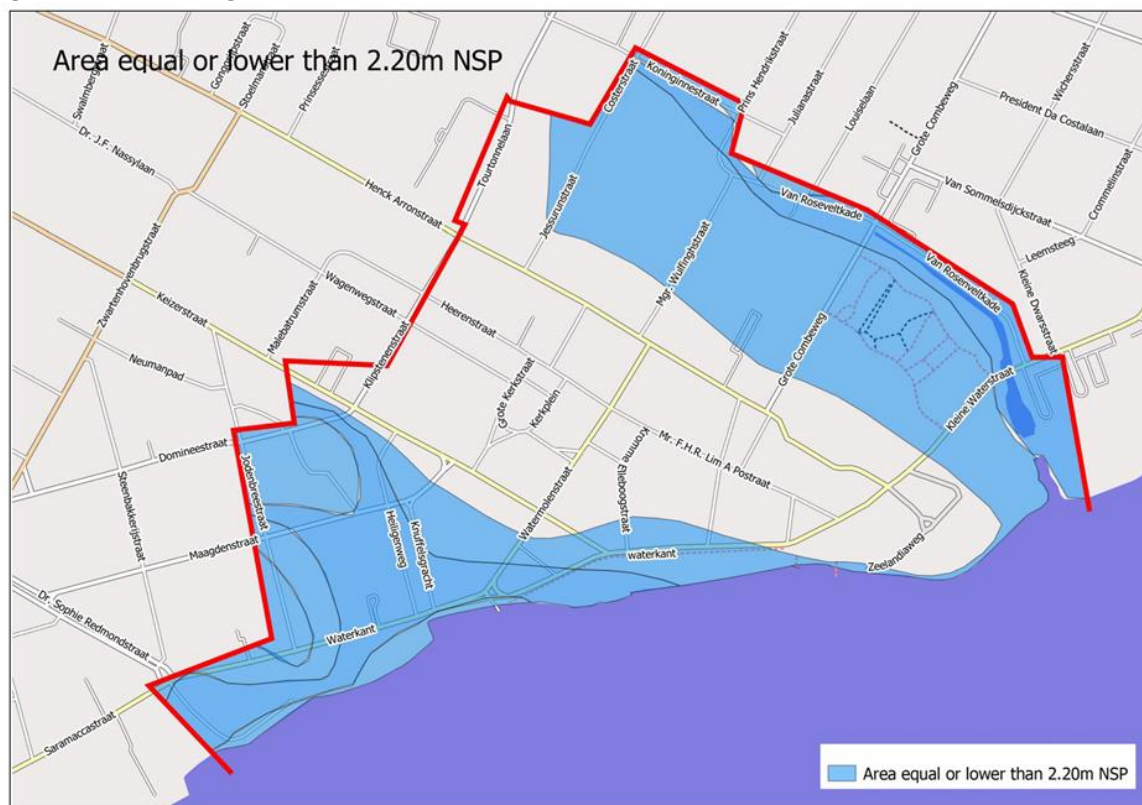


Fig 10. Areas with ground level of 2.40 m NSP or lower

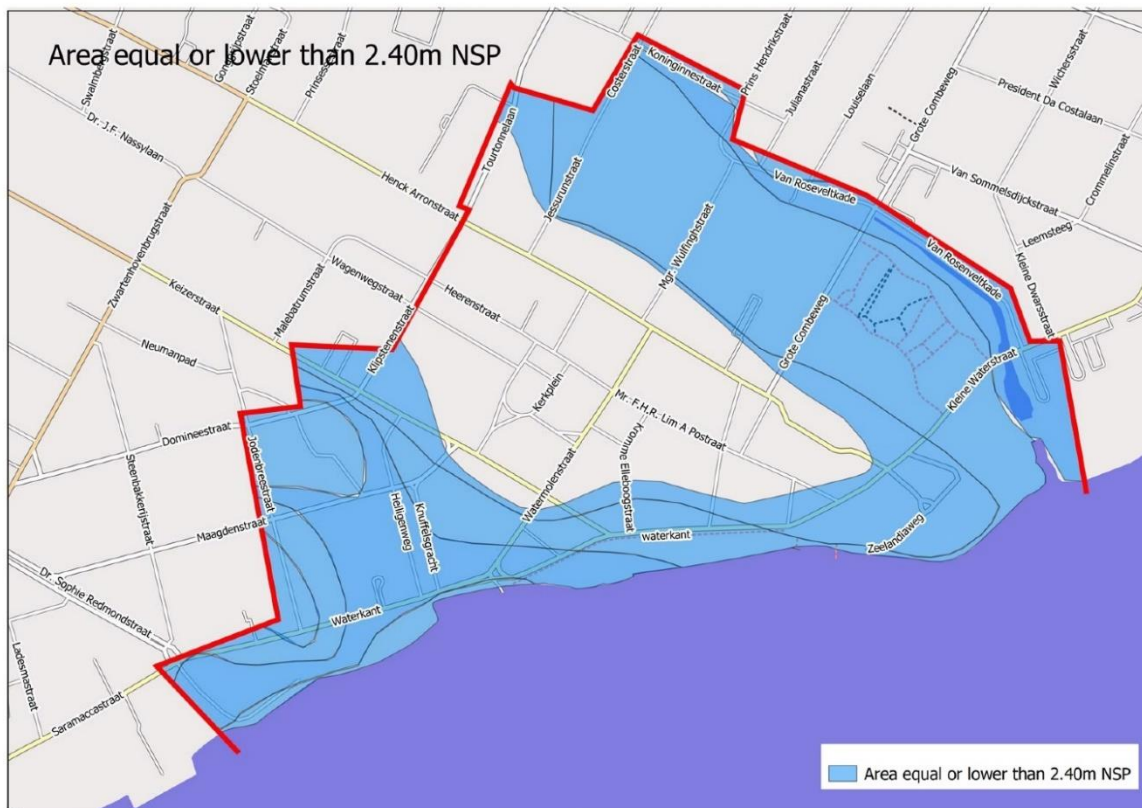


Fig 11. Areas with ground level of 2.60 m NSP or lower

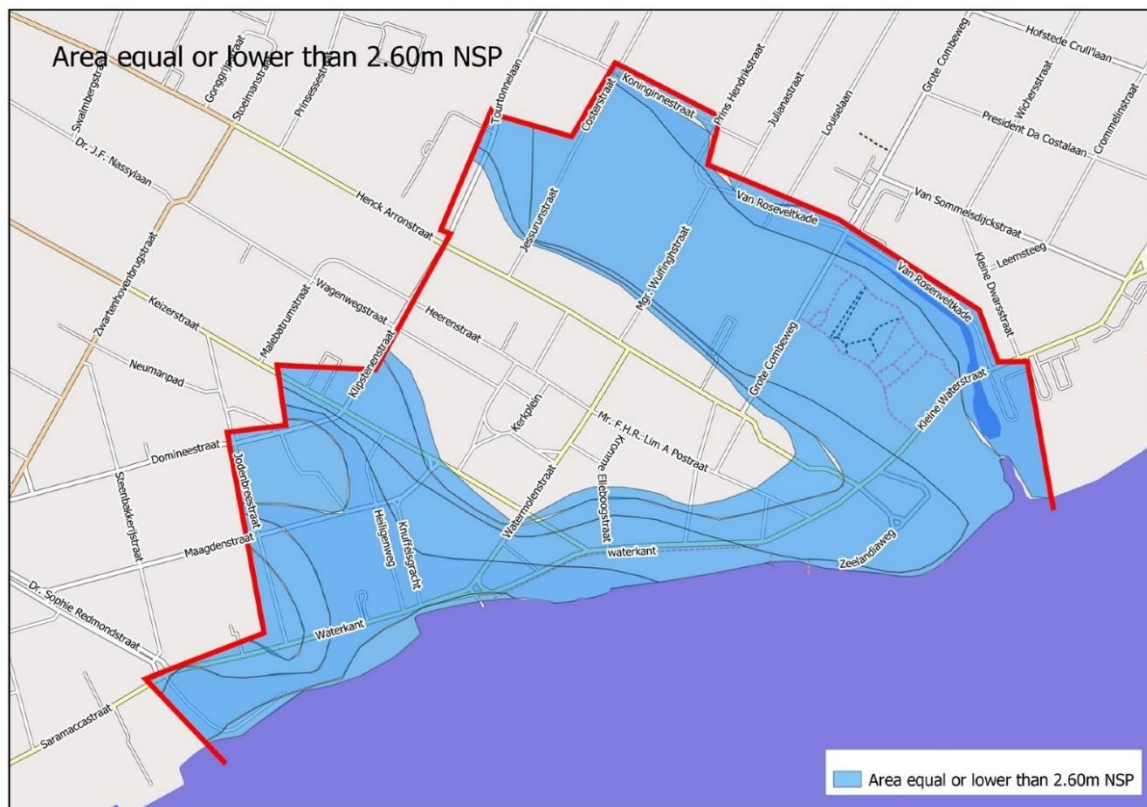


Fig 12. Areas with ground level of 2.80m NSP or lower

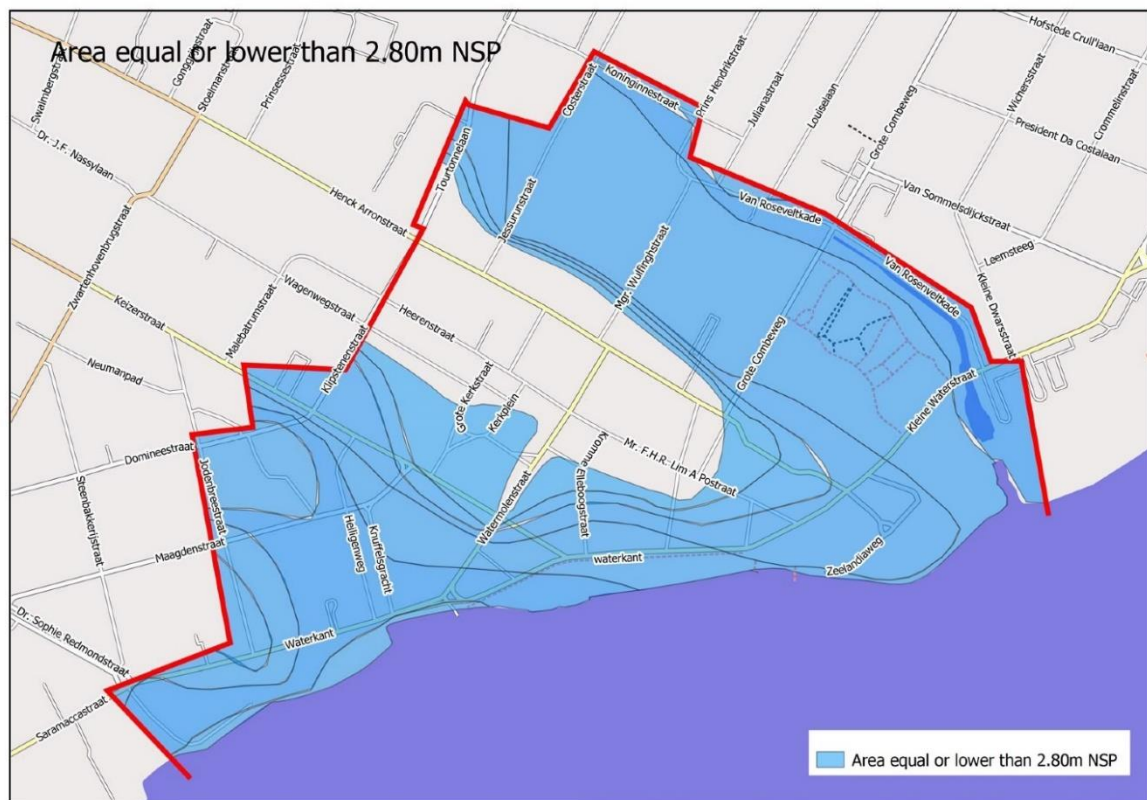


Fig 13. Areas with ground level of 3.00 m NSP or lower

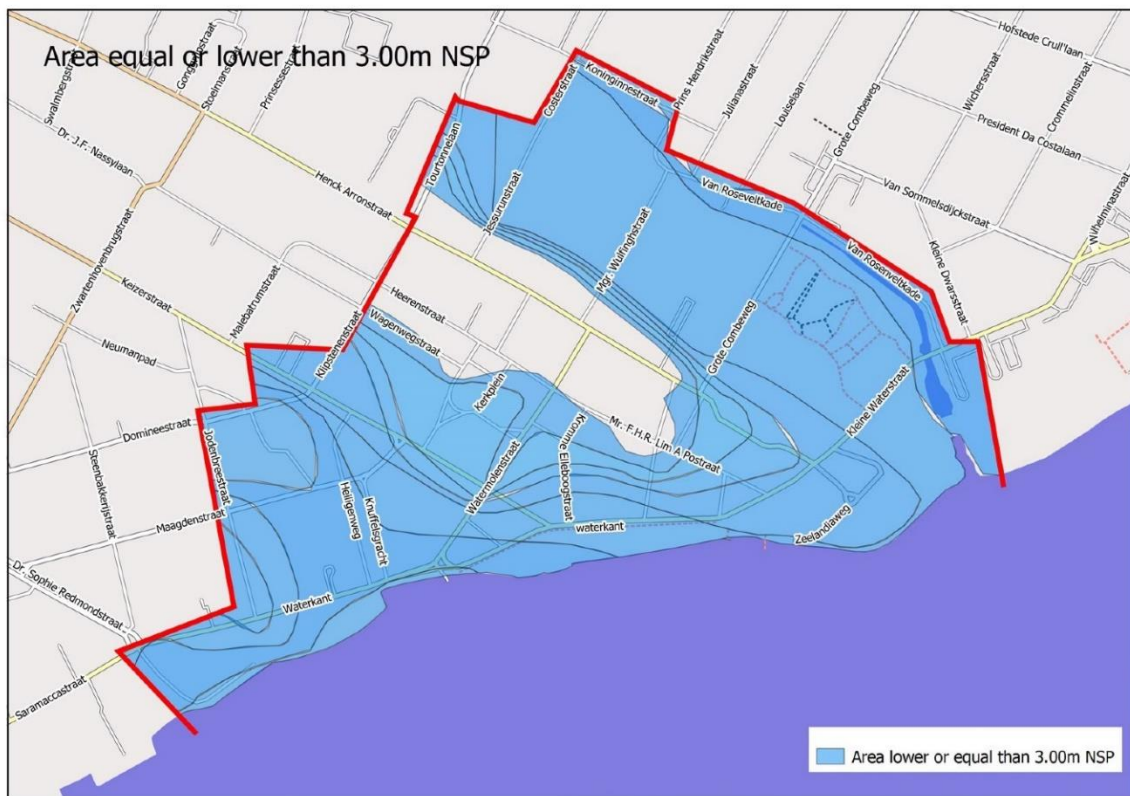


Fig 14. Areas with ground level of 3.30 m NSP or lower

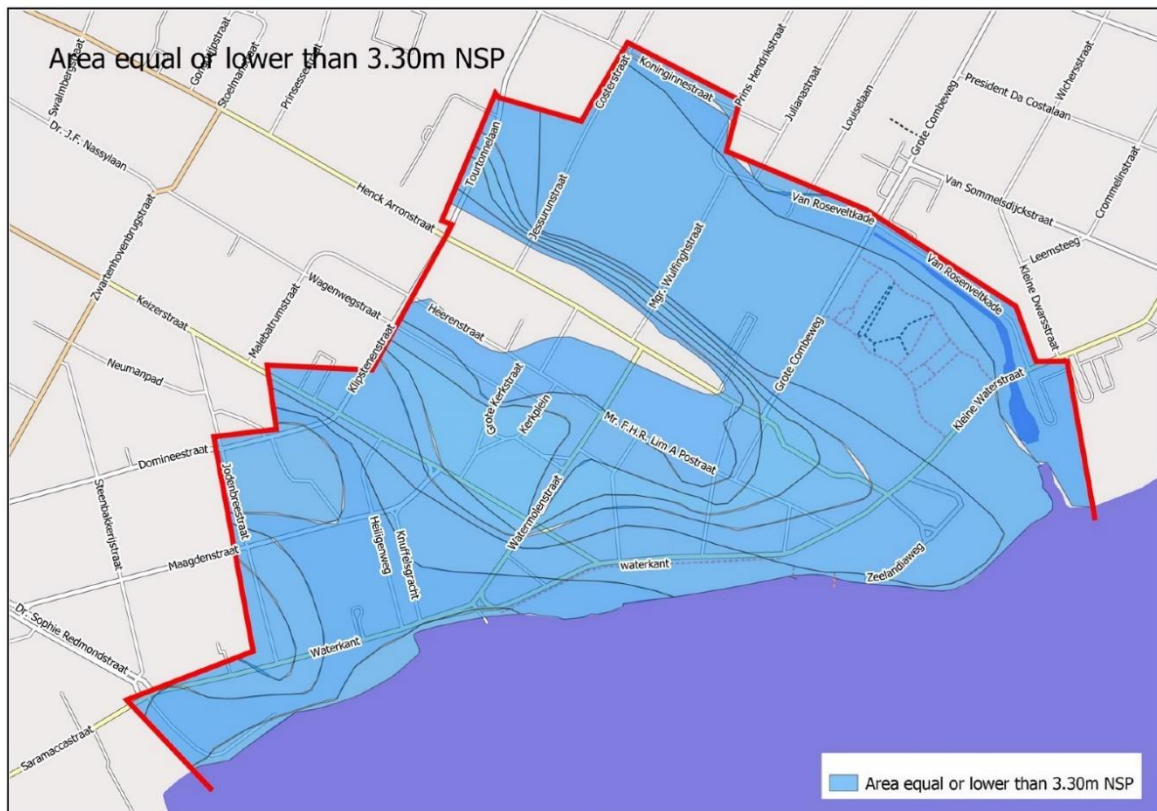
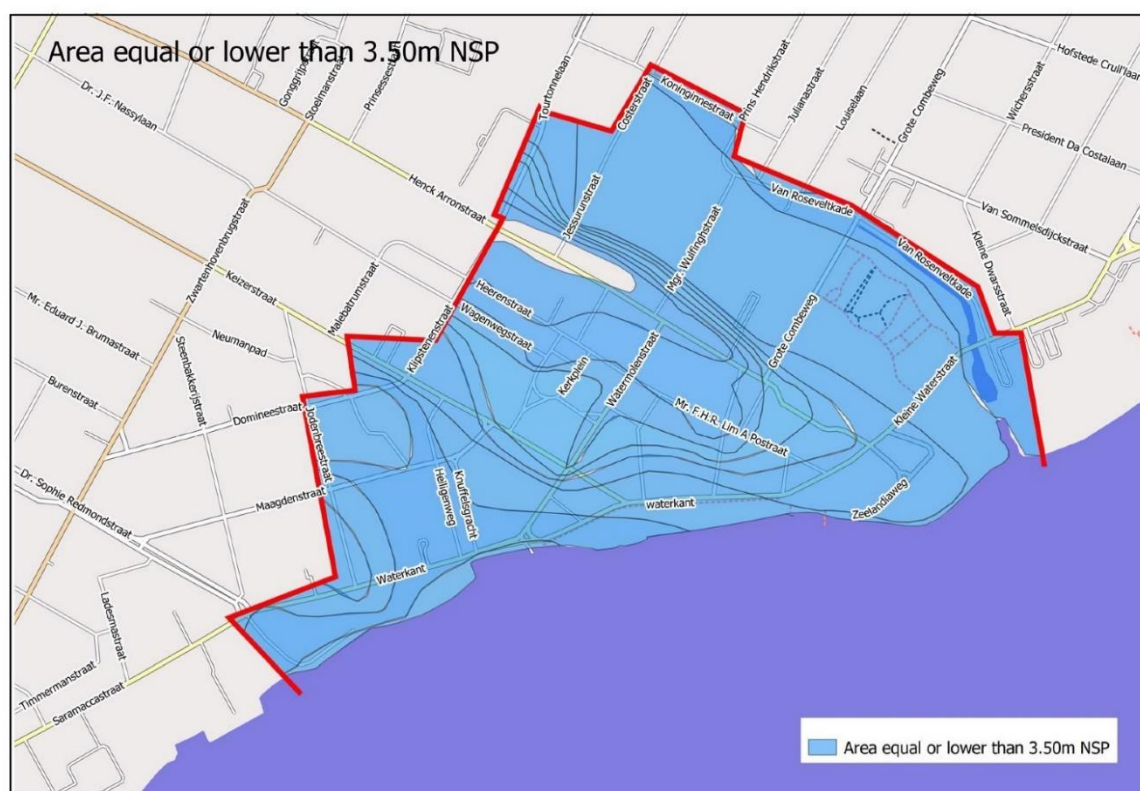


Fig 15. Areas with ground level of 3.50 m NSP or lower



III.2.1.2 Water Level in the Suriname River

The mean high-water level in the Suriname River is about 1.20 m NSP (Amatali, 2008). The probability of the high-water level in the Suriname River at Paramaribo was estimated in 1999 (Amatali and Naipal, 1999) (Table 9). The probability of high-water level in Paramaribo has been updated using data from WLA and MAS up to 2022. The updated probability of the water level will be used in this report to estimate the risk for flooding.

Probability Highest High-Water Level

The probability of the water level is updated in the context of this Study, employing the Gumbel distribution, which is commonly used in hydrological analysis. The updated probabilities of the water level expressed in return periods are presented in table 9 as well as the former probabilities.

Sea Level Rise

Sea level rise and accelerated sea level rise are processes that are already ongoing. Referring to Section II.3, in this rapport, two scenarios for sea level rise will be taken into account, a sea level rise of 1.00m and 2.00m by 2100 with 2008 as the base year.

Table 9. Probability of High Water Level Suriname River at Paramaribo

Tr)* (Years)	Highest High Water Level (cm NSP) Data 1962-2022 Updated	Highest High Water Level (cm NSP) Data 1962-1999 (Amatali and Naipal, 1999)
2,5	192.9	--
5	204.8	--
10	215.6	201.0
25	229.2	211.0
50	239.3	219.0
75	245.2	--
100	249.3	226.0

The scenarios used for the estimation of the flood risks analysis are:

1. A sea level rise of 1.00m by the year 2100
2. A sea level rise of 2.00m by the year 2100

The base year of these scenario's is 2008.

III.2.1.3 Risk without Sea Level Rise

Areas at Risk

The areas which are at risk due to high water with the return periods are presented in Table 10. Once in 2.5 years at least 2.6% of the study area is at risk, once in 5 years at least 20.2%, once in 25 years at least 57.2% and once in 50 years 70.8%

Risk for lost

The study area is within the Paramaribo District. About 55% of the study area is within the City Centre Resort and about 45 % within the Rainville Resort. According to the General Bureau of Statistics (GBS, 2020), the population density in the City Centre Resort is 2,292.3 persons per km² and 733.8 persons per km² in the Rainville Resort. According to a published listing of GLIS unbuilt land in and near the study area is valued at 30 up to 300 USD per m². According to online advertisements of real estate brokers prices for business premises in the study area range from 540 Euro (about 540 USD) to 3,500 USD per m², on average about 2,000 USD per m². When assessing the value of existing real estate here, the value of commercial properties is taken into account, since the majority in the study area is commercial.

For the estimation of the loss within the study area due to river flooding, the average population density of both resorts is taken into account, which is 1,513 inhabitants per m², and an average of 2,000 USD per m² for real estate, building plots with buildings on it. Plots without buildings on it are neglected, since there are only a few of this type of real estate in the study area. The estimation of the risk for loss of life and real estate is presented in Table 11. It should be noted that these estimates have been done for the current social-economic conditions. It is expected that in the future the development in the study area will increase, as well as the population, investment in the study area, and the value of real estate.

Table 10. Probability of High Water Level in Paramaribo and Related Areas at risk without Sea Level Rise.

Return period (years)	Water level (m NSP)	Inundated Area (m ²)	% of study area	Remarks
2.5	1.93	At least 14,434.12	2.6	Zones with earth's elevation 1.80 m NSP or lower. See Figure 7
5	2.05	At least 111,313.4	20.2	Zones with earth's elevation 2.00 m NSP or lower. See Figure 8
10	2.16	At least 111,313.4	20.2	Zones with earth's elevation 2.00 m NSP or lower. See Figure 8
25	2.30	At least 314,850.9	57.2	Zones with earth's elevation 2.20 m NSP or lower. See Figure 9
50	2.40	At least 389,743.9	70.8	Zones with earth's elevation 2.40 m NSP or lower. Figure 10
75	2.45	At Least 389,743.9	70.8	Zones with earth's elevation 2.40 m NSP or lower. Figure 10
100	2.50	At Least 389,743.9	70.8	Zones with earth's elevation 2.40 m NSP or lower. Figure 10

Table 11. Estimation of People and Real Estates at Risk for River Flooding Related to Statistical Occurrence of High River Water.

Return period (years)	Water level (m NSP)	Inundated Area (m ²)	Population density person/km ²	Persons at risk	Value Real estate per m ² (USD)	Value at risk Million USD
2.5	1.93	At least 14,434.12	1,513	21.8	2,000	28.9
10	2.05	At least 111,313.4	1,513	168.4	2,000	222.6
12.5	2.16	At least 111,313.4	1,513	168.4	2,000	222.6
25	2.30	At least 314,850.9	1,513	476.4	2,000	629.7
50	2.40	At least 389,743.9	1,513	589.7	2,000	779.5
75	2.45	At Least 389,743.9	1,513	589.7	2,000	779.5
100	2.50	At Least 389,743.9	1,513	589.7	2,000	779.5

III.2.1.4 Risk with Sea Level Rise of 1.00m by the Year 2100

In table 12, the total area at risk for inundation by the river water is presented due to the statistical occurrence of high river water level and 1.00m sea level rise by the year of 2100. The base year as in NC2 and NC3 is 2008.

The current flood risk assessment is executed in 2023 and 15 years have already passed since the base year. Here it is assumed that the sea level rise is on average 1 cm per year. For the coming 25 years for this scenario this is 25 cm, the coming 50 years 50 cm and coming 75 years 75 cm.

In Table 13 an estimation of people and real estates at risk for river flooding related to statistical occurrence of high river water combined with a 1.00m sea level rise. Also here it should be taken into account that in the future the development in the study area will increase, as well as the population, the investment in the area and the value of real estate.

Table 12. Total area at risk for River Flooding due to Statistical Occurrence of High River Water and 1.00m Sea Level Rise by the Year 2100

Return period (years)	Water level (m NSP)	Sea Level Rise	Total Water level (m NSP)	Inundated Area (m ²)	% of study area	Remarks
25	2.30	0,25	2.55	About 414,288.6	75,3	Zones with earth's elevation 2.60 m NSP or lower. See Figure 11
50	2.40	0.50	2.90	About 483,960.7	87,9	Zones with earth's elevation 3.00 m NSP or lower. Figure 13
75	2.45	0.75	3.20	About 512,624.6	93,1	Zones with earth's elevation 3.30 m NSP or lower. Figure 14

Table 13. Estimation of People and Real Estates at Risk for River Flooding Related to Statistical Occurrence of High River Water and 1.00m Sea Level Rise by the Year 2100

Return period (years)	Water level NSP	Inundated Area (m ²)	Population density person/km ²	Persons at risk	Value Real estate per m ² (USD)	Value at risk Million USD
25	2.55	414,288.6	1,513	626.8	2,000	828,6
50	2.90	483,960.7	1,513	732.2	2,000	967,8
75	3.20	512,624.6	1,513	755,6	2,000	1,025.3

III.2.1.5 Risk with Sea Level Rise of 2.00m by the Year 2100.

In Table 14, the total area at risk for inundation by the river water is presented, due to the statistical occurrence of high river water levels combined with a 2.00m sea level rise by the year 2100. Also, here the base year is 2008.

Here it is assumed that the sea level rise is on average 2 cm per year. For the coming 25 years in this scenario, this is 50 cm, the coming 50 years 100 cm and the coming 75 years 150 cm.

In Table 15 an estimation is presented of people and real estate at risk for river flooding due to the statistical occurrence of high river water and a 2.00m sea level rise by the year 2100.

Table 14 Total area at risk for River Flooding due to Statistical Occurrence of High River Water and 2.00m Sea Level Rise by the Year 2100

Return period (years)	Water level (m NSP)	Sea Level Rise	Total Water level (m NSP)	Inundated Area (m ²)	% of study area	Remarks
25	2.30	0,50	2.80	456,594.8	82,9	Zones with earth's elevation 2.80 m NSP or lower. See Figure 13
50	2.40	1.00	3.40	512,624.6	93.1	Zones with earth's elevation 3.30 m NSP or lower. See Figure 13
75	2.45	2.00	4.45	Total study area 550,502.2	100.0	

Table 15. Estimation of People and Real Estates at Risk for River Flooding due to Statistical Occurrence of High River Water and 2.00m Sea Level Rise by the Year 2100

Return period (years)	Water level NSP	Inundated Area (m2)	Population density person/km2	Persons at risk	Value Real estate per m2 (USD)	Value at risk Million USD
25	2.80	456,594.8	1,513	690.8	2,000	913.2
50	3.40	512624,6	1,513	789.2	2,000	1,083,3 1,043.2
75	4.45	550502,2	1,513	833.0	2,000	1,101,2

III.2.2 Pluvial Flooding

In Section II.1, according to GBS (2022) all hazards in Paramabo are related to pluvial flooding. The main reason for these floods are the lack of capacity of the drainage system and/or lack of maintenance. In the past decades also it is very likely due to the impact of climate change. In the future, the impact of climate change will be worst. Apart from the increasing intensity of rainfall, increased river water level will decrease the capacity for gravitation drainage. Also, it should be taken into account that with the increase of spilling of excessive water from the van Blommenstein Lake, including the possible implementation of the Tapajai-project⁴, the capacity of gravitation drainage will decrease due to the increase of the discharge of the river and the river water level.

Under the current conditions, there is no flooding on the road in the project area (the total study area is larger than the project area). It may happen that water sometimes

⁴ The aim of the Tapajai project is to increase the capacity of the van Blommenstein reservoir for generating hydroelectricity, diverting water from the adjacent Marowijne River basin to the said lake.

remains on the street due to poor inflow into the sewer. The area between the road and the sheet pile wall along the riverbank is poorly drained, since drainage has never been carried out. With the new design for the renovation, drainage has now been included in that part.⁵

Referring to Figure 5 and 16 the ridge on which the Henck Arron street is constructed can be recognized, of which the orientation is about in the South-East direction. The watercourse of the van Sommelsdijck Creek and the catchment of this creek and of the other drainage areas are mostly orientated in the same direction, whereby the excessive water is drained into the Suriname River.

The study area is part of the Paramaribo drainage system and is drained by means of two pumping stations and two sluices. Referring to Figure 16, water from the study area is drained into the Suriname River. About 64.4% of the study area, located in the North-East is drained by the pumping station at the outfall of the van Sommelsdijck Creek, see Pumping station 1. At this pumping station, there is also a sluice for drainage properties.

Further upstream there is also a pumping station at Knuffels gracht (Pumping station 2) and a sluice (Sluice 1) near the Central Market. These two drainage infrastructures are within one drainage area and drain about 32.9% of the study area located in the South-Western part of the area. Finally, further upstream a sluice is located just upstream of the study area. This sluice drains about 2.7% of the study area.

According to the map of the Masterplan study Urban Drainage Paramaribo (2001), there are two spots within the study area. One small narrow spot is close to the riverbank, at the junction of the Mr. J.C. de Miranda Street and Waterkant. A larger spot is located at the Western part of the study area, near de Junctions Maagdenstreet, Dominee street, Jodenbree street and Neuman pad, of which half is within the study area. During heavy rainfall with high intensity, these areas are still flooded. In the past, it happened that river water flowed in through the sewage system into this area during high tide, when there was leakage at the existing drainage infrastructure.

Referring to Figure 5 and 16, the spot at the junction between the Miranda Street and Waterkant, the ground level is equal to or lower than 2.20m NSP, which is relatively low. The spot at the Western part of the study area is low-elevated. There is a spot of which the ground level is equal to or less than 1.80m (Figure 7)

In 2001 a Masterplan for the drainage of Great Paramaribo was prepared. In this masterplan, a design storm of 60 mm/2 hour is recommended. Currently, an update of the masterplan is in execution. As part of the updating of the masterplan, the capacity of the draining system has been tested for future situations. In the new Master Plan (currently being implemented) a new set of standards and guidelines are prepared. This includes climate change influences on precipitation and sea level rise⁶.

The top of the sheet piling along the river bank is at +3.25 m NSP. This height is calculated on the basis of the Highest High-Water Level in the Suriname River with a return period of 50 years and sea level rise at that time of 1.8 mm per year over 75

⁵ Communication with R.Patandin, Director of Engineering firm ILACO

⁶ Communication with R.Patandin, Director of Engineering firm ILACO

bend of the river, it is expected that the water flow close to the river bank is intensely. Due to the intense river water flow, there is a risk of erosion in this section. As seen in Figure 18 the water flow crosses from the right bank towards the left bank near the project area.

Referring to Figure 20, the path of the outflowing water from the river, where the water mainly flows, is close to the left bank as it approaches the bend, to approximately near the extension of the Dr. Sophie Redmondstraat and near the Keizerstraat. After this location, the outflowing water crosses the river towards the right bank.

Given the course of the inflowing and outflowing river water, it is expected that strong river currents are present from the vicinity of Fort Zeelandia to the upstream of the river bend. There is a wreck of the Goslar, a sunken ship from the Second World War, which also influences the stream flow in the river.

III.3.1.2 Bathymetry of the Suriname River

Depth contours of the river bed have been constructed by the consultant using bathymetric maps provided by the MAS of 2022 and 1993. The map of 2022 is digital in AutoCAD format and the 1993 one is a scanned copy. The contour lines of both maps were constructed by means of GIS, whereby the scanned one was geo-referred.

III.3.1.2.1 Bathymetry 2022

The depth contour lines constructed from the bathymetric map of 2022 are presented in Figure 21. The depths are referred to **the chart datum** used by the MAS for navigation properties, which is **1.28 m below NSP**. An area in which the depth is equal to or deeper than 10 m (10 m contour line) exists from the vicinity of the wreck of Goslar to the vicinity of the Heilige weg, which is the deepest zone. The maximum depth of the river bed near the study area decreases from this location towards the downstream direction. At the section near the wreck of Goslar the maximum depth is equal to or greater than 10 m, decreasing up to 4 m in the vicinity of the outfall of the van Sommelsdijk Creek. The 10 m depth contour line is close to the river bank at the vicinity of the Jodenbree street, and the 8 m one is near Keizerstreet and Fort Zeelandia

III.3.1.2.2 Comparison Bathymetry 2022 and 1993

When the depth contour lines of 2022 and 1993 are compared, it is obvious that the depth of the river bed is increasing significantly towards the downstream direction. This indicates that the river bed and river bank are not stable.

Referring to Figure 22, the 9m and 10 m depth contour lines of 2022 and 1993 are compared. The contour lines of 2022 are drawn as full lines and the 1993 ones are in dashed lines. The size of the area enclosed by the 10m and 9m contour lines has increased about two times in size during the three last decades, moving towards the downstream direction. The size of the area enclosed by the 7m and 8m contour lines has also increased about two times, also moving towards the downstream direction (Figure 23). Contour lines 5m and 6m have also moved towards the downstream direction (Figure 24) and the 3m and 4 m contour lines disappeared near the project area, of which the depth has increased (Figure 25).

III.3.1.2.3. Stability of the river bed and river bank

Fig 17 Geo-referencing of the scanned bathymetric map of MAS for identification of the path of the inflowing water in the river.

Fig 18. The identified Path of the inflowing water in the river.

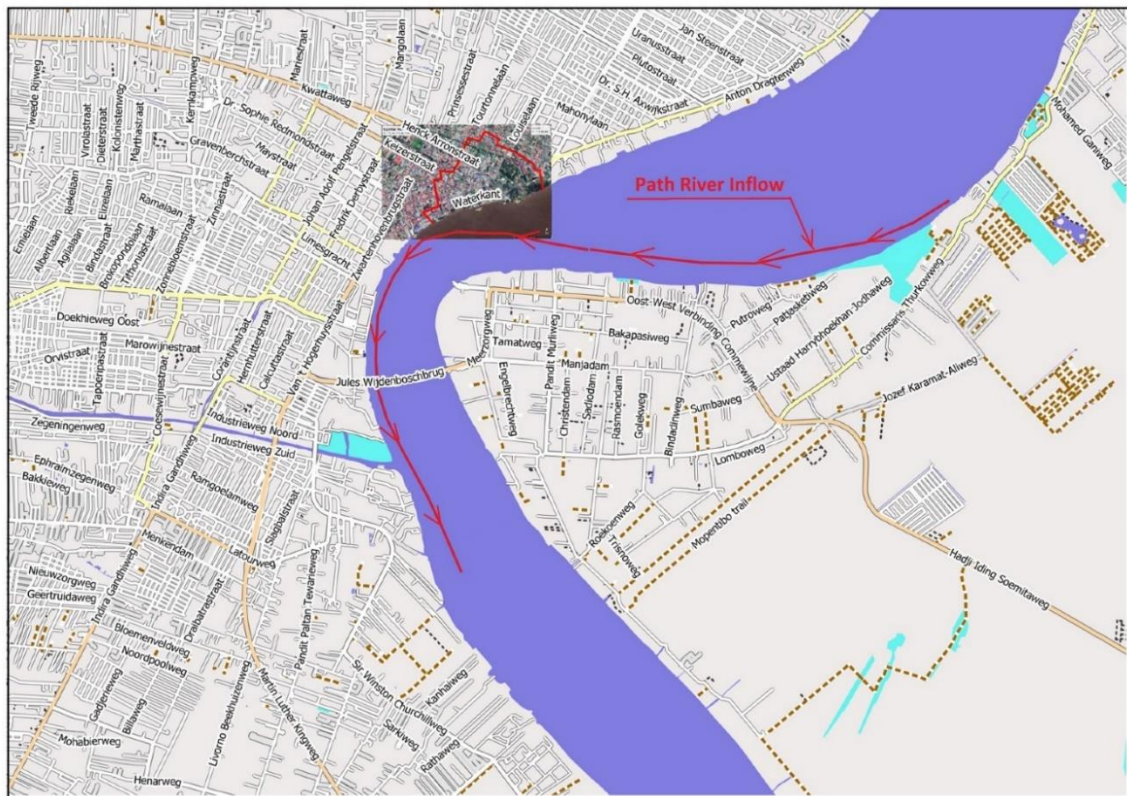
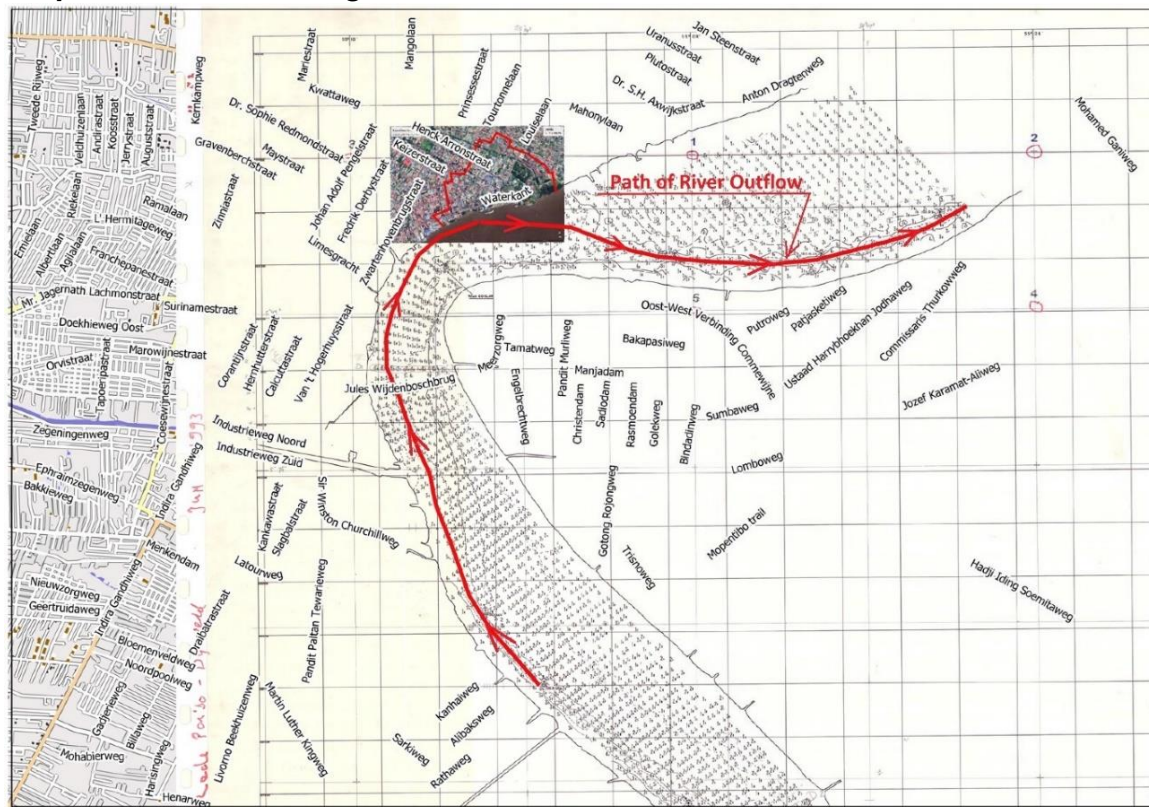


Fig 19 Geo-referencing of the scanned bathymetric map of MAS for identification of the path of the outflowing water in the river.



[illegible]

Figure 22. Comparison of the 9m and 10m depth contour lines of 2022 with the 1993 ones

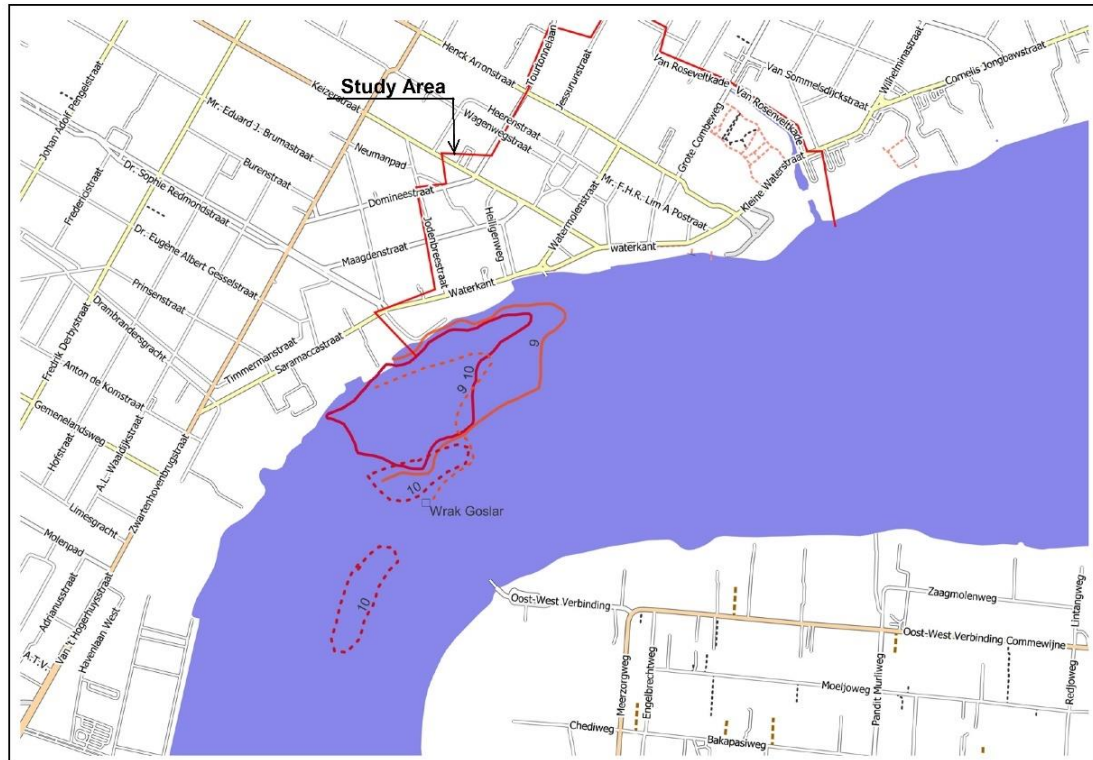


Figure 23. Comparison of the 7m and 8m depth contour lines of 2022 with the 1993 ones



Figure 24. Comparison of the 5m and 6m depth contour lines of 2022 with the 1993 ones



Figure 25. Comparison of the 3m and 4m depth contour lines of 2022 with the 1993 ones



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Appendix

Appendix 1 Overview registered natural hazards 2006 – 2014 (GBS, 2014)

Tabel 2.5: Gebieden en personen beïnvloed door een natuurramp, 2006 en 2013

Table 2.5: Areas and population affected by a Natural disaster, 2006 and 2013

Period/ period	Soort natuurramp/ Type of Natural Disaster	Gebieden die het meest zijn getroffen/ Areas mostly affected	Populatie Population
6-2006	Overstroming (zware regenval)/ Flooding (heavy rainfall)	Gebieden in het binnenland/Areas in the interior: Marowijne en Sipaliwini : Dorpen langs de boven Marowijne rivier en de boven Suriname rivier/ Villages along the upper Marowijne river and the upper Suriname river	20.000 persons
20 -6- 2013	Staart van een zware storm/Overstroming (zware regenval)/ Tail of a heavy tropical storm./Flooding (heavy rainfall)	Paramaribo, Wanica, Saramacca, Marowijne (Galibi) Daken zijn weggerukt (30 huizen), bomen ontworteld en beschadigde stroompalen, reclame borden en straatverlichting / <i>Roofs were torn away (30 houses), trees uprooted and damaged power poles, advertising signs and street lighting</i>	300 Personen/ persons

Bron/Source: NCCR situatie Analyse /NCCR Situation Analysis

Tabel 2.6: Gebieden en huishoudens beïnvloed door een calamiteit, 2007-juli 2014
Table 2.6: Areas and households affected by a Casualty, 2007 –July 2014

Period/ period	Soort calamiteit/ Type casualty	Gebieden die het meest zijn getroffen/ Areas mostly affected	Huishoudens/ Households
2007	Hevige rukwinden/ Strong winds	Para (Paramaribo) Dag weggerukt / Roofs torn away	
1-2010, 6-2010, 8-2010, 9-2010	Hevige rukwinden en regens/Strong winds and heavy rainfall	Paramaribo & Wanica Daken zijn weggerukt/ Roofs were torn away	
6-2011	zware regenval/ heavy rainfall	Nickerie (Wageningen) Overstroming/Flooding	50
21-5- 2012	Zware storm met hevige rukwinden/ Heavy Storm and heavy rainfall	Kuststrook van Suriname/Coast of Suriname 1. Marowijne (Galibi, Albina, Christaan- en Langamakondre). Daken zijn weggerukt, stroom uitval, metershoge golven, gezonken aangemeerde boten en windsnelheden van 80 km/u. /Roofs were torn away, power outages, meters high waves, sunken moored boats and wind speeds of 80 km / h. 2. Paramaribo (centrum). Daken weggerukt, stroom uitval en beschadigde stroompalen en zendmasten/Roofs torn away, power outages, damaged power poles and masts	200
2 -6- 2012	Hevige rukwinden en regens/ Strong winds and heavy rainfall	Paramaribo en Nickerie 1. Paramaribo (Zorg en Hoop, Centrum) Daken zijn weggerukt, bomen ontwortelt en beschadigde stroompalen/ Roofs were torn away, trees uprooted and damaged power poles 2. Nickerie (Nieuw Nickerie, Groot Henar en Oostelijke polder) Daken zijn weggerukt (57 huizen), bomen ontwortelt en beschadigde stroompalen (6)/ Roofs were torn away (57 houses), trees uprooted and damaged power poles(6)	57
8- 2012 11-2012	Hevige rukwinden en regens/ Strong winds and heavy rainfall	Coronie en Paramaribo Daken zijn weggerukt/ Roofs were torn away	
20 -2- 2013	Hevige rukwinden en zware regens/ Heavy winds and rainfall	Brokopondo (Brownsweeg, Wakibasoe 1, Kadjoe, Janka Kondre) Daken zijn weggewaaid / Roofs were torn away	
8-2013 9-2013	Hevige rukwinden en regens/ Heavy winds and rainfall	Paramaribo (Latour, Zorg en Hoop , centrum), Wanica (Highway, Leidingen), Commewijne (Meerzorg) en Nickerie Daken zijn weggerukt, bomen ontworteld en beschadigde stroompalen / Roofs torn away, trees uprooted and damaged power poles	
17-1-2014	Hagel /hail		
7-7-2014	Hevige rukwinden en zware regens/ Heavy winds and rainfall	Para Onverwacht) en Nickerie Para 7 woningen en Nickerie 191 woningen/ Para 7 dwellings and Nickerie 191 dwellings	200

Bron/Source: NCCR situatie Analyse /NCCR Situation Analysis

Appendix 2 Overview registered natural hazards 2017 – 2021 (GBS, 2022)

Tabel 2.7a: Soort ramp veroorzaakt door extreem weer naar getroffen personen en gebieden die het meest zijn getroffen, 2017-2018

Table 2.7a: Types of Disasters due to Extreme Weather by Population Affected and Area Mostly Affected, 2017-2018

Periode/ Period) (D/M/Y)	Soort natuurramp/ Type of Natural Disaster	Gebieden die het meest zijn getroffen/ Areas mostly affected	Personen gewond/dood People Injured/dead	Huishoudens beïnvloed/ Households Affected
2017				
18 t/m 20 2-2017	Zware overstromingen/ Severe flooding	Sipaliwini (dorpen te Boven-Suriname en Tapanahony gebied (Loka Loka) stonden blank./ Villages in Boven Suriname and Tapanahony were flooded.	-	-
23-5-2017	Zware regenbuien met heftige rukwinden/Heavy rainfall with heavy winds	Paramaribo, Wanica & Commewijne Daken weggerukt, bomen ontworteld en beschadigde stroompalen, reclameborden en straatverlichting./ Roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.	-	69
17 t/m 19- 8-2017		Paramaribo, Wanica & Commewijne Daken weggerukt, bomen ontworteld en beschadigde stroompalen, reclameborden en straatverlichting./ Roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.	-	10+
12-9-2017	Staart van een zware storm/ Tail of a heavy tropical storm (heavy rainfall)	Paramaribo, Wanica, Commewijne en Coronie Daken weggerukt./ Roofs torn away.	-	30
Totaal aantal natuurrampen/ Total natural Disasters 2017			-	109
2018				
19-2-2018	Zware regenbuien met heftige rukwinden/Heavy rainfall with heavy Winds	Paramaribo (Tamenga) Daken weggerukt./ Roofs torn away.	-	5
4-3-2018		Paramaribo (Kwatta) Daken weggerukt./ Roofs torn away.	-	1
7-4-2018		Paramaribo: (Paramaribo-Noord/ North), Commewijne, Marowijne & Saramacca waren onder water. / were flooded.	-	-
21-4-2018 23-4-2018		Paramaribo (Latour & Centrum) Daken weggerukt./ Roofs torn away.	-	5
8-6-2018	Zware regenbuien en overstroming/ Heavy Rainfall with flooding	Oost-Suriname/ East of Suriname (Galibi & Goninikrikimofa) Door slechte afwatering is er veel wateroverlast en de scholen zijn enige tijd gesloten./ Due to poor drainage, there is a lot of flooding and the schools have been closed for some time.	-	-
8-10-2018	Zware regenbuien met heftige rukwinden/ Heavy rainfall with heavy winds.	Paramaribo (Blauwgrond) Daken weggerukt na onweersbui./ Roofs torn away after thunderstorm.	-	10
29-10-2018		Paramaribo Daken weggerukt na onweersbui./ Roofs torn away after thunderstorm.	-	1
Totaal aantal natuurrampen/ Total natural Disasters 2018			-	22

Bron/ Source: Nationaal Coördinatiecentrum voor Rampenbeheersing (NCCR)/
National Coordination Center for Disaster Relief

Opmerking/ Remark:

- = gegevens ontbreken/data not available
- = nul/zero

Tabel 2.7b: Soort ramp veroorzaakt door extreem weer naar getroffen personen en gebieden die het meest zijn getroffen, 2019- 2020

Table 2.7b: Types of Disasters due to Extreme Weather by Population Affected and Area Mostly Affected, 2019-2020

Periode/ Period) (D/M/Y)	Soort natuurramp/ Type of Natural Disaster	Gebieden die het meest zijn getroffen/ Areas mostly affected	Personen gewond/dood People Injured/dead	Huishoudens beïnvloed/ Households Affected
2019				
13-2-2019	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Paramaribo (Tamenga)	-	2
7-3-2019		Paramaribo (Rainville) & Commewijne (Meerzorg)	-	4
23-4-2019		Paramaribo (Paramaribo-Noord/ <i>North, Centrum, Kwatta & omgeving/area, Abrabroki, waren onder water./ were flooded.</i>	-	.
3-6-2019		Nickerie	-	1
20-6-2019	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Daken weggerukt. / <i>Roofs torn away.</i>	-	2
20-7-2019		Paramaribo (Centrum) en Wanica (Leiding) Daken weggerukt. / <i>Roofs torn away.</i>	-	19
27-7-2019	Zware regenbuien met heftige rukwinden / <i>Heavy rainfall with heavy winds</i>	Paramaribo (Centrum & Munder) Daken weggerukt, bomen onworteld en beschadigde stroompalen, reclameborden en straatverlichting. Ook het dak van een school is weggerukt. / <i>Roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting. Also the roof of a school was torn away.</i>	-	3
2-8-2019	Zware regenbuien/ <i>Heavy Rainfall</i>	Paramaribo, Wanica & Commewijne waren onder water. / <i>were flooded.</i>	-	2
12-8-2019	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Paramaribo (Morgenstond, Charlesburg, Tourtonne, Geversvliet) & Commewijne) waren onder water en verstoken van elektriciteit. / <i>were flooded and deprived of electricity.</i>	-	1
9-9-2019	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Marowijne (Moengo) Daken weggerukt. / <i>Roofs torn away.</i>	-	4
1-10-2019		Paramaribo (Centrum) Daken weggerukt. / <i>Roofs torn away.</i>	-	5
13-10-2019		Paramaribo (Rainville & Centrum) Daken weggerukt, bomen onworteld en beschadigde stroompalen, reclameborden en straatverlichting. / <i>Roofs torn away, trees uprooted and damaged power poles, advertising signs and street lighting.</i>	-	31
Totaal aantal natuurrampen/ <i>Total natural Disasters 2019</i>			-	74
2020				
8-7-2020	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Paramaribo en Nickerie Daken weggerukt. / <i>Roofs torn away.</i>	-	-
2-8-2020		Wanica (leidingen) Daken weggerukt. / <i>Roofs torn away.</i>	-	3
23-8-2020		Para (Para-Noord) Daken weggerukt. / <i>Roofs torn away.</i>	-	-
Totaal aantal natuurrampen/ <i>Total natural Disasters 2020</i>			-	3

Bron/ Source: Nationaal Coördinatiecentrum voor Rampenbeheersing (NCCR)/
National Coordination Center for Disaster Relief

Opmerking/ Remark:

. = gegevens ontbreken/data not available
- = nul/zero

Tabel 2.7c: Soort ramp veroorzaakt door extreem weer naar getroffen personen en gebieden die het meest zijn getroffen, 2021

Table 2.7c: Types of Disasters due to Extreme Weather by Population Affected and Area Mostly Affected, 2021

Periode/ Period) (D/M/Y)	Soort natuurramp/ Type of Natural Disaster	Gebieden die het meest zijn getroffen/ Areas mostly affected	Personen gewond/dood People Injured/dead	Huishoudens beïnvloed/ Households Affected
3-9-21	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy Winds</i>	Paramaribo, Welgelegen Dakbedekking gewaaid/ <i>Roofs torn away.</i>	-	4
6-9-21		Paramaribo, Centrum Dakbedekking gewaaid/ <i>Roofs torn away.</i>	-	2
2-9-21		Paramaribo, Centrum Brand en Rukwinden/ <i>Fire and heavy winds</i>	-	4
28-8-21	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Paramaribo, Pontbuiten Dakbedekking gewaaid/ <i>Roofs torn away.</i>	-	9
		Wanica, Houttuin Dakbedekking gewaaid/ <i>Roofs torn away.</i>	-	17
		Wanica, Nieuwe grond Dakbedekking gewaaid/ <i>Roofs torn away.</i>	-	12
		Para, Osembo Dakbedekking gewaaid/ <i>Roofs torn away.</i>	-	5
9-10-21	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Paramaribo, Blauwgrond Dakbedekking gewaaid/ <i>Roofs torn away</i>	-	4
11-10-21	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Wanica, Nieuwe grond Dakbedekking gewaaid/ <i>Roofs torn away</i>	-	12
		Para, Para Oost Dakbedekking gewaaid en ingestort/ <i>Roofs torn away and collapsed</i>	-	1
15-12-21	Zware regenbuien met heftige rukwinden/ <i>Heavy rainfall with heavy winds</i>	Para, Para Oost Dakbedekking gewaaid/ <i>Roofs torn away</i>	-	5
Totaal aantal natuurrampen/ Total Natural Disasters 2021			-	75

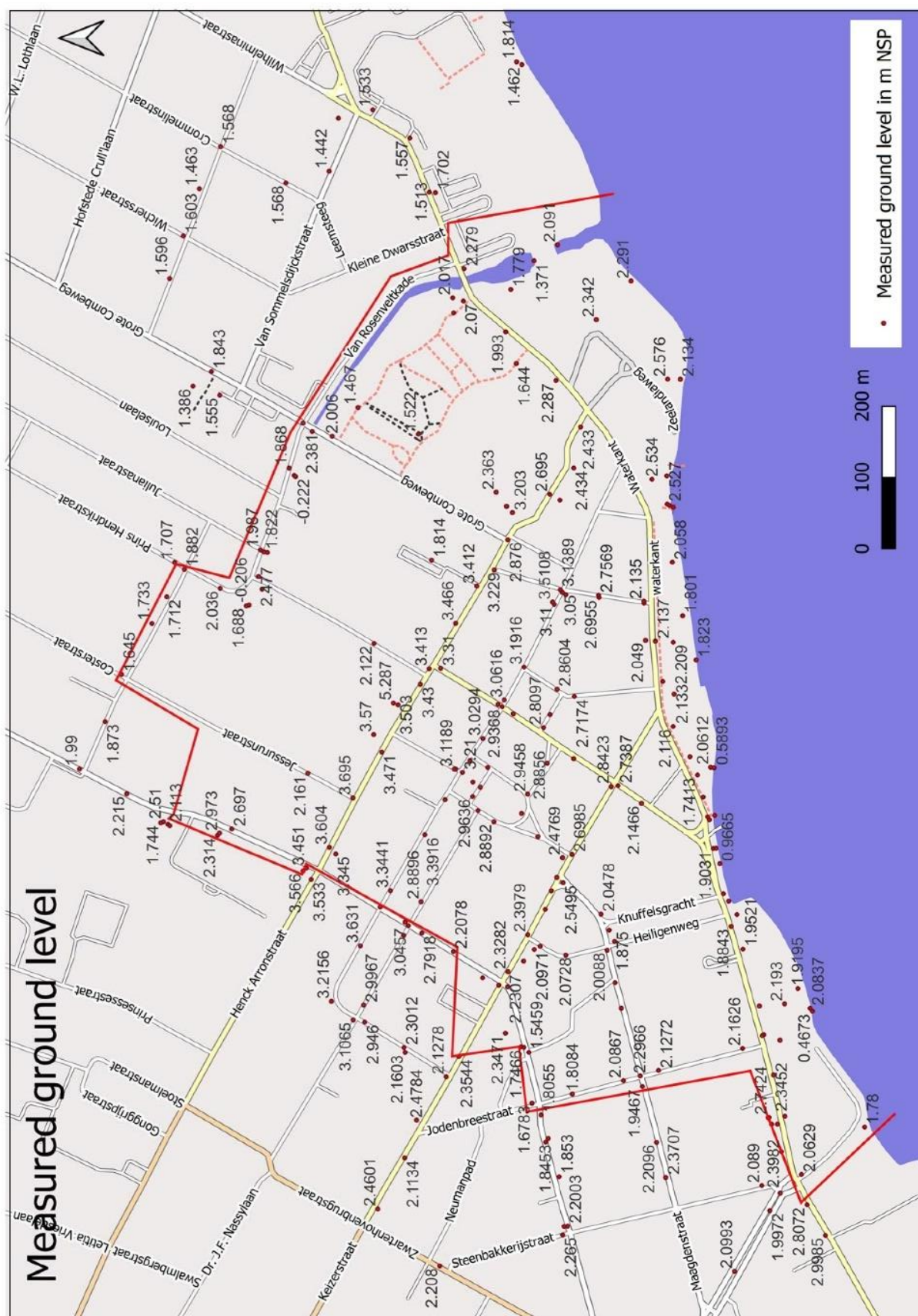
Bron/ Source: Nationaal Coördinatiecentrum voor Rampenbeheersing (NCCR)/
National Coordination Center for Disaster Relief

Opmerking/ Remark:

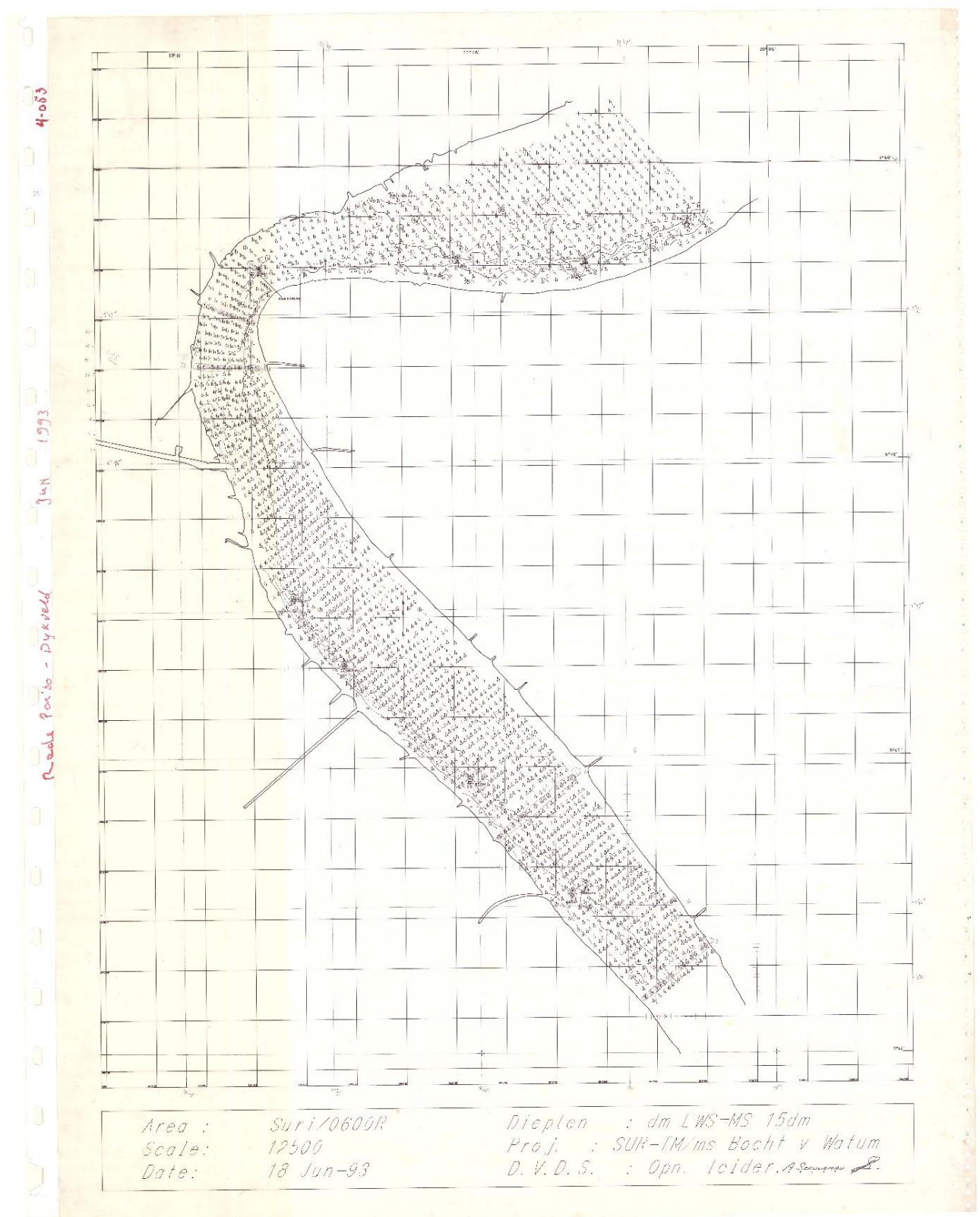
= gegevens ontbreken/ data not available

= nul/ nil/zero

Appendix 3. Measured ground level by ENSU NV



Appendix 4. Bathymetric map 1993. Source MAS



Appendix 5. Bathymetric map 2022. Source MAS



Appendix I

Civil Construction Report

Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

8 May 2023



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1. Impact Assessment of Civil Works

1.1 General

In this appendix the potential impacts of the *Civil Works* on the environment are assessed.

Affiliated Documents

The impact assessment of the Civil Works was conducted on the following specific technical documents from the above referenced project:

- a. Technical Specifications, VOLUME 1, Civil Engineering, March 4th, 2022
- b. Drawing's folder, containing individual drawings name number 1 till 214, of which numbers 104 till 117 in the listing are missing. Recent reference date on the drawings is December 16th, 2022.

Hereafter, listings are provided of the specific subjects of Volume 1 and the drawings, which were studied as part of the civil construction impact assignment.

Subject of interest following Volume 1

The subjects of interest from Volume 1 of the Technical Specifications were (*table a.1*):

No.	Chapter number and description	Subject of interest for Construction Impact Assessment (<i>Key Question - KQ</i>)
1.	Ch.1.6 – Workplace safety	Assess the construction safety approach within the requirements of the project. (<i>Key Q: in what manner do the safety requirements address the potential construction and environmental risk associated with the Civil construction?</i>)
2.	Ch.1.10 - Safety, Health, Environment and Quality (SHEQ) Plan	Assess HSEQ analogue to aim of bullet 1. (<i>KQ: idem above</i>)
3.	Ch.1.12 - Traffic Control	Idem bullet 1 and 2.
4.	Ch.1.22 - Dust Control and Air quality	Assess the approach and risk coverage of dust emissions, originating from the construction operation. (<i>KQ: do the prescribed control and mitigation measures assure adequate emission control on the project?</i>)
5.	Ch.1.25 - Adjacent Residences	Assess the approach and risk coverage regarding the limitation or mitigation of nuisance to residences along the route of the project.

No.	Chapter number and description	Subject of interest for Construction Impact Assessment (Key Question - KQ)
		<i>(KQ: do the prescribed control and mitigation measures assure adequate limitation of nuisance to Stakeholders directly affected by the Works?)</i>
6.	Ch.3.3 - Spoiling of Vegetation and Waste Material	Assess the approach and risk coverage regarding the handling of waste streams originating from the project; both within the project site, as well as at outside at waste disposal sites. <i>(KQ: do the prescribed requirements on waste control assure adequate disposal handling procedures?)</i>
7.	Ch. 3.5 - Demolition and removal	Idem as bullet 6, but then for demolition and removal of demolition debris.
8.	Ch. 4.3.2 - Stockpiling	In essence same-like bullet 4 regarding nuisance and originating from stockpiles (dust control).
9.	Ch. 4.4 - Excavations (incl. Ch. 5.5.8 Obstruction to Traffic)	In essence linked to bullet 1 and 2 (Safety), but also the level of arrangements for access to premises of businesses and residence. <i>(KQ: how well do the specs for excavations cover the safety aspect for road users, pedestrians and residences. But also, how well is access guaranteed in the specifications?)</i>
10.	Ch. 5.16 - Cleaning Up	Assess the requirements affiliated to the cleaning up of the work site, both on daily basis, as well as at handing-over of the project. <i>(KQ: do the prescribed instructions assure adequate cleaning up of the Site?)</i>
11.	Ch.11.1 - Other Services Reference to: damage avoidance to properties (pg. 64/67 – last two paragraphs of Ch.11.1)	Assess the requirements affiliated to avoidance of damage to properties, but moreover, the stipulations on the handling of damage, once occurred. <i>(KQ: do the prescribed instructions assure adequate damage avoidance, but when occurred, how well are the responsibilities defined regarding settlement of damages?)</i>

Table a.1: overview subjects of interest within Volume 1 Civil Engineering

Subject of interest within the drawing's dossier

Some preliminary remarks on the dossier:

- The file names of the received drawings are per follow-up numbers (0 to 214);
- Number 0 regards the drawings list, *which is incomplete* in the received version. The captive shows drawings follow number 1 to 34. However, this incomplete list did not have no bearing on the impact assessment.
- For sake of completion, it is mentioned here that the *drawings follow numbers 104 to 117* are not included in the received files. The Employer (PIU) confirmed that these numbers do not form part of the final design.

Following the assessment objective of this chapter, the following drawings are of direct interest (table a.2):

No.	Drawing numbers (file) (No.)	Drawing's subject	Elaboration on the interest for Impact Assessment (Key Question - KQ)
a.	1 till 34	Existing situation (plan views, cross-sections, drainage, utilities, etc.)	Get understanding of the existing Civil infrastructure of the project. <i>(Key Q: no specific KQ, but basic understanding needed of the existing infrastructure, in order to better grasp the designed interventions and their implications, if any (e.g. on the existing environment)).</i>
b.	35 & 36	Objects to be removed	Assess the geographical and dimensional effects of the objects to be removed, as well as their implications given potential nuisance to the surroundings. <i>(KQ: what is the complexity of objects to be removed, and what may be the (negative) impacts on the environment and people? How well are the safety measures defined to minimize nuisance and avoid incidents?)</i>
c.	40 till 50	Various plan views of new design	Get understanding of new design (imposed on existing situation).
d.	61 till 71	Cross-section new design	Get understanding of the new design per cross-sectional view, and the implications on the existing Civil infrastructure of the project. <i>(Key Q: no specific KQ, but basic understanding needed of the new design and its geometric implications on the existing infrastructure, in order to better grasp the interventions and their implications, if any (e.g. on the existing environment)).</i>
e.	72 till 74 & 168 till 201	Drainage design overviews & Drainage details	Get understanding on the geometric and substrata (depth) implications of the drainage infrastructure, and assess the risk coverage thereof as embedded in the technical specifications. <i>(KQ: what is the extent of the drainage works within the project site, and what are the substrata features? How is dealt with these features in the design and technical specifications in terms of safety during construction and nuisance to people?)</i>

No.	Drawing numbers (file)	Drawing's subject	Elaboration on the interest for Impact Assessment (Key Question - KQ)
			<i>Do the prescribed control and mitigation measures assure adequate limitation of nuisance to Stakeholders directly affected by the Works?)</i>

Table a.2: overview drawings of interest within the project Design

1.2 The Civil Design & Construction and their relevant features

The design facilities

Reference is made to the description of the project site as included in the ESIA report.

For sake of completion the listing of the foreseen new primary facilities for the redevelopment of the Waterfront, as presented within the ESIA is repeated below. Also repeated is an image of the overarching layout design (*image 01*).

Primary facilities:

- Recreational area
- Crafts market
- Food stalls
- Watchtower
- Balcony/stage
- Children's playground
- Walking paths and paths for cyclists
- Benches to sit and relax
- Management building and public restrooms

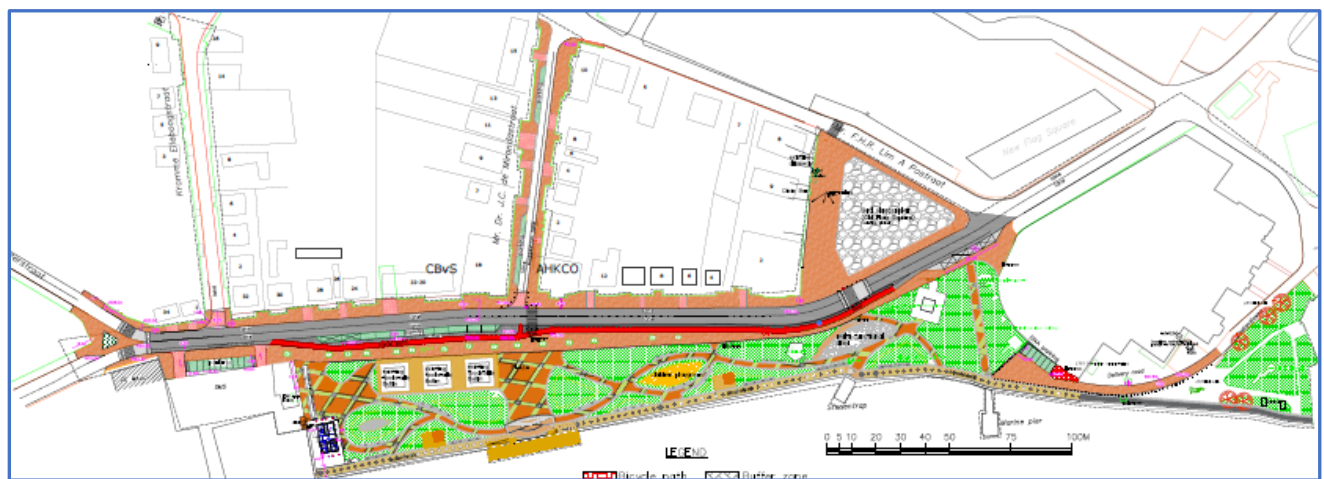


Image 01: layout design of new Waterfront area (source: drawing's dossier ILACO-IBT)

The primary Civil Design components

From a civil design point of view, the following design components are of interest:

- I. The new layout design of the area (plan view of the new situation; see sample image 01)
- II. Road and drainage designs and affiliated details
- III. Side-walk pavements and details
- IV. Foundations (where relevant for civil construction impacts)

The primary Civil Construction components

The following civil construction activities for the Waterfront redevelopment are deemed relevant *(in terms of potential environmental impacts)*:

- I. Demolition works *(safety & nuisance)*
- II. Earthworks *(safety & nuisance)*
- III. Drainage works *(safety, damage avoidance, accessibility provisions, nuisance)*
- IV. Utility works *(safety, damage avoidance, nuisance)*
- V. Sidewalks and road side construction *(safety, nuisance)*
- VI. Road Foundations and Pavements *(safety, nuisance, traffic management)*
- VII. Construction of Waterfront Recreational Area *(where relevant for civil construction impacts)*

1.3 Relevant environmental aspects affiliated to the Civil Construction

General

The project itself is predominately governed by earthworks, excavations, laying of pipes and erection of pavements and landscaping. Thus, by virtue a construction framework based on urban road and pavement works and the adjacent road side reconstruction. The *construction complexity* of the project can be classified as *simple to simple-moderate*, whilst in line with the Urban character of the project, it is anticipated that the logistics organization and traffic management during construction will form the major challenges on the site, and not the construction works themselves.

Moreover, from an ESIA point of view, it is generally acknowledged that the three (3) most damaging environmental (primary) effects of such construction sites are:

- *Noise*
- *Dust* and
- *Vibrations*.

Noise mainly occurs during the construction phase but it can also occur to a lesser degree during maintenance operations (defects notification period).

Dust is predominately created during handling of granular materials on site (e.g. piling of sands, stone materials), as well as the construction of sand and/or unbound aggregate layers, and

backfills. With the absence of piling works in the project, *vibrations* can be predominately linked to moving construction equipment and vehicles.

Despite the expected main impacts as listed above, hereafter an *extensive listing* is provided of *potential impacts* following the foreseen Civil Construction of the project following its design. The listing is accompanied by a first qualitative classification on the relevancy of these impacts, whilst in chapter (Ch. 1.4) the relevant impacts are further assessed.

Listing Environmental Impacts (tables b.1 and b.2)

Civil Construction Qualitative Assessment of Environmental Impacts for further Analysis			
No.	Environmental element	General qualification [Relevant/ Non-Relevant]	Elaboration on qualification & potential effects
1.	Air Quality Control	R	Relevancy directly linked to nuisance to businesses and residents, but also potential health risk (e.g. breathing impaired). Dust originating from soil handling on site, as well as emissions from equipment may form the sources for air quality impact.
2.	Noise & vibration control	R	Nuisance.
3.	Water pollution control	NR	Risk of polluting aquifers: may be deemed not relevant, following the scope of the project.
		R	Risk of damage to water utility: moderate to high risk following urban character of the project site.
4.	Soil disposal and/or recycle	R	Effects of dust generation affiliated to soil handling/piling in dry season, as well as off-site handling of soils destined for disposal outside the project site. Effects as per bullet 1.
5.	Construction material control	R	Unbound materials: idem bullet 1 and 4.
		NR	Bound materials/ solids: not relevant.
6.	Waste treatment and disposal	NR	The construction simplicity, as well as the prescribed waste handling responsibilities of the Contractor within the technical specifications, imply rather basic expected waste streams with more or less standard handling activities. Deemed customary in Suriname, with anticipated no extraordinary risks.

Civil Construction Qualitative Assessment of Environmental Impacts for further Analysis			
No.	Environmental element	General qualification [Relevant/ Non-Relevant]	Elaboration on qualification & potential effects
7.	Soil and water protection program during construction	NR	Following the scope of the project, not relevant.
8.	Animal & plant protection	NR	Following the scope of the project, not relevant.
9.	Landscape protection	NR	Following the scope of the project, not relevant.
10.	Local residence & business protection	R	Moderate to High risk of negative effects, affiliated to property access during construction, as well as impaired safety. Furthermore, nuisance following dust and noise, and damages to properties.
11.	Traffic management & maintenance	R	Moderate risk of delays for daily <i>through-traffic</i> for the road sections affiliated to the project (given the detour options and overall non-existing traffic congestions on these sections). <i>Local businesses and residence</i> : high risk for impaired parking facilities, and incidental blockage of entrances by construction equipment or works.
12.	Cultural heritage conservation	R to NR	The site is within the heritage zone, whilst various excavations are foreseen. Especially the relative deeper (pit) excavations should incorporate caution, in order to assure that possible presence of artifacts is not lost.
13.	Public health control	NR	Although potential health risk factors reside with bullets 1 and 4, the geographical extent is deemed very limited, and thus with very limited to non-risk to the Public at large.

Table b.1: overview environmental elements of the Civil Construction and their relative relevancy

Civil Construction Qualitative Assessment of Construction Activities for further Analysis on Impacts			
No.	Construction Activity	General qualification [Relevant/ Non-Relevant]	Elaboration on qualification and potential effects
I.	Demolition	R	Relevancy linked to nuisance to residents and businesses and dust production. High risk for impaired accessibility to properties and businesses. Dust production affiliated risks as per bullet 1 and 4 of table b.1.

Civil Construction Qualitative Assessment of Construction Activities for further Analysis on Impacts			
No.	Construction Activity	General qualification [Relevant/ Non-Relevant]	Elaboration on qualification and potential effects
II.	Earthworks, including excavations	R	Idem bullet I regarding accessibility and dust related nuisance. Also, potential impaired safety.
III.	Drainage works	R	Idem bullets I and II.
IV.	Utility works	R	Relevancy linked to damages with impaired service to residents and businesses.
V.	Sidewalks and road side reconstruction	NR	Deemed simplistic construction works, and quite customary within the sector, provided that the basic safety and procedure requirements are incorporated within the Contract, and upheld by Parties.
VI.	Road foundations and pavements	R	Idem bullet II and III.
VII.	Construction waterfront recreational area	NR	Idem bullet V.

Table b.2: overview construction activities with link to (potential) environmental impacts

2. Environmental Impact Assessment Civil Construction

2.1 Air Quality Control

General

Construction of the proposed project will require the use of both nonroad construction equipment as well as on-road vehicles.

Nonroad construction equipment includes equipment operating on-site such as excavators and loaders. *On-road vehicles* include construction-trucks arriving to and departing from the project area as well as operating on-site.

Emissions from nonroad construction equipment and on-road vehicles, as well as *dust-generating* construction activities such as truck loading and unloading operations, have the potential to (negatively) affect air quality. Equipment-based emissions are generated from the operating (diesel) engines on construction sites, whilst dust is generated from the construction activities themselves. The potential for dust emissions is *higher during the dry season* (especially when windy), and obviously much less during the rainy season.

Thus, the direct impacts on air quality following the foreseen Civil Construction works, include:

- *Emissions of dust* from construction activities and movement of vehicles and heavy machinery over unbound/unpaved surfaces; and
- *Emissions of combustion/exhaust* from equipment/ vehicles.

Significance of Construction on Air Quality and mitigation measures

Table c.1 hereafter presents the impact assessment of the construction works on the air quality.

AIR QUALITY	
Phase	Construction
Environmental Impact	Execution of the Waterfront redevelopment plan
Description	The redevelopment plans of the waterfront include: landscaping & vegetation, pavement erection, drainage infrastructure, road reconstruction and traffic provision. During construction of these work items, <i>dust and exhaust emissions</i> will be generated, which may lead to nuisance to people working or living in the direct neighborhood, and may even lead to airway health issues.
Related construction activities (table b.2)	I. Demolition/ removal works II. Earthworks (especially excavations and soil layer erection) III. Drainage works (pit excavations) VI. Road foundations (basecourse operation)

Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Medium	ST	MS	Medium	High	Moderate
Key mitigation measures/Recommendations by ESIA Consultant				Actual mitigation measures as listed in the Technical Specifications (TeSp) [Yes or No/ Recommended to add]			
<ul style="list-style-type: none">• Use robust <i>watering program</i> to suppress dust as needed in all unpaved/ unbound areas (e.g., use of watering truck with sprays).• <i>No burning</i> of any waste at construction sites.• Keep work <i>vehicles clean</i> (particularly tires) to avoid tracking dirt around and off the site.• <i>Cover work vehicles</i> transporting granular & stone materials to prevent materials being spread around and off the site.• <i>Minimize drop heights of materials</i> when conducting on or off-loading of soils, granular and stone materials.• Avoid <i>unnecessary idling</i> of construction equipment or delivery trucks when not in use. Especially if near direct work areas or residents.				<ul style="list-style-type: none">• Yes; Paragraph 1.22 (dust control).• Idem Par. 1.22• Yes, but indirectly in Par.1.22 (last paragraph "The Contractor shall take utmost care not to spillor in the project area".• Yes. Par.1.22 (3rd Paragraph). Assumed coverage hereof is (also) meant by "wind fences". See also additional measures below.• Not mentioned. Recommended to include in Par.1.22 of the Technical Specifications. Sample: "<i>the Contractor shall see to it that during his earth moving operations, drop heights of soil and granular materials by loader and/or excavator shall not increase the risk of extraordinary dust generation</i>".• Not mentioned. Recommended to include in Par.1.22 of the Technical Specifications.			
Additional measures included in the Technical Specifications, not listed by the ESIA Consultant (and accompanied by remarks): <ul style="list-style-type: none">❖ Par. 1.22 (pg 20/76): storage of wind fences materials on site. <i>Remark: assumed that here is meant the use of provisions (e.g. blanket materials) for the coverage of dust generating materials (in trucks or stock piles).</i>❖ Par.1.22: stabilization of excavated materials. <i>Remark: assumed that chemical stabilization is meant here. This method is deemed Not feasible as actual dust control option, since within the design no other stabilization materials are used. Therefore, it is very unlikely that without an obligatory prescription of such costly system, (competitively engaged) Tenderers/Contractors will include such system within their control methods.</i> <i><u>Recommendation:</u> because of the rather over seeable (small-scale) construction site in terms of dust control, it is believed that this method is <u>not needed</u>. In case the Employer insists on keeping</i>							

this method within the listing, it is recommended that it is written as “obligatory” for all excavated materials (within the dry season), and of course under instruction of the Engineer.

- ❖ Par.1.23: for sake of completion, it is mentioned here that as per Specifications, the Contractor his “Working Method” shall include his plan for dust (and noise) control.

With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	High	Minor
Residual effect(s)	Neglectable (to non). No residual impact significance expected after completion of the project, and as such no additional mitigation/ management measures are needed.						

Table c.1: impact assessment of the construction works on Air Quality

2.2 Noise and Vibration Control

General

Noise levels during construction at the project site and the therein residing (business & residential) communities will be generated by:

- Noise from the operation of construction equipment
- Noise from construction and delivery vehicles traveling to and from the site

Noise and vibration levels at a given location are dependent on:

- ❖ The *type* and *quantity* of *construction equipment* being operated
- ❖ The *acoustical utilization factor* of the equipment. This regards the *%-of time* an equipment is operating with a certain distance to the noise-sensitive receptors or the distance to any noise shield (e.g. from buildings, walls, or barriers)
- ❖ The objects being constructed, as well as the actual stage of construction reached versus the location of the construction activities relative to the noise-sensitive receptor locations.

Various international documentation exists on the generated noise level of construction equipment. In *table d.1* hereafter, a condensed selection is presented with their potential relevance to the project.

No.	Equipment List	Typical Noise Level at 15m ¹ [dBA]	Potential use on the project [Yes or No]	Remark
1.	Auger Drill Rig	85	No	Small auger may be used. No relevance to noise.
2.	Backhoe	80	Yes	May be used for small scale soil and material site hauling.
3.	Compactor (ground)	80	Yes	Will differ for landscaping operation vs. road pavement operation. For landscaping small scale rollers are expected with less noise generation.
4.	Compressor (air, less than or equal to 350 cfm)	53	Yes	For various cleaning operations.
5.	Concrete Mixer Truck	85	Yes	For all reinforced concrete foundations.
6.	Concrete Pump Truck	82	Yes	Idem
7.	Concrete Saw	90	Yes	May be required during removal operations.
8.	Crane	85	--	Not expected for civil construction. The structures may require a small crane.
9.	Dozer	85	No	Not expected on the site.
10.	Dump Truck	84	Yes	For all soil and suchlike hauling operations.
11.	Dumpster/Rubbish Removal	78	Yes	For temporary collection of construction and domestic waste

No.	Equipment List	Typical Noise Level at 15m ¹ [dBA]	Potential use on the project [Yes or No]	Remark
				from the site.
12.	Excavator	85	Yes	Expected to be one of the main equipment on the site.
13.	Flat Bed Truck	84	Yes	For deliverance of equipment and materials.
14.	Front End Loader	80	Yes	Expected as a main equipment for onsite soil and material hauling and placement.
15.	Generator (< 25 KVA, VMS signs)	70	No	Expected that the Contractor will connect to power grid.
16.	Impact or vibratory Pile Driver	95	No	No piling works foreseen.
17.	Jackhammer	85	Yes	For removal works.
18.	Paver	85	Yes	Road works
19.	Pumps	77	Yes	For drying of excavated pits.
20.	Roller	85	Yes	Road works.
21.	Tractor	84	Yes	Potentially as auxiliary equipment
22.	Vacuum Street Sweeper	80	Yes	Contractor dependent. Needed for road cleaning.
Source: ¹ New York DOT "Rules for Citywide Construction Noise Mitigation," Chapter 28, DEP, 2007.				

Table d.1: overview of impact assessment of the Construction works on air quality

Analysis of the "Noise Receptor" environment and target noise levels

When overviewing the project site from a "Noise Receptor" point of view, the project area is expected to be (qualitatively) classified as a "Medium to Low" sensitive area. *Medium*, as linked to the residential portion of the area, and *Low* as linked to the business/commercial portion of the area.

The objects to be constructed, both civil, as well as structure wise, are deemed to require simple and standard construction equipment. Their noise generation can therefore be characterized as "*customary*" for inner city construction projects. Because also piling works are not included in the scope, *vibrations* can also be qualitatively classified as *low to very low*.

For eventual future reference on the project (e.g. when actual construction noise levels need to be measured for setting additional mitigation measures), the following Noise level guide ceilings can be used (NY-DOT, 2007):

Residential area: $L_{10-Res} \leq 65 \text{ dBA}$

Commercial area: $L_{10-Com} \leq 80 \text{ dBA}$

Hereafter the significance of Noise & Vibrations impact to the project is determined.

Significance of Construction on Noise & Vibration Control

Table d.2 hereafter presents the impact assessment of the construction works on the air quality.

NOISE & VIBRATIONS							
Phase	Construction						
Environmental Impact	Execution of the Waterfront redevelopment plan						
Description	The redevelopment plans of the waterfront include: landscaping & vegetation, pavement erection, drainage infrastructure, road reconstruction and traffic provision. During construction of these work items, <i>Noise and Vibrations</i> will be generated, which may lead to nuisance to people working or living in the direct neighborhood, and may even lead to damage (e.g. cracking) to existing structures.						
Related construction activities (table b.2)	<p>➤ By virtue, <u>all construction works</u> generate noise, with relative <u>very limited</u> noise from:</p> <p>V. Road side reconstruction (walkways etc.)</p> <p>VI. Recreational area, especially the vegetation landscaping portion of the works.</p>						
Without mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Low	ST	MS	Low	High	Minor
Key mitigation measures/Recommendations by ESIA Consultant				Actual mitigation measures as listed in the Technical Specifications (TeSp) [Yes or No/ Recommended to add]			
<ul style="list-style-type: none"> Maintain all construction equipment in accordance with manufacturer's specifications. Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable. Schedule construction, modification, and rehabilitation work to minimize direct activity on the road during peak periods of traffic (if so relevant). Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g. residents, commercial businesses, and apartments) of 				<ul style="list-style-type: none"> Not specifically mentioned, but can be regarded as customary for an experienced contractor. No specific inclusion in specification needed. Yes. Par. 1.21 defines the reigning working hours for the contract as from 07:00 A.M. till 18:00 P.M. Yes. Par. 1.12 covers traffic control framework with aim of facilitating smooth flows as much as possible during construction. Yes. Par.1.12 dictates public communication responsibilities on part of the Contractor. Par.1.25.1 dictates notice obligations to residences. 			

construction activities.							
<ul style="list-style-type: none">• Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies).• Avoid <i>unnecessary idling</i> of construction equipment or delivery trucks when not in use. Especially if near direct work areas or residents.				<ul style="list-style-type: none">• Not mentioned. Recommended to include in the Specifications. E.g. in Par.1.23 (see below).• Not mentioned. Recommended to include also in Par.1.23 (or reference Par.1.22 as recommended under dust control).			
Additional measures included in the Technical Specifications, not listed by the ESIA Consultant (and accompanied by remarks):							
<ul style="list-style-type: none">❖ Par. 1.25: damage due to vibrating compactors residing with the Contractor. <i>Remark: correct inclusion of such obligation.</i>❖ Par.1.23: general obligation of the Contractor to control Noise (and dust). <i><u>Recommendation</u>: list in Par.1.23 that back-up alarms of equipment will be broadband spectrum based.</i>							
With mitigation	Type of Impact	Magnitude	Duration	Scale	Severity	Probability	Impact significance
	Negative	Negligible	ST	MS	Negligible	High	Negligible
Residual effect(s)	Non. No residual impact significance expected after completion of the project, and as such no additional mitigation/ management measures are needed.						

Table d.2: impact assessment of the construction works on Noise & Vibrations

2.3 Other Impacts

Except for the impacts related to air quality, noise and vibrations, the potential impacts of the other construction related aspects, as listed in *table b.1*, have been qualitatively assessed. The following table gives the overall summary view of their significance (*table e*).

Civil Construction Impact Assessment of Other Remaining Aspects (following table b.2)						
No.	Environmental element	General qualification [Relevant/ Non-Relevant]	Impact Significance			Adequate measures in Technical Specifications [Yes or No]
			Severity	Probability	Significance	
3.	Water pollution control <i>Risk of damage to water utility: moderate to high risk following urban character of the project site.</i>	R	Low	High to medium-high	Minor	Yes. <i>Safety measures and damage responsibilities listed.</i>
4.	Soil disposal and/or recycle <i>Effects of dust generation affiliated to soil handling/piling in dry season, as well as off-site handling of soils destined for disposal outside the project site. Effects as per bullet 1.</i>	R			Idem Air quality	Idem Dust control
5.	Construction material control <i>Unbound materials.</i>	R			Idem Air quality	Idem Dust control
10.	Local residence & business protection <i>Impacts for property access during construction, as well as impaired safety. Furthermore, nuisance following dust and noise, and damages to properties.</i>	R	Low	High	Minor	Yes. <i>Safety measures and damage responsibilities listed. Also notices responsibility to residence and business community.</i>
11.	Traffic management & maintenance <i>Risk to commuting delays. Local parking limitations, blockage of entrances.</i>	R	Low	High	Minor	Yes. <i>Traffic control & safety measures taken. Damage responsibilities listed. Also notices responsibility to residence and business community.</i>

Civil Construction Impact Assessment of Other Remaining Aspects (following table b.2)						
No.	Environmental element	General qualification [Relevant/ Non-Relevant]	Impact Significance			Adequate measures in Technical Specifications [Yes or No]
			Severity	Probability	Significance	
12.	Cultural heritage conservation	R to NR	Low	Low	Negligible	Yes. <i>Par.1.15 requires a "hold point" on part of the Contractor for "heritage" items.</i>

Table e: overview environmental elements of the Civil Construction and their relative relevancy



Paramaribo Urban Rehabilitation Program

(SU-L1046)

Chance Find Procedure

Prepared by	Version	Date	Approved by	Date
Program Implementation Unit	1	02-05-2024	Program Manager	

	Chance Find Procedure	Version	1
		Date	28 Apr '24

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1 INTRODUCTION

According to the “Paramaribo World Heritage Site Management Plan (PWHSMP) 2011-2015,” there are approximately 400 known pre-Columbian archaeological sites in Suriname. Of these, only a few are located in and around Paramaribo. Within the Paramaribo WHS, the only known pre-Columbian archaeological resources are at Waterkant, Mirandastraat, Heerenstraat, Gravenstraat, Sommelsdijkse Kreek and Oranjeplein (Independence Square). Additional resources in the Paramaribo district are located at Kwatta, Charlesburg, Cultuurtuin and Blauwgrond, approximately 5 to 10 km from the inner city (Boomert, 1975).

According to the PWHSMP, archaeological research in Suriname is predominantly focused on the pre-Columbian period. Archaeology of the colonial period is mainly practiced by amateur archaeologists. Urban archaeological resources can be found at construction sites within the historic inner city, and consist mostly of clay pipes, bottles, coins, brick foundations, and brick water cellars. Archeological resources preserved within standing historic structures include the remains of a fountain or pound under the floor of the St. Peter and Paul Cathedral, which dates back to the Jewish Theater building “The Resurrected Phoenix,” brick foundations of an earlier building constructed at Grote Combéweg # 2, and brick foundations of houses destroyed during the city fires of 1821 and 1832 (e.g., Waterkant 12). Several historic brick wells, cellars, and ovens have also been documented by the Suriname Built Heritage Foundation (SBHF) in Paramaribo.

As noted in the PWHSMP, there is the potential to find additional archaeological remains in the Paramaribo WHS associated with the first inhabitants of Paramaribo, as well as the Indigenous settlement near the Palm Garden.

2 Purpose of the chance find procedure.

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8 and European Bank for Reconstruction and Development (EBRD) Performance Requirement 8, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented. OP-703, Directive B.9 of the Inter-American Development Bank (IDB) states that “For operations where archeological or historical artifacts can be expected to be found either during construction or operations, the borrower will prepare and implement chance find procedures based on internationally accepted practices”.

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3 SCOPE

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

4 DEFINITIONS

Term	Definition
Artefact	An object made by a human being, typically one of cultural or historical interest.
Archaeological site	A place (or group of physical sites) in which evidence of past activity is preserved either prehistoric or historic or contemporary.

5 Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

6 ROLES AND RESPONSIBILITIES

The general roles and responsibilities of the Program Manager and the personnel involved in the implementation of the Chance Find Procedure for PURP is briefly listed in Table 2.

Table 1 - Personnel Role and Responsibility

Position/Role	Responsibility
Program Manager (PM)	<ul style="list-style-type: none"> • Informs and maintains contact with the Directorate Culture. • Works with the EHS, CLS, and Technical Advisor on actions to be taken to resolve grievances. • Support the Directorate of Culture in making decisions regarding the handling of the finds.
Technical Advisor (TA)	<ul style="list-style-type: none"> • Carry out preliminary field assessment after finding has been discovered. • Provide advice to the PM and Directorate Culture regarding the handling of the finding.

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Archaeological Department (AD)	<ul style="list-style-type: none"> • Determines the type of find. • Conduct field assessment and document the finds through pictures, field notes and GPS coordinates. • Prepare and submit report of the assessment to Directorate of Culture
Environmental, Health & Safety (EHS) Specialist & Community Liaison Specialist (CLS)	<ul style="list-style-type: none"> • Receive information about the finds. • Inform PM and TA about the finds. • Contact the AD and provide information about the finds. • In case of excavation or earth moving works, contact the AD at least 2 weeks prior to commencement of works. • Ensure representative of AD is present during excavation or earth moving works
Contractor	<ul style="list-style-type: none"> • Report any find immediately to the PIU. • Stop all activities immediately in the vicinity of the finds. • Secure the area of the finds. Depending on the type of finds, the contractor is responsible for placing security at the site. • Submit timely the workplan for any excavation or earth moving works to the PIU

7 Potential impacts to archaeological sites

Archaeological materials are most likely to be present in the Paramaribo World Heritage Site (PWHS) or at depths undisturbed by previous construction; however, artifacts may also be found where previous development has occurred, or even within disturbed fill layers. Prior ground disturbance in an area should not be seen as an indication that archaeological materials are not present.

Project work that involves excavation, movement, vibration, construction of sewerage and septic tanks, or disturbance of soils has the potential to adversely impact unidentified archaeological materials. This work can include, but is not limited to, project activities such as land clearing/grubbing, excavation, asphalt/concrete removal, equipment moving, and excavation.

8 Chance finds procedure.

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken (Figure 1):

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1. The contractor stops all works in the vicinity of the find and secure the area until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained.
2. Immediately notify the Contractor's project manager. The project manager will then notify the PIU, either the EHS Specialist, Technical Advisor and/or the Community Liaison Specialist (CLS).
3. The PIU will inform the Archaeological Department (AD) and request the assessment of the location of the find. The PIU provides pictures of the finds.
4. The PIU will record details in Incident Report and take photos of the find.
5. The Contractor secures the discovered site or area to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged.
6. The AD determines the appropriate type of find. The AD must make a rapid assessment of the site or finds, either through the pictures or site visit, to determine its importance. Based on this assessment the appropriate type of find will be determined: Minor Chance Find, Significant Chance Find or Human Remains (Table 3). The AD can decide to conduct archaeological monitoring during construction in order not to delay the work schedule of the Contractor.
7. Sites of Minor Chance Find (such as isolated or unclear features, and isolated finds) should be recorded immediately by an archaeologist, thus causing a minimum disruption to the work schedule of the Contractor.
8. The results of all archaeological work must be reported in writing by the AD to the Directorate of Culture (MESC) and the PIU, once completed.
9. In the case of Significant Chance Find the Directorate of Culture and the PIU should be informed immediately and in writing within 5 days of the find.
10. In the case of Human Remains, the local law enforcement (Police) will be informed immediately.
11. The decision on how to handle the finding shall be taken by the Directorate of Culture and the PIU after the report from AD has been received. The report should document the chance find through pictures and field notes, including GPS coordinates of the finds. The decision could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration, and salvage.
12. In cases 8 & 9, AD prepares and implements a treatment plan.
13. Construction works could resume only after permission is granted from the PIU.

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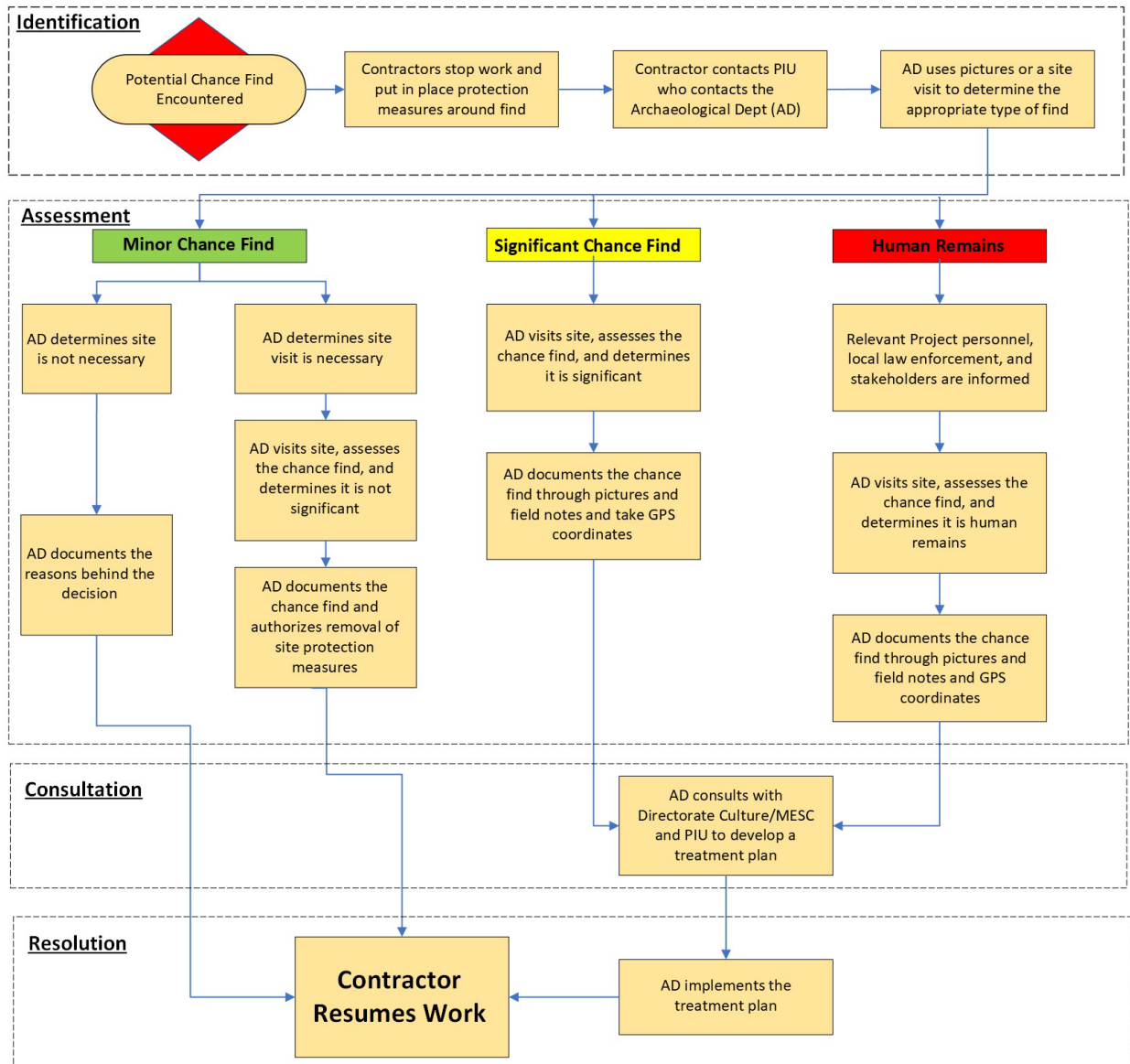


Figure 1 – Chance Find Procedure Flow Chart

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Table 2 - Three-tiered Chance Find Hierarchy

Chance Find Type	Characteristics	Evaluation Process
Minor Chance Finds	Modern features or objects. Isolated historic or prehistoric artifacts that are out of context or lack research potential or value.	Construction work will stop in the area of the find. The potential finds will be reported to the PIU within 24 hours, who will then notify the AD. The AD will then examine the potential find via photographs or a site visit. If the find is determined to represent a minor chance find, the find will be documented and collected without MESC consultation. AD informs the PIU about the results of the assessment. Construction activities will then resume in the area.
Significant Chance Finds	Significant historic or prehistoric features or artifacts.	Construction work will stop in the area of the find. The potential finds will be reported to the PIU within 24 hours, who will then notify the AD. The AD will then conduct a site visit to examine the potential find. If the find is determined to represent a significant chance find, the AD will develop a treatment plan in consultation with the MESC/PIU. Construction works will resume in the area upon completion of the treatment plan.
Human Remains	Modern, historic, or prehistoric burials, isolated human remains, and/or associated features and/or artifacts (i.e., grave goods).	Construction work will stop in the area of the find. The potential finds will be reported to the PIU within 24 hours, who will then notify the AD. The AD will then conduct a site visit to examine the potential find. If the find is determined to represent human remains and/or burial goods, the PIU will inform the local law enforcement agency. If human remains are believed to be archaeological in nature, the AD will initiate consultation with the Directorate of Culture/MESC and other stakeholders (e.g., potential descendent communities), as appropriate, to develop a treatment plan. Construction works will resume in the area upon completion of the treatment plan.

8.1 Excavation Works and Earth Moving Activities

- Excavation works or earth moving activities may only take place with the presence of an Archaeologist.
- Contractors are required to submit a workplan for excavation and/or earth moving works at least 3 weeks prior to commencement to the PIU.

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- At least two weeks before excavation works or earth moving activities commence, the Archaeological Department must be informed by the PIU.
- The Archaeological Department shall indicate an archaeologist or a trained technician to be present during the excavation work and to monitor the work.
- Works will not take place if the archaeologist/technician is not on site in the high-risk areas.

8.2 Recording

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with Directorate of Culture/Archaeological Department, conclusions and recommendations/guidance, implementation reports kept. The AD should handover copies of all records of the findings and related archaeological reports to the PIU which will log them in the PIU PURP database.

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9 References

Boomert, A. 1975. Archeologische vindplaatsen in Suriname. Stichting Surinaams Museum/Archeologische Dienst, Ministerie van Onderwijs en Volksontwikkeling.



Livelihood Restoration Plan for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure

Updated Plan

MAY 2024

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Abbreviations

ABS	General Bureau of Statistics
DC	District Commissioner North-East
ESIA/EIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management and Monitoring Plan
GRM	Grievance Redress Mechanism
IDB	Inter-American Development Bank
IP	Indigenous Peoples
LRP	Livelihood Restoration Plan
LI	Livelihood Impact
NIMOS	National Institute of Environment and Development in Suriname
NMA	National Environmental Authority
PAPs	Project Affected Peoples
PURP	Paramaribo Urban Rehabilitation Program
ROM	Ministry of Spatial Planning and Environment
SMS	Foundation for Shipping in Suriname
UNESCO	United Nations Education, Scientific and Cultural Organization
WBR	Waterkant Beheers Raad
WHS	World Heritage Site
WMP	Waste Management Plan

Executive Summary

Project Description

In 2017, the Surinamese Government received a loan of 20 million U\$ dollars from the Inter-American Development Bank to finance the Paramaribo Urban Rehabilitation Program (PURP), contributing to the socio-economic revitalization of the Paramaribo historic center. Paramaribo's historic Waterfront situated along the Suriname River, is the most important public space inside the historical center area defined as a World Heritage Site (WHS) by UNESCO and will undergo redevelopment.

A plan for the redevelopment of this important area includes: improvement of safety and security, traffic flow and parking, signage and markings, facilities for bicycles and pedestrians, space for (un)loading, connection to the water, tourism revitalization, removing homeless people, preservation of monuments, trees/shade, spaces for events and culture, spaces for commercial activities, sport/leisure activities, spaces for craft seller, accessibility for disabled persons, seating, 24/7 access, waste management, and utilities.

This redevelopment will adversely impact a group of food-and craft vendors and their workers, who are leasing commercial space in the project site and will need to temporarily relocate their business ventures to other locations or cease the activities completely. These project affected people (PAP) will experience mainly temporary income reduction or loss to support themselves and their families, therefore there is a need to minimize and mitigate such adverse impacts and risks with the following Livelihood Restoration Plan (LRP).

Scope and Objectives of the LRP

The LRP follows the Inter-American Development Bank (IDB) OP-710 on Involuntary Resettlement that aims to avoid or minimize involuntary resettlement and, where this is not feasible, to ensure that the affected people receive fair and adequate compensation and rehabilitation. Therefore, the project will assist economically displaced persons in improving or at least restoring their livelihoods and standards of living to pre-displacement or to levels prior to the beginning of project implementation. The presence of indigenous women as craft vendors triggers IDB's OP-765 on Indigenous Peoples.

The project is expected to mainly cause temporary economic displacement¹ of local craft- and food vendors and their workers which will adversely impact their livelihood and income. The project will cause displacement during the construction phase of the project, projected for 12 months, with a possible time extension.

¹ Economic displacement refers to the loss of access to assets that may lead to loss of income and livelihood

The LRP has the following sub objectives:

- Mitigate unavoidable adverse social and economic impacts resulting from project activities and provide timely livelihood support for loss of income.
 - Quantify impacts and develop compensation schemes for each group of PAPs (i.e. crafters- and food vendors group and workers of the food vendors who will lose their job). Develop livelihood restoration activities to enable affected persons to benefit from the project.
 - Avoid or minimize displacement by force.
- Provide a plan for the implementation of the LRP by the PIU, to support PAPs and reduce their risks to impoverishment.

Project Impacts

The proposed project will disrupt the selling of crafts and food in the waterfront and will put at risk the jobs of workers of the food vendors because the vendor stands will be renovated or demolished and then rebuilt. The vendors will have to leave the site from the moment construction starts until it is completely finished for an estimated 12 months, with a possible extension of time. Crafters who are operating their businesses at the Waterfront will be impacted by temporary relocation during the construction phase. Below, Table 1 provides an overview of the project impact and the amount of Project Affected Peoples (PAP)s.

Table 1: Compensation overview

Compensation description	Details PAPs			
	Craft Vendors	Food Vendors	Workers	Remark
# Temporary economic displaced	18	11	24	Temporary economic displacement will take place. Craft vendors will be relocated to another location for 12 month during construction, while food vendors and their workers refused relocation and will be financially compensated during the construction period.
Type of compensation	Relocation to the Kasimex terrain (corner of Waterkant and Keizerstraat)	Financial compensation	Financial compensation	

Livelihood Support and Restoration

The provisions for livelihood restoration outlined in the LRP are founded on the entitlement matrix, which has been developed based on the IDB operational guidelines on involuntary resettlement (OP-710) and indigenous peoples (OP-765). A Socio-economic and cultural analysis was done to establish the entitlements for craft- and food vendors. The entitlements were defined on the assumption that the PAPs are small-scale enterprises through vending stands and location and have had verifiable activity until the 10th of January 2023, when the Waterfront ESIA was announced to the stakeholders and initiated.

After consultations with the PAPs in which alternatives for compensation were thoroughly discussed and negotiated, the Crafters have decided for livelihood restoration with relocation to the Kasimex terrain, and food vendors and their workers for financial compensation.

Implementation of Livelihood Restoration

The PIU following the IDB E&S policies is responsible for the **implementation** of the project and has a project implementation unit (PIU/PURP) assigned for this task. Activities that will be undertaken for the finalization and implementation of the LRP are the following: i) finalization and disclosure of the LRP, ii) set-up of database of eligible PAPs, iii) signing of livelihood support agreements, iv) preparation of alternative location, v) payment of livelihood support, vi) monitoring and closure. Throughout the implementation of this LRP, PAPs will be engaged closely through an array of meetings and other communication activities. Likewise, to ensure the effectiveness of the implementation and to adequately assess received grievances internal monitoring of the LRP activities will be carried out and reported on a quarterly basis by the PURP. Furthermore, an evaluation will be prepared every six months by a third party as a form of external monitoring.

An indicative budget was developed for the execution of the LRP, and is presented in Table 2 below:

Table 2: Indicative budget for execution of the LRP

No .	Measure/Impact	PAPs	Total Budget per month for all PAPs (SRD)	Total Budget for 12 months for all PAPs (SRD)	Total Budget per month for all PAPs (USD)	Total Budget for 12 months for all PAPs (USD)
1	Displacement/relocation	Crafters	9,000	N/A	N/A	N/A
2	Displacement and suspension of business activity	Food vendors	47,580	N/A	N/A	N/A
3	Loss of income	Food vendors	291,500	3,498,000	7,738	92,862
4	Workers' compensation	Workers	170,400	2,044,800	4,530	54,300
5	Training package	Crafters & Food vendors	N/A	536,680	N/A	14,000
Total LRP implementation Budget			518,480	6,079,480	12,268	161,162

1. Introduction

1.1 Project Description

In 2017, the Surinamese Government received a loan of 20 million U\$ dollars from the Inter-American Development Bank to finance the Paramaribo Urban Rehabilitation Program (PURP), contributing to the socio-economic revitalization of the Paramaribo historic center. The program, implemented by the Ministry of Education, Science and Culture, aims to i) attract new residents and commercial activities, ii) restore the value of its cultural heritage, iii) reduce traffic congestion, and iv) strengthen the institutional framework for managing its sustainable development.

Paramaribo's historic Waterfront situated along the Suriname River, is the most important public space inside the historical center area defined as a World Heritage Site (WHS) by UNESCO. The Waterfront provides a unique opportunity to reimagine the center as a vital area of residence and public encounter, and as a main core of everyday leisure activities and yearly events. There is an urgent need to rethink the city's relationship with water and develop new strategies to adapt and mitigate climatic changes.

The historic city center further faces a wide range of problems concerning traffic and mobility which contributes to its current chaotic state. Traffic congestion, unregulated parking, inadequate sidewalks, and lack of infrastructure for alternative modes of transportation such as bicycle paths, are issues encountered by everyday users. Homeless people and drug addicts are present near the waterfront, and this social economic problem has exacerbated due to the global pandemic (COVID-19). The homeless group can be a deterrent to downtown visitors.

Within PURP, a design for the redevelopment of the Waterfront and improvement of mobility infrastructure has been developed with inclusion of stakeholders (Figure 1-1). The design was consulted with key Government stakeholders and considered several aspects including: safety and security, traffic flow and parking, signage and markings, bus routes, facilities for bicycles and pedestrians, space for (un)loading, connection to the water, tourism revitalization, homeless people, preservation of monuments, trees/shade, spaces for events and culture, spaces for commercial activities, sport/leisure activities, spaces for craft sellers, accessibility for disabled persons, seating, 24/7 access, waste management and utilities.

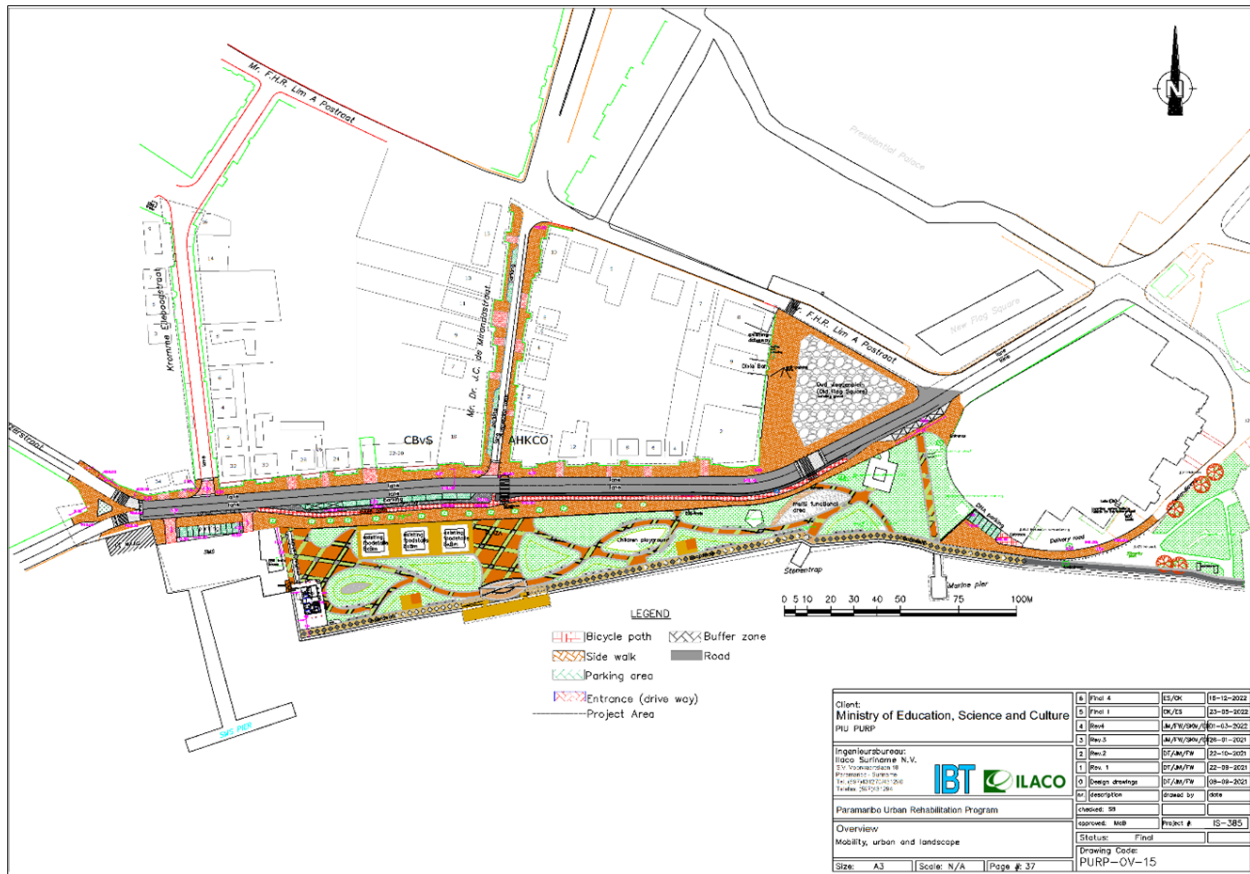


Figure 1: Design for the redevelopment of the Waterfront. Source: PURP

1.2 Objective

The main objective of the LRP is to minimize and mitigate the adverse impacts on those who are temporarily displaced. The LRP has the following sub-objectives:

- Mitigate unavoidable adverse social and economic impacts resulting from project activities and provide timely livelihood support for loss of income
- Quantify impacts and develop compensation schemes for economically displaced persons in a fair and equitable manner.
- Develop livelihood restoration activities to enable affected persons to benefit from the project
- Avoid or minimize displacement by force.

The LRP was developed by the PIU PURP in the period of January 2023 till November 2023, in tandem with the ESIA for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure.

1.3 Scope

The scope of this LRP follows the IDB's OP-710 on Involuntary Resettlement that aims to avoid or minimize involuntary resettlement and, where this is not feasible, to assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement or to levels prior to the beginning of project implementation.

The project is expected to cause temporary economic displacement² of a total of 18 crafter, 11 food vendors and 24 workers, thus impacting primarily their livelihood and income-generating activities. The project is expected to cause displacement during the construction phase of the project, projected for 12 months starting in Q2 of 2024.

Craft and food vendors have indicated in a previous Livelihood Assessment Study³ that business closure for more than a few weeks will impact their income, and they would like either i) financial compensation or ii) in-kind compensation such as relocation to another business location, training, etc. Especially the food vendors rely on a regular customer base for sustained income, and they are worried they will lose their regular customer base, making business continuity a priority for them⁴.

The key themes covered under this LRP are the following:

- Socio-economic profile of Project Affected Peoples (PAPs)
- Impact of the project on livelihoods
- Restoration: entitlements, eligibility, cut-off date, benefits
- Planned livelihood restoration activities and limitations
- Capacity building requirements
- Livelihood planning and implementation: responsible entities and institutions, stakeholder engagement, grievance redress, budget, execution calendar, monitoring, and evaluation.

The presence of indigenous women as craft vendors triggers IDB's OP-765 on Indigenous peoples (IP) that aims to design and implement projects in a way that fosters full respect for indigenous peoples' human rights and cultural uniqueness, ensuring that they receive cultural compatible social and economic benefits and/or do not suffer adverse effects or are excluded during the process.

Compliance with the IDB's OP-765 for the Redevelopment Waterfront project will bring in an additional requirement:

- Include perspectives and options preferred by the affected indigenous peoples in the provision of benefits and design of mitigation measures.
- Develop plans and implement resettlement in continued consultation with the affected indigenous and maroon people.

² Economic displacement refers to the loss of access to assets that may lead to loss of income and livelihood

³ Culturecom, 2016. Livelihoods Assessment and Plan for the Waterfront redevelopment and Bus Terminal improvement.

⁴ ERM, 2016. Environmental and Social Assessment for the Paramaribo Revitalization Program

In addition, the LRP is supplementary to the limited Environmental and Social Impact Assessment for the Redevelopment of the Waterfront and Improvement of Mobility Infrastructure (Category B path 2) as required by the National Institute for Environment and Development in Suriname (NIMOS).

1.4 Study Methodology

The LRP was prepared by the PURP PIU in close consultation with the project affected persons (PAPs) and builds on the Environmental and Social Assessment for the Paramaribo Urban Rehabilitation Program⁵ and the Livelihood Assessment⁶.

The study was prepared with reference to industry best practice to provide environmental/socio-economic protection for the proposed development activities. An overview of the study approach is provided in the following sections.

1.4.1 Data Collection

Data on the background socio-economic conditions of the PAPs and the existing regulatory regime under which the LRP should be executed was collected in the pre-phase of this LRP, as follows:

- **Desk-top Research.** A desk-top exercise, collating information from the internet, databases and a library search of published information. Specific attention was given to earlier livelihood restoration activities in Suriname.
- **Key-Person Interviews.** Interviews with experts and PAPs because livelihood restoration planning is a novel undertaken in Suriname.
- **Baseline Field Survey.** Field survey for gathering information on the socio-economic profile of the PAPs. Household interviews were conducted to obtain a baseline information and profiling of the PAPs. The household interviews were conducted for PAPs through a structured questionnaire gathering details on the household composition, employment and income, educational and skill level, health, infrastructure and the perceptions about the project and livelihood restoration. Follow-up phone calls were conducted to validate field survey information. An overview of the questionnaire is provided in Appendix 1.

Information gathered during interviews was kept confidential. For the purpose of analysis and this report, every individual or household received a unique identifier.

The data collection and verification were conducted from January 2023 till November 2023, with PAPs from all PAP groups: Crafters (18), Food vendors (11) and Workers (24).

⁵ *Ibid* ERM, 2016

⁶ *Ibid* Culturecom 2016

1.4.2 Data Analysis

The collected data was analyzed using the following methods:

- Kobo Toolbox, a data analysis tool from the United Nations which can work in online and offline situations. Kobo Toolbox is a simple tool to collect data in phones and tablets in a safe manner and has tools to visualize spatial data and also export data at any time in formats such as Excel, CSV, KML, SPSS. Kobo Toolbox was used to analyze the **Baseline Field Survey**.
- **Focus Group Sessions.** The thoughts and opinions of participants were collected, and main themes were identified.

The analyzed data was used to determine the profile of the PAPs, their vulnerabilities, projected impacts, eligibility criteria and the livelihood support activities presented in this LRP. Results from the first version of the LRP were compared with data from the interviews of the update and finalization phase, and discrepancies were redressed.

1.4.3 Stakeholder/PAPs Engagement

Stakeholder consultation is a key component throughout the LRP process. The objectives of stakeholder consultation for this project included the following:

- Enhance the quality of the baseline data by collecting information from PAPs and other stakeholders
- Consult PAPs in the planning of restoration of livelihood during construction activities
- Solicit the opinions and address the concerns of PAPs that may be adversely affected by proposed operations whether through routine or accidental operations.

Participation or engagement of Project stakeholders have already been included in previous studies about the Waterfront, which were conducted during the period 2016-2022. The project stakeholders have expressed their fatigue with meetings and other engagement activities for the Redevelopment of the Waterfront⁷. This was again emphasized during the data collection for update and finalization purposes in November 2023. Considering this, the time of contact with stakeholders was brought to a minimum with the updating of the LRP. Stakeholder engagement activities conducted were:

During 1st phase of LRP development

- A Scoping session with key-stakeholders at the beginning of the ESIA process to solicit their views and concerns on the project and announce the LRP planning. This was held on January 10th, 2023.
- Consultations with the PAP to gather information on the eligibility criteria and the discussion of mitigation measures and options for livelihood restoration. Information about the LRP was shared with PAPs, after which their feedback and inputs were gathered. The PAPs were also informed about the grievance redress process. An overview of the stakeholders' consultations is provided in Chapter 5.

⁷ Personal communication District Commissioner Paramaribo Northeast Mr. R. Bhola, November 2022

During LRP update and finalization phase

- Individual consultations with 16 of the 18⁸ crafters and food vendors between August 23rd – September 4th 2023 and with 24 workers in November 2023,
- Presentation and validation of LRP structure and compensation model: November 2023 for Crafters and February 2024 for Food vendors,
- Signing of agreement between PURP/ Ministry of Education, Science and Culture (MESC) and PAP's.

Efforts to gather information were planned effectively taking into account the PAPs availability. Specific approaches towards engagement were described in the Environmental and Social Impact Assessment's (ESIA) Stakeholder Engagement Plan (Appendix 4) which was developed for the ESIA study.

The PIU proceeded using data that was already accessible and information obtained throughout the consultations and interviews. The qualitative information gathered from consultations with project affected people reflects their perspectives and has been included in the design of the LRP.

1.4.5 Structure of the Report

The LRP report is structured as follows:

- **Executive Summary** - provides a summary of the main findings of the LRP.
- **Chapter 1 Introduction** - provides an introduction to and motivation for proposing the project and gives an overview of the methodology of the LRP.
- **Chapter 2 Project and Legal Requirements** - provides the project description and an overview of the applicable international and national policy, legal and administrative framework.
- **Chapter 3 Consultations with Project Affected People** – provides the topics of the consultations and concerns of the PAPs
- **Chapter 4 Socio-Economic Profile of Project Affected People** – provides analysis of the baseline socio-economic profile of the PAPs.
- **Chapter 5 Project impact on PAP Livelihood** - identifies and assesses potential impacts on the PAPs associated with the proposed project and recommends mitigation and optimization measures.
- **Chapter 6 Livelihood Support and Restoration** - identifies and assesses the eligibility and entitlement of the PAPs for livelihood restoration and recommends livelihood restoration activities.
- **Chapter 7 Livelihood Restoration Activities**- provides an overview of the support proposed for restoring the livelihood of the PAP during the construction activities. Discusses the justification for the approach and the amount and the criteria for compensation
- **Chapter 8 Implementation of Livelihood Restoration** - provides an overview of the institutional structure and mechanisms necessary for effective implementation of the LRP. Includes the compensation agreements with the PAPs.

⁸ During the consultations only 16 crafters were available for an interview. However the 2 remaining crafters are already in scope of the PIU to be included in the study.

2. Project and Legal Requirements

2.1 Project Description

The history of the Waterfront goes back to the establishment of Paramaribo in 1613 (Figure 2a). In 1683, the existing 27 houses along the Waterfront and Gravenstraat were being expanded and the area developed as center for core activities. The quay area was used for loading and unloading of ships, mainly because the Suriname river had enough room for ships to maneuver (approximately 1km wide). Also, the slave trade settled here; slaves were imported from Africa and reached the shores, after they were weighted and sold to plantation owners until 1863.

In 1821, a large number of the houses at the Waterfront were destroyed in a fire. Redevelopment of the Waterfront included newly established wooden houses with galleries, which is nowadays a feature of the inner city of Paramaribo. There are 291 listed monuments in Paramaribo and in the past three decades only a few have disappeared in favor of new developments. This feature has designated the city as a UNESCO World Heritage Site in 2002 (Figure 2b).



Figure 2: Waterkant a.- Around 1890⁹s b.- Anno 2020¹⁰.

The Waterfront redevelopment is part of a larger redevelopment plan for the inner city of Paramaribo, focusing on rehabilitating historical buildings and improving social functions. The proposed project consists of approximately 1 hectare and is part of the historic city center of Paramaribo and listed as a World Heritage Site under the UNESCO.

The project site for the Redevelopment of the Waterfront includes the area of the waterfront that stretches between Fort Zeelandia and the Waaggebouw, including part of the streets¹¹ that run into the

⁹ By Théodore van Lelyveld - Collectie NederlandMuseum, CC BY 3.0,
<https://commons.wikimedia.org/w/index.php?curid=99694995>

¹⁰ Rafael Jantz - <https://www.instagram.com/p/CIAGtzzFcZ/>

¹¹ Dr. J.C. de Mirandastraat and Kromme Elleboogstraat

Waterfront area and the so-called triangle between the Mr. F.H.R. Lim A Po straat and the Waterfront (Figure 3).



Figure 3: The proposed project area

The newly developed Waterfront will provide recreational facilities and selling opportunities for local food and craft vendors. In addition, the area will have footpaths for walking/strolling, a pier, a multifunctional area, a stage/balcony over the water, a watch tower, a playground, and an amphitheater which are accessible to the public. The construction activities are scheduled to commence in Q2 of 2024

2.1.1 Construction Activities

The Waterfront redevelopment project is set to undergo construction activities over a 12-month period, and will mainly include:

- I. Demolition: recreational area and old Flag square/road
- II. Earthworks: recreational area and old Flag square/road
- III. Drainage: main drainage infrastructure to be installed section by section

Other works planned are:

- 1) Repair and replacement of non-return flaps for outfall locations.
- 2) Construction of roadside minor pit and pipe system drains.
- 3) Installation of new herbing.
- 4) Installation of property connections, collector pipes, utility access holes, couples and check valves.

- 5) Utility Conduit Installation. Along the road next to the Waterfront, the water main will be removed and reinstalled and electricity installation will occur.
- 6) Construction of Sidewalks. Sidewalks will be constructed along the north- and south side of the road next to the Waterfront, as well as the Dr. J.C. de Mirandastraat.
- 7) Road Pavements: in the north- and south side of the road next to the Waterfront, as well as the Dr. J.C. de Mirandastraat. Road pavement activities include:
 - Pavement of pedestrian crossings
 - Milling of existing asphalt
 - Applying asphalt sealPavements for pedestrian crossings and parking will expand into Fort Zeelandia and the Old Flag square and will include line marking.
- 8) Construction of Waterfront Recreational Area. A variety of works will be executed, including:
 - Construction of riverside balcony and upgrade of marine pier
 - Building of craft market using partially the same materials from previous building, 3 buildings of each 45m², totaling 135m²
 - Building of food stands, 12 buildings of each 64m², totaling 768m²
 - Paving of areas
 - Construction of planting beds
 - Building of public playground, watch tower, recreational area and 2 Gazebo's of each 16 m²
 - Construction of landscape furniture
 - Planting of greenery
 - Provision of signage and markings
 - Construction of management building and public restrooms, total 105.8m²
 - Construction of footpath network including boardwalks and ramp.

2.1.2 Operational activities

The following activities and facilities are projected at the renewed Waterfront:

1. Recreational area
2. Crafts market
3. Food stalls
4. Watch tower
5. Balcony/stage
6. Children's playground
7. Walking paths and paths for cyclists
8. Benches to sit and relax
9. Management building and public restrooms

2.1.3 Specific Structures for the Project Affected Persons (PAPs)

The project will involve construction activities for an estimated 12 months, with a possible time extension, which will affect vendors who are currently selling their goods (craft, food, and beverages) from stands located in the project area. The stands are property of the local government and are being leased by both vendor groups. The following construction activities are planned:

- **Craft Stands.** These include 2 new buildings, each with a 20m² open area and a 25m² enclosed area. Each building has space to accommodate 4 crafters with service counters and steel cabinets for storage. The buildings will have a wooden roof construction, connected with wooden posts held by concrete base. Roof sheets are made from steel with heat insulation. The floor will be made of concrete in the covered area and tile in the open area, which is connected to several footpaths.
- **Food Stands.** For these stands renovation is planned. Currently, there are 12 food stands grouped together in 3 separate buildings of each 64m² and there is one tent in the front and one container at the back, both of which are detached from the buildings. Poor quality and damaged building parts and electrical, water and sewage facilities will be repaired and renovated. The renovations will include tiling walls and floors and painting the service counters.
- **Waterkant Beheers Raad (*Management Board*) building.** This building will be specially allocated for the Waterkant Beheersraad (WBR), which is responsible for the maintenance of the area. Currently the Beheersraad is housed in a container building, but after renovation the board will be accommodated with 1 building including toilets.



Figure 4: Waterfront after Redevelopment projection

Legend:

1. Food vendors buildings (3)
2. Crafters buildings (2)
3. Waterkant Beheers Raad & toilet group building (1)

2.2 Applicable Reference Framework

There are several government institutions which through their regular duties and authority, will be responsible for the legal guidance of the Waterfront Rehabilitation Project. This Project will be led by the Ministry of Education, Science, and Culture (MESC) through the Project Implementation Unit (PIU) of the Paramaribo Urban Rehabilitation Program. Below is a brief breakdown of the relevant ministries and agencies and their responsibilities for the project.

Table 3: Relevant Ministries and agencies and their responsibilities

Ministry of Education, Science and Culture (MESC)	Responsible for the development of policies to enhance the protection of the Paramaribo World Heritage Site (PWHS) and therefore also for the Waterfront which lies within the site.
Ministry of Public Works (MPW)	Responsible for planning, building and construction, road and walkway infrastructure, parking, drainage, sewage, waste management, green zones, park development, bridges, sea walls and dikes of the WHS. The MPW is also responsible for the maintenance of all state-owned buildings including listed monuments.
Paramaribo District Commissioner (DC)	Within the administrative division of Paramaribo, the DC is responsible for issuing licenses to all users of resorts including but not limited to shops, parking, businesses, cultural activities, advertisements on public spaces, etc. Furthermore, the DC is responsible for the monitoring of effects of business licenses and sanctioning in case of violation of rules as established in the licenses. The DC resorts under the Ministry of Regional Development.
PIU PURP	Responsible party for executing the LRP. The community liaison officer will manage the communication with the PAPs and the implementation of the LRP with support from the entire PIU.

2.3 Applicable Legal and Regulatory Framework

An examination was undertaken, encompassing local, national, and international laws and norms relevant to involuntary displacement, land expropriation, compensations, and the involvement of affected individuals. It is essential to note that the country currently lacks a specific legal framework addressing these issues. Moreover, given that Project Affected People (PAPs) do not possess property ownership of the land where their businesses are located, the concept of land or property expropriation is inapplicable. As such, in alignment with OP-710, which primarily addresses dwellings, housing, or land where individuals reside, the focus will be distinctly directed towards the displacement of PAPs' economic activities rather than a physical displacement. Relevant international policies to deal with this economic displacement are further elaborated in the next chapter.

2.4 Relevant IDB Policies

IDB OP-710: Operational Policy on Involuntary resettlement

The objective of the policy is to avoid displacement of people, and when possible, to minimize the disruption of the livelihood of people living in the project's area of influence, and ensuring that when people must be displaced, they are treated equitably and, where feasible, can share in the benefits of the project that requires their resettlement. This project - description of economic activities which may be subject to compensation or temporary relocation.

The sections applicable to this LRP prescribe the following:

- Through census and socioeconomic surveys of the affected population, identify, assess, and address the potential economic and social impacts of the project that are caused by involuntary taking of land (e.g., relocation or loss of shelter, loss of assets or access to assets, loss of income sources or means of livelihood, whether or not the affected person must move to another location)
- Identify and address impacts also if they result from other activities that are (a) directly and significantly related to the proposed project, (b) necessary to achieve its objectives, and (c) carried out or planned to be carried out contemporaneously with the project.

IDB OP-765: Operational Policy on Indigenous peoples

The objective of this policy establishes respect for the rights of Indigenous Peoples and seeks to avoid, minimize and/or compensate the project's adverse impacts and risks. It also recognizes that they can be particularly vulnerable if their lands and natural resources are affected, or if their culture is threatened.

It should be clear that the indigenous people identified in the project site neither live there nor is it their land. There is thus no threat to their cultural identity or territory. However, because the majority of crafters are indigenous women, the policy is triggered for a sociocultural analysis which was done to determine the vulnerabilities and considerations of these indigenous people and was considered in the formulation of the LRP.

IDB OP-703: Operational Policy on Environment and Safeguards Compliance

The main objective of the policy is to advance the Bank's mission in Latin America and the Caribbean toward achieving sustainable economic growth and poverty reduction goals consistent with long term environmental sustainability.

The specific objectives of the Policy and applicable to this LRP are:

- To enhance long-term development benefits to its members countries by integrating environmental sustainability outcomes in all Bank operations and activities and strengthening environmental management capacities in its borrowing member countries,
- To ensure that all Bank operations and activities are environmentally sustainable as defined in this Policy, and

- To foster corporate environmental responsibility within the Bank. The Bank will act to achieve these specific objectives by adopting measures to mainstream the environment into overall economic and social development, and to safeguard the environment in all Bank activities.

2.5 Preliminary Livelihood Framework

In 2016, a preliminary livelihood analysis, and planning framework were developed to guide potential livelihood restoration activities of the PURP program. The analysis and planning framework defined the assessing livelihood restoration and associated compensation and relocation costs of potentially affected peoples. This planning framework is summarized in Table 4. When compliant with the current structure of the PURP, essential components are included in this LRP.

While typically, cash compensation is considered a last resort, particularly in cases of vulnerability, during the initial phase of the LRP development various compensation options such as relocation and cash compensation were reflected on with the PAPs. Regrettably, information provided in these sessions fostered expectations of financial compensation. Notably, food vendors strongly expressed their preference for financial compensation over relocation. This was also highlighted in a letter to the DC.

In response to this situation, the national government, in collaboration with the PIU, approved the request to forestall any delays in project execution and mitigate potential reputational risks to the Program. Workers of the food vendors also articulated their preference for cash compensation, citing prior discussions with the food vendor they are working for.

Conversely, crafters were receptive to relocation, expressing a willingness to continue their craft business at a suitable and nearby site.

Table 4: Planning framework

Theme	Details
Principles	Minimizing negative impacts on livelihoods to every extent possible
	Providing viable alternatives of market/venue (e.g., different location for street vendors and area businesses alike)
	Compensating those economically displaced with the equivalent of lost income
	Immediately restoring capacity for existing livelihoods
Compensation	The compensation package consists of a financial compensation and a training package. Losses of income for business will be calculated using an estimation of net monthly profit of the business, based on records if any, on business owner statements. If the vendors cannot provide evidence, an average will be calculated based on information provided during the interviews in the second phase.
	Crafters will be compensated for the cost of reestablishing commercial activities at designated and agreed temporary site at the Kasimex terrain which is located across the road of the Waterfront. For lost net income during the period of transition and for the costs of the transfer and reinstallation of their equipment.
	Each eligible affected person will sign a compensation agreement together with the authorized Program representative. The compensation agreement establishes the terms and conditions by which each PAP group will be supported, mainly with the following commitments: <ul style="list-style-type: none"> • On Program side: commitment to provide the agreed compensation in kind (e.g. securing and providing an alternate business location for craft vendors free of charge) or financial support as agreed with each group PAP; and allow business owners to continue to work on their property as long as is safe. • On the affected person(s): commitment to close out/move out their businesses before any works is schedule on the Waterfront site; craft vendors will communicate potential needs for temporary relocation due to constructions activities; and • Commitment by both parties to abide by the requirements of the LRP and any other provisions related to the success of the process. The agreement for these compensations are Grievance Submission Channels: Grievances and complaints can be submitted through multiple channels, including a hotline, QR Code, website, email and information/help desk. The user's name, contact information and description of grievance will be collected within the system. Upon receipt of a grievance, confirmation will be sent immediately to the user. <p>GRM Responsibility: The Ministry and the PIU PURP are responsible for implementing the GRM and maintaining communication with the citizens who submit grievances.</p> <p>Complaint and Response Mechanism (GRM):</p> <ul style="list-style-type: none"> - Established for effective handling of community grievances, especially during construction phases. - Managed by officers of the PURP-PIU. - Diverse submission channels: hotline, QR code, website, email, and information/help desk. - Ministry and PIU PURP responsible for implementation. - Timely responses within a 3 to 14 working day timeframe. <p>System Activation:</p>

	<ul style="list-style-type: none"> - Multiple entry points: missed call interaction, QR code scanning, website navigation, hotline calls, and information/help-desk visits. - Convergence of entries in a central database for review, escalation, and resolution. - Widespread public information through social media, print ads, radio advertising, presentations, and the PURP website. <p>LRP Implementation Framework:</p> <ul style="list-style-type: none"> - Tailored actions and timelines for engagement with Project Affected People (PAPs). - Consultation with PAPs throughout planning. - Monthly tracking of LRP implementation. - Regular recording of grievances. - Third-party reviews every three months during construction and operations. - Periodic evaluations every six months. - Training reports generated after each training session. <p>Overall Objective:</p> <ul style="list-style-type: none"> - Foster a culturally sensitive and collaborative project environment. - Ensure a responsive approach to community concerns. <p>Appendix 9 - Agreement Crafters, Appendix 10 – Agreement Food Vendors & Appendix 11 – Agreement Workers. Part of compensation will be paid to move out or close out the business (one-time).</p>
Public Consultation and Participation	<p>Engagement with the PAPs has to become an ongoing process and PURP will use the facilities and resources to undertake this important and critical strategic task</p> <p>The GRM designed for PURP I will be used to receive and process grievances. Persons and businesses in the Program area should be provided with the necessary information about a “claims desk” where they would be able to deposit their written complaints and have access to an official who can discuss and help them to address and remediate their claims. The PIU PURP has a communication liaison Officer who will be the designated specialist to monitor and provide follow up on grievances and complaints from the PAPs.</p>

2.6 Definitions

For the purpose of this plan, the following definitions are used:

- **Project Affected Persons (PAPs)** – the land holder or user of affected land parcels, business or services and residents that may be affected by the PURP Program
- **Livelihood** includes the full range of means that individuals, families and communities utilize to make a living, including wage-based income, tourism and other natural resource-based livelihoods
- **Physical displacement** includes relocation or loss of shelter/housing or land
- **Economic displacement** includes loss of assets or access to assets that leads to loss of income sources, including employment, or other means of livelihood as a result of PURP -related land acquisition and/or restrictions on land use.
- **Cut-off date** refers to a calendar limit on PURP's responsibility to compensate for impacts, specifically by defining a date after which the public 'should know' not to make improvements or settle on Program land by virtue of public consultation and other communications efforts.
- **Entitlement** refers to the fact of having a right to something.
- **Compensation** in this context is the amount required, so far as money can, to put the owner of a business or structure in the same position as if his/her use and enjoyment has not been disrupted.

3. Consultations with Project Affected Persons

This chapter summarizes the topics and concerns that were raised and discussed during the consultations with PAPs. The main objectives for the consultations were:

- Obtain the topics and concerns of PAPs about livelihood restoration.
- Identify the most appropriate livelihood restoration measures supported by the PAPs.
- Obtain insight regarding the expectations of the PAPs after the renovation of the Waterfront.

3.1 Early scoping Consultations with PAPs

During scoping consultations with the PAPs from January to March 2023, see Appendix 2 – Early consultation with PAPs, the PAPs raised concerns about the project. These concerns were considered throughout the further consultation process and also in the development of this LRP through mitigation measures where applicable. The key issues raised during this phase were:

- The Crafters would feel more secure with a signed agreement from both the crafters and the Directorate Culture (PURP)/DC stating that all crafters shall be placed back at the Waterkant after construction. This could be used as proof.
- The Crafters do not want to be placed separately after the construction but as a group again because of the economic benefits.
- Their previous experience with relocation has left a trauma: when the time came for the crafters to move back to their spot, her name was not on the list, and she could not find a spot. Suddenly there was a new list with other names, and she was left to find somewhere else.
- The food vendors indicated that each of the vendors pays a fee to the Waterfront management, and that this should be used for general management (such as permanent security guard). However, this is not happening.
- The power balance within the WBR has been discussed since 2013. It is believed there are too many high-level Government officials in the board and that the local vendors are not well represented. An official request signed by local vendors was sent in 2013 but has not been addressed (this was shared with the team).

Various methods were implemented to gather data from the PAPs during the scoping phase, methods such as:

- Focus Group Discussions,
- Interviews,
- Baseline Field Survey.

Throughout the scoping phase, data was collected from PAPs through various methods such as Focus Group Discussions, Interviews, and a Baseline Field Survey. The information gathered defined details about the proposed project, its potential impacts, mitigation measures, and the eligibility criteria that would be adhered to. This disclosure ensured that PAPs were informed about the project's scope, potential effects, and the measures in place to address them, fostering transparency and stakeholder awareness during the early stages of project planning.

3.1 Summary of Consultation rounds with PAPs for finalizing LRP

The information gathered in the scoping phase was reviewed and updated from August-November 2023. The following points came to our attention that have not been mentioned beforehand:

- The crafters indicate that currently there is a significantly reduced flow of customers. They sell very few, if any, items per week. Initially, it was mentioned that the closing of the Waterkant would occur around August 9th. Although the relocation and closing have been postponed, it was publicly announced in the media by the District Commissioner (without consulting the PIU) that the closing of the Waterfront will take place on August 9th. According to the food vendors this has resulted in a considerable decline in the number of visitors to the Waterfront, but this has not been verified. The crafters are unhappy with this situation because sales were already low, and this announcement has had an even greater impact on their livelihoods.
- Furthermore, they are not comfortable with their current surroundings. They are heavily affected by drug addicts and homeless individuals who sleep on the crafters' tables and attend to their needs in close proximity. The crafters are compelled to mop and disinfect the area repeatedly using their own cleaning supplies.
- They also experience theft of their items or belongings, and there are frequent arguments and fights among the drug addicts and homeless individuals. This situation is unattractive and unpleasant for customers, especially foreigners, which deters them from visiting the craft market.
- The crafters expect the following aspects after the renovation of the Waterfront: Security, Better accommodation, Increased flow of customers, Storage facilities, Improved shading, Access to electricity & water, Less to no disturbance of the homeless people.

4 Socio-Economic Profile of Project Affected Peoples

This Chapter presents the socio-economic profile of the PAPs within the scope of the redevelopment of the Waterfront. The socio-economic profile served as the baseline to identify the PAPs and assess the extent of impact of the proposed project. Interviews and a survey were conducted at the project site with the PAPs from January – November 2023.



Figure 5: On the left Crafter stalls and on the right Food vendors stand at the Waterfront

4.1 Demographics

4.1.1 Population

The census identified crafters and food vendors as PAPs as they are currently selling goods at the Waterfront, but also workers employed by the food vendors are PAPs. There are 18 crafters, 11 food vendors and 24 workers at the site with an average household size of respectively 3 persons.

4.1.2 Age and Gender

The data shows the crafters to be mainly female and the food vendors predominantly male. As for the workers 46% is Male and 54% female (respectively 11 and 13 workers).

The average age of the crafters is 51 years, while the food vendors are slightly older, on average 58.3 years. The age profile shows high ages among the food vendors, with the category 50-60 having the highest scores. The workers are generally between 30 and 50 years.

4.1.3 Ethnicity and Religion

As illustrated in Table 5, the majority of crafters are of Indigenous descent while the majority of food vendors are creoles. When considering the indigenous and tribal groups all together, the crafter group consist of 57% of indigenous peoples as defined under the IDB guidelines.

Table 5: Ethnicity & nationality among crafters & food vendors and workers

Ethnicity & Nationality	Craft Vendors		Food Vendors		Workers	
	#	%	#	%	#	%
Indigenous	11	61	0	0	0	0
Maroon	5	31	2	18	5	26
Creole	1	6	5	45	3	16
Javanese	0	0	1	8	3	16
Hindustani	0	0	1	8	3	16
Dominican	0	0	0	0	1	5
Cuban	0	0	0	0	1	5
Mixed	1	6	2	15	3	16
Total	18	100%	11	100%	19	100%

**Note: Workers information based on 19 persons of which verification was done during the research period*

While this is ultimately not a criteria for being compensated, it has come to the attention that 1 of the workers is an immigrant (Cuban), who doesn't have a work permit. The second immigrant (Dominican), who is also employed as a worker does have a permit to reside in the country.

The project will indirectly impact 24 workers of the food vendors when they shut down their business operations for the duration of the waterfront construction. These workers will also be economically displaced as they will lose their jobs and income to support themselves and their families.

In compliance with the Bank's Environmental and Social Safeguard policies, OP-710 (Involuntary Resettlement) and OP-703 (Environmental and Safeguards Compliance Policy), Directive B. 5 (to present measure to avoid, minimize, compensate and/or mitigate key direct and indirect impacts and risks), the LRP will be providing financial compensation to all these workers.

Among the beneficiary workers are two undocumented migrants. They have been working for the food vendors but lack Surinamese residency and work permit. Surinamese national labor and migration laws forbid undocumented workers to get paid for employment, nonetheless these two affected migrant workers will get monetary compensation under this LRP due to the adverse impact caused by the project and compliant with the above-mentioned bank policies.

In terms of religion, the majority of PAPs across crafters and food vendors practice the Roman Catholic religion, totaling 52%. Many other religions are being practiced among the PAP, and one person is an atheist.

Table 6: Religion among vendors

Religion	Craft Vendors	Food Vendors	% of PAPS
	#	#	
Latter-Day-Saints	4	2	21
Seven Day Adventist	1	0	3
Roman Catholic	10	5	52
Winti Religion	1	0	3
Morovian Church	0	2	7
Weslyan Church	1	0	3
Hinduism	0	1	3
Islam	0	1	3
Atheist	1	0	3
Total	18	11	100%

4.2 Education and Skills

The data shows food vendors to be better educated than crafters. More than 50% of the PAPS have received secondary education: a larger number of food vendors (39%) and workers (74%) compared to 34% craft vendors.

Besides formal education, PAPS possess certain skills listed below:

- Crafters: knitting, sewing, crafting, cooking, nail and hair care, computer skills, agriculture, construction.
- Food Vendors: Sales, food and beverage handling, sewing, food and snack preparation, agriculture, leadership skills, business skills.
- Workers: Administration, Tourism, Agriculture.

4.3 Employment and Business Income

4.3.1 Employment

The craft- and food vendors operate along the Waterfront. The craft vendors engage in production and sales of crafts, and the food vendors in production and sales of food and beverages. Looking at the number of years that they have been active at the Waterfront, it is found that most food vendors have been at the site for more than 10 years, while most crafters are between 3-10 years. As for the workers, the number of years working for a food vendor varies from ±2 years (after Covid-19 Pandemic) to 10 years or more.

4.3.2 Household Income

The majority of crafter households fall in the lower income categories, earning monthly between SRD 3,000-8,000. Contrastingly, the majority of food vendors earn significantly more money in the household, often more than SRD 10,000.

Important to note is that in some instances the specified household income is lower than the business income, which is not realistic. Although we had brought this under the attention of the PAPs, no changes were made to the specified household or business income. Based on observations of sales over several weeks, we estimated the household income to be higher than the business income, because the business income was valid. For this reason, the household income is listed as “Unspecified” in the PAPs table (Appendix 3 - PAPs Socioeconomic overview).

Important to consider is the number of people dependent on this income. As PAPs are part of a family/ household structure, with dependents also living from PAPs income, the impact of income loss will also be extended to these dependents. The socioeconomic profile learns that there are PAPs with children in school and also PAPs who take care of their parents. This means that the project extends to not only have an impact on the PAPs but also on their household as they will have to search for another way to make ends meet.

As Table 7 demonstrates, food vendors and crafters have more household members compared to workers.

Table 7: Average household size per PAP

Type of PAP	Average Household Size
Craft Vendors	4
Food Vendors	5
Worker	2

In case crafters need support, they can primarily rely on family. Because they have limited reserves and options at the bank, crafters rely on loan sharks to support them in time of need. One person reported pawning jewelry in time of need. For food vendors, the situation is better. They have their own reserves and can access bank loans or rely on family and friends for support. One person reported buying goods on consignment.

4.3.3 Expenditures

When analyzing the household expenditures, differences between crafters, food vendors and workers are noticeable.

- Crafters use household income mainly for basic human needs such as food, housing, utilities, travel and communication.
- Food vendors spend money on these basic needs but have more finances available for education, healthcare, entertainment, and the internet.
- Workers use household income mainly for basic human needs such as food, housing, utilities, transport, communication & internet. Also, education is an important monthly expenditure for persons in this group.

4.4 Production and Infrastructure

4.4.1 Production and Sales

The majority of crafters report selling an average of 1-10 items per day, while the food vendors sell more than 10 items daily. Food vendors have reported that after the Covid-19 epidemic, sales are down, and one food vendor has ceased their business accordingly. The addition of Waka Pasi, a public space with craft and food vendors located within 800 meters from the Waterfront presenting about the same, has also contributed to lower sales at the Waterfront.

For both the crafters and food vendors, the holidays and December are the busiest months while January is the slowest month for business sales.

4.4.2 Infrastructure

a. Household Infrastructure

The majority of PAPs have basic household infrastructure available consisting of toilet with running water, in-house water supply, in-house electricity, washing machine, and a refrigerator. However, food vendors have comparatively more additional infrastructure available, e.g.: automobile or other motor-transportation, internet connection, computer/ tablet, etc.

Table 8: Household Infrastructure

Household Infrastructure	Craft Vendors	Food Vendors
Auto/minibus/pickup truck	6	11
Bicycle	3	1
Computer/tablet	4	6
Toilet with running water	10	8
In-house water supply	12	10
In-house electricity	18	11
Washing machine	11	9
Clothing dryer	2	3
Fridge	12	11
Freezer	6	8
Generator	1	1
Internet connection	9	11
In-house kitchen	9	10
Outdoor kitchen	0	1

b. Rent infrastructure

The PAPs do not own the land where their business is located at the waterfront. They, 18 craft- and 11 food vendors are renting their business space from the Government through the District Commissioners office¹². The specifics of the rented space are listed below in Table 9.

Table 9: Vending space amenities

Rent Infrastructure	Craft Vendors	Food Vendors
Rental area	4m2 – SRD 350 per month	16m2 – SRD 1500 per month
Electricity 120V	18	11
Water	0	11
Closed area	0	11
Bar	0	11
Sales table/stand	16	11
Concrete floor	16	11

**One person sells food out of a container which is located at the Waterfront. This stall was personally constructed and is different from the vending stands.

**Both food- and craft vendors use a public sanitary facility available on site, for SRD 15 per visit.

4.5 Perceptions of Project Impacts

4.5.1 Impact of the Project during the renovation

Table 10 shows the perceptions of PAPs of the project impacts during the renovation. Loss of vending space, income, and workers were mentioned as the biggest impact by the food vendors. Craft vendors are mostly worried about loss of clients.

Table 10: Perception of project Impacts during the renovation

Project Impact	Craft Vendors	Food Vendors	Workers
Loss of clients	3	0	0
Loss of income	0	11	19
Loss of jobs	0	11	19
Loss of workers	0	11	0
Loss of vending space	18	11	0
More financial burden	0	1	19 ¹³

¹² The District Commissioner is part of the PURP Project Steering Committee for which the PIU relies on to ensure coordination of the different activities carried out under the program, such as the waterfront redevelopment and the formulation and implementation of this LRP.

¹³ There are in total 24 workers identified. However, during the assessment only 19 workers were interviewed as the other 5 could not be reached.

4.5.2 PAPs perception of the Project during the renovation

The perception of crafters about the project impact is divided: 80% think the project will bring improvement and the remaining 20% can't assess the impact yet.

The workers have a positive outlook on the project and expect the Waterfront to be successful just like the beginning. Similar concerns are raised by food vendors: None of the food vendors are worried about losing clients. On the contrary, they have big expectations for the project and think that they will attract more customers after the renovation, anticipating that sales will improve. They believe that the location will attract more people and that their regular customers will return.

5. Project impact on PAP livelihood

This section describes the potential impacts that are caused by the proposed project for redevelopment of the Waterfront. The project envisages demolition of the basic infrastructure and construction of new buildings, landscaping- and traffic infrastructure. The project design is final and the impact on livelihoods have been identified based on the information as presented in the following chapters in this document:

- Chapter 2 - Project information
- Chapter 3 - Consultations with the potentially affected peoples
- Chapter 4 - Socio-economic profile of affected people

5.1 Project Impacts

The proposed project will disrupt the selling of crafts and food because the vendor stands will be renovated or demolished and then rebuilt. The vendors will have to suspend their economic activities, leave the site from the moment construction starts until it is completely finished for an estimated 12 months. This means, they would be involuntarily but temporarily displaced of their economic activities from which they and their families depend on. Below is an overview of the project impact and the number of impacted persons.

Table 11: Brief overview of project impacts

Type of Project Impact	Number of Impacted Persons			Details
	Craft vendors	Food vendors	Workers	
Economic displacement (temporary)	18	11	24	<ol style="list-style-type: none">1. Temporary economic displacement will take place.2. Craft vendors will be relocated to a different location during 12 months of construction.3. Food vendors prefer not to be relocated and preferred to be financially compensated during the 12 months of construction. (This was notified through a letter addressed to the PIU in July 2023)4. The food vendor worker will be financially compensated during the construction time.

5.1.1. Impacts on Socioeconomic status and livelihood

Loss of income

Vendors who are operating their businesses at the Waterfront will be impacted by temporary loss of income during the construction phase for 12 months. The socio-economic profile reports a total of 18 active crafters, 11 food vendors and 24 workers who will face temporary income loss.

As mentioned before, the PAPs income provides living for dependents as specified in table 17. The loss of income as an impact of the project thus extends to these dependents. Furthermore, some PAPs are part of the same family/ household. In these cases, all family/ household members who are earning their income at the waterfront, will be impacted by the project, and are considered PAPs.

Disruption of Social networks and Loss of Customer base

The relocation or temporary displacement of PAPs may disrupt their established social networks and relationships with customers, other vendors, and the local community. The loss of these connections could impact their ability to rebuild their businesses efficiently after the project is completed.

5.1.2 Other Impacts

Regulatory compliance

After the project is completed, new regulations or requirements may be introduced by the district government for any business activity that may wish to use the Waterfront. PAPs will need to be prepared and adhered to these, which potentially may result in incurring additional costs or operational challenges. When the new permit regulations are made known by the DC the PAPs will receive training and support from the PIU PURP to adhere to these new permit regulations to renew their permits to operate or lease the business space. The DC has indicated that once the new permit regulations have been developed before the re-entry of the Waterfront they will be shared with the PIU and PAPs.

5.2 Minimizing and Mitigating Impacts

The survey data from January 2023 indicates that craft vendors and food vendors were considering either relocation to a similar location or a financial compensation arrangement.

Upon verification in August 2023, it is confirmed that only the crafters are interested in relocation, while all the food vendors prefer only a financial compensation package as stated in the letter to PIU PURP mentioned in previous chapters. The request for financial compensation exclusively was made by the food vendors after the initial consultations carried out by a previous consulting firm, and the misleading information they provided the PAPs. As a result, the use of cash compensation was justified given the difficulty the food vendors would have in setting up their business elsewhere because of their clientele and the available relocation spots near the Waterfront.

Ultimately, they expect that compensation should provide for some retention of livelihood. Also important to both groups are proper and on-time communication and sharing of information.

For this, the PIU has decided that the food vendors will receive a compensation based on the estimated amounts given during the interviews. After receiving a few bookkeeping accountings, no sales average could be determined based on insufficient information.

6. Livelihood Support and Restoration

In this Chapter the eligibility criteria and entitlement matrix for the LRP is presented, which has been developed based on the IDB operational guidelines on (1) involuntary resettlement (OP-710), (2) indigenous peoples (OP-765) and (3) Environment and Safeguard Compliance (OP-703). This matrix provides the basis for the livelihood restoration activities, which are presented in Chapter 7.

6.1. Principles

The principles presented here will govern the livelihood restoration during the redevelopment of the Waterfront:

- **Social Status of PAPs.** Minimization of negative effects on PAPs is the ultimate goal of this LRP. In case minimization is unavoidable. The PAPs should be able to maintain their social and economic status as they did before the implementation of the project. Affected people will receive livelihood support to maintain their basic living standards and quality of life prior to their displacement.
- **Legal Rights.** People with demonstrable economic activity without any recognizable legal right (ownership) are eligible for livelihood support. Absence of legal right¹⁴ should not prohibit entitlement to assistance.
- **Consultation with PAPs.** The LRP will be developed in close cooperation with the PAP to include their views and ideas in a culturally appropriate manner.
- **Disclosure of LRP.** Entitlements and livelihood restoration activities, and implementation of the LRP will be disclosed with the PAP and other stakeholders before construction starts.
- **Changes to Plans.** Any changes to plans require revisiting the LRP and this may potentially amend the nature of livelihood restoration activities and assistance to PAPs.
- **Cutoff date.** The establishment of a clear cutoff date before the date established to determine who is eligible for compensation under the LRP. For this LRP, the cutoff date was set in the ESIA for 7 May 2023, also applies. The cutoff date was mentioned to the PAPs during the last consultation of the ESIA on May 16, 2023, and in various occasions during the update of the LRP in the period between August and October 2023.

6.2. Eligibility Criteria

The LRP considers all affected persons losing business and/or income. The eligibility criteria for restoration assistance are:

- Affected persons who lose income in their entirety or part
- Affected persons who lose the business physical structure

¹⁴ Legal right is defined by the license granted by the Government (DC Paramaribo Northeast). However, the DC has intervened in the granting of licenses and have not extended granting licenses pending the relocation of craft- and food vendors. This intervention prohibits relying on licenses for eligibility

- Vulnerable persons including female-headed households, households living below the poverty line and indigenous people.
- All eligible Food Vendors and Crafters must possess a permit to sell their goods at the Waterfront.
- Affected persons who was registered as Food vendor, Crafter or Worker until the set cutoff date of May 7, 2023. During the verification round a window was opened from August till October 30, 2023, make corrections on the previous registration. Persons that can prove through verifiable documents proving that they had been operating at the Waterfront for a minimum of 6 months prior to the cutoff date were added to the list of PAPs. Additionally, eyewitness statements from other vendors or workers who could confirm their association with the Waterfront in any of the three capacities were sought. Individuals who do not meet these criteria are not considered eligible for any form of compensation.

6.3. Entitlement Matrix

Entitlement is based on the following suppositions:

- Craft- and food vendors are small-scale enterprises. The monthly reported income from sales obtained during the socio-economic survey will be used to determine the livelihood support.
- Business activity is verifiable during the last 6 months. Verification occurs through the coordinator of crafters and food vendors, respectively.

Table 12: Entitlement Matrix

Type of Impact	Application	Entitled Person	Livelihood Support	Responsibility
Displacement (temporary) and relocation to alternate site	Vending stalls	Craft vendors (18)	<ul style="list-style-type: none"> • PAPs will be given 30 calendar days advance notice to vacate structure before construction starts • PAPs will sign agreement on having right to comparable vendor space (<i>within the Paramaribo inner-city, not more than 1km radius distance from the current location</i>) during 12 months of construction • PAPs will be provided with a vending table of 4m² in outdoor space (same size as current tables) with access to electricity and have the following infrastructure available during the 12 months of construction: sales table on concrete floor, availability to sanitary facilities. This infrastructure will be provided free of charge. • Outdoor space will be centrally located, offering convenient access and visibility for general public to stimulate sales • In case construction could not be completed within the stipulated time frame, the PAPs will be entitled to an extension of the use of the assigned vending place for the additional period of disruption • PAPs will move into the new Waterfront location within 7 business days after the new location is finished • PAPs are entitled to receive a training package for effective implementation of livelihood restoration and for intensifying business activity as this is part of the compensation package. 	<ul style="list-style-type: none"> • PURP will be responsible to give the notice • PURP will develop, negotiate and sign agreement with crafters for relocation • PURP will provide one-time financial compensation to the PAP in SRD 500. Which will be divided into 2. One time for leaving the Waterfront and the other for re-entering the Waterfront. • PURP will lease comparable space/location for crafters within the inner-city (1000m radius from Waterfront) • PURP is responsible for the administrative actions associated with the livelihood support (identification of PAPs, livelihood support arrangements etc.) • PURP will be responsible for providing a banner at the street for the alternative location to be found by customers

			<ul style="list-style-type: none"> • All fees and other charges incurred for the replacement structure shall be borne by the PIU PURP 	<ul style="list-style-type: none"> • PURP will conduct meetings to discuss relocation with PAPs in culturally appropriate manner
Loss of commercial structure Displacement and no relocation (temporary)	Food stand	Food vendors renting stand (11)	<ul style="list-style-type: none"> • PAPs will be given 30 calendar days advance notice to vacate structure before construction starts • PAPs will sign agreement on vacating Waterfront vendor stand during 12 months of construction • In case construction could not be completed within the stipulated time frame, the PAP will be notified at a minimum of 60 days prior to agreement expires • PAPs will be given cash assistance calculated based on the current socioeconomic vulnerability factors, e.g. monthly business income (as specified in the socio-economic survey), gender, ethnicity, age, dependents, monthly household income, etc. for the loss of income during the period of construction. • The cash assistance will be a fixed average amount, monthly paid to all food vendors • In case construction could not be completed within the stipulated time frame, PAPs will continue to receive the agreed financial compensation for the additional period of disruption • PAPs will be responsible for clearing the vendor stand no later than 14 days before construction starts • PAPs will be responsible for converting the food stall permit to a vendor stand permit in order to be eligible to move into the new Waterfront location • PAPs will move into the new Waterfront location within 7 business days after the new location is completed • The workers have indicated that they will be returning • PAPs are entitled to receive a training package for effective implementation of livelihood restoration and for intensifying business activity as this is part of the compensation package. • All fees, taxes and other charges incurred for the loss of income restoration shall be borne by the PIU PURP. 	<ul style="list-style-type: none"> • PURP will be responsible to give the notice • PURP will sign agreement with food vendors for compensation structure • PURP will assist in negotiations with DC to convert food stall permit to vendor stand permit (as food stalls are not compatible with the Waterfront redesign) • PURP is responsible for the administrative actions associated with the livelihood support (identification of PAPs, livelihood support arrangements etc.) • PURP will conduct meetings to discuss compensation structure with PAPs in culturally appropriate manner • PURP will provide monthly financial compensation to the PAPs in SRD 26,500.00 and a one-time financial compensation of SRD 3,660.00 for leaving the Waterfront(transportation costs). • PURP will organize all aspect of trainings for PAPs to attend.
loss of job and income (temporary)	Indirectly displaced	Workers (24)	<ul style="list-style-type: none"> • PAPs will be given cash assistance calculated based on the current socioeconomic vulnerability factors, e.g. monthly income. • The cash assistance will be a fixed average amount, monthly paid 	<ul style="list-style-type: none"> • PURP will sign agreements with food vendors worker for compensation of income loss

			<p>to all food vendors worker</p> <ul style="list-style-type: none"> • Craft and Food vendor PAP will be offered a training package for effective implementation of livelihood restoration and for intensifying business activity as this is part of the compensation package. PAPs will be encouraged to participate in training sessions as it is believed that the subjects will help improve their skills, knowledge, and competences. 	<ul style="list-style-type: none"> • PURP is responsible for the administrative actions associated with the livelihood support (identification of PAPs, livelihood support arrangements etc.) • PURP will conduct meetings to discuss compensation structure with PAPs in culturally appropriate manner
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7. Livelihood Restoration Activities

This Chapter will detail the support proposed for restoring the livelihood of the PAP during the construction activities of the Waterfront and beyond. This section also includes the valuation of the proposed livelihood restoration activities. The livelihood activities proposed here are based on thorough discussions with PAPs and insights gained from PAP information.

While preliminary the idea was to relocate all PAPs as compensation for their losses, the food vendors indicated in writing that they were not interested in rebuilding their business at another location for one year, to start again after the rehabilitation (see Appendix 7 - Letter Food Vendors regarding financial compensation). However, the crafters did agree with the relocation option.

Therefore, the livelihood restoration further to be set up encompasses:

- Relocation of Crafters to an alternate site that is close to the current business location
- Providing crafters with adequate temporary infrastructure and services (access to electricity, water) free of cost for them in the alternate business site Coordinating and supporting crafters during their relocation to and from the alternate site.
- Securing a vending place in the renovated waterfront after the project is completed
- Preparing and building the skills and knowledge of PAP business owners with training
- Financial compensation of Food vendors and their workers.

7.1. Considerations for calculation of Financial Compensation for Food Vendors

At first the following was considered for the calculation of the financial compensation of the Food vendors:

- Food vendors had to indicate their business income during interview sessions in August 2023
- Food vendors could provide evidence of business income through bookkeeping papers of June, July, August, and September 2023.

While all food vendors could indicate an average business income during the interview round, the following concerns were determined after review of the provided bookkeeping information:

- Not all food vendors structurally kept their bookkeeping information and therefore could not provide these. 8 Out of 11 food vendors were willing and able to provide bookkeeping records. However, after analyzing these records, some of the bookkeeping information appeared to be incomplete. Out of the 8, there were only 2 vendors whose records were complete.
- Only 6 of the food vendors were able to provide an overview of their income, expenses, and profit/loss, of which only 2 could provide in-depth information through receipts and other evidence documents.
- Significant gaps in net incomes were determined verbally and in bookkeeping evidence. Workers of the food vendors were also not able to demonstrate their salary through receipts. An average was calculated based on the indicated salaries they gave during the interviews.

Based on these concerns, the following strategy was followed for financial compensation for the Food vendors and their workers:

- Calculation of an average of the Food vendor Business Incomes as indicated during interviews (see Appendix 15 - Compensation calculation Food Vendors). This Because there is no clear indication or justification even if you separate in types such as by type, drinks, drinks and food, food and catering or low, medium and high earnings.
- Calculation of an average of the salary of the workers as indicated during interviews with them (see Appendix 16 - Compensation calculation Workers).

7.2. Calculation of average business income for PAPs

The craft- and food vending businesses will experience a loss of income/ business relocation during 12 months of construction. The valuation of income is based on the PAPs monthly business income (BI) which was provided by the PAPs (see overview in Appendix 3 - PAPs Socioeconomic overview).

Financial compensations for PAPs will be based on an average monthly business income (ABI) or average daily income (ADI) per PAP group (crafter/ food vendor). The following principles were applied in determining the ABI:

- The average monthly business income (ABI) for crafters, food vendors & workers were each calculated with the following formula: $\sum BI/n$ ¹⁵
- In case the BI is identified as an outlier with minimum income, it was included for livelihood support, and the amount of monthly livelihood support was determined by the ABI.
- PAPs eligible for Financial Compensation will receive monthly support based on the average of their ABI (including PAPs who did not specify their BI during consultations). The compensation of the Food Vendors workers was calculated based on the average of their income as indicated during interviews.

7.3.1 Crafters alternative business location

The crafters currently rent a table at the Craft market at the waterfront where they run their business activities, as explained in detail in chapter 4. During the project construction the crafters will have to be relocated to an alternative business location which is comparable or better than the current location. Specific requirements for the alternative business location are:

- Within the Paramaribo Centre, not more that 1km distance from the current location
- Comparable infrastructure to the current business location

The crafters will be relocated to an alternative area, commonly referred to as the Kasimex area, situated at a distance of approximately 150 meters from the Waterfront corner. This location is centrally located

¹⁵ n = number of PAPs

and in the heart of the city, a fairly busy area. As a result, there is a lot of visibility and an increased chance of sales. The PURP will not charge craft vendors for relocation nor for using the temporary vending stalls.

It concerns an empty plot on which there used to be a building. The PURP will build vending stalls for the PAPs relocation, as described below. Currently, the site consists of a combination of paved and unpaved surface. The paved part (about 50% of the plot) is covered with element pavement, which provides a solid and textured surface, while the unpaved part creates the feel of a natural and open space.

There are two entrances/exits and the property is fully fenced, ensuring privacy and security. The location is currently provided with electricity and water supply. There was no existing sanitary facility at Kasimex terrain, but this has been installed free of charge for the relocated crafters. There is also security from 6 pm till 6 am and on Sundays and holidays. Pictures are included in Appendix 19

The structure of the stalls to be placed at the alternative location on the Kasimex terrain is as follows:

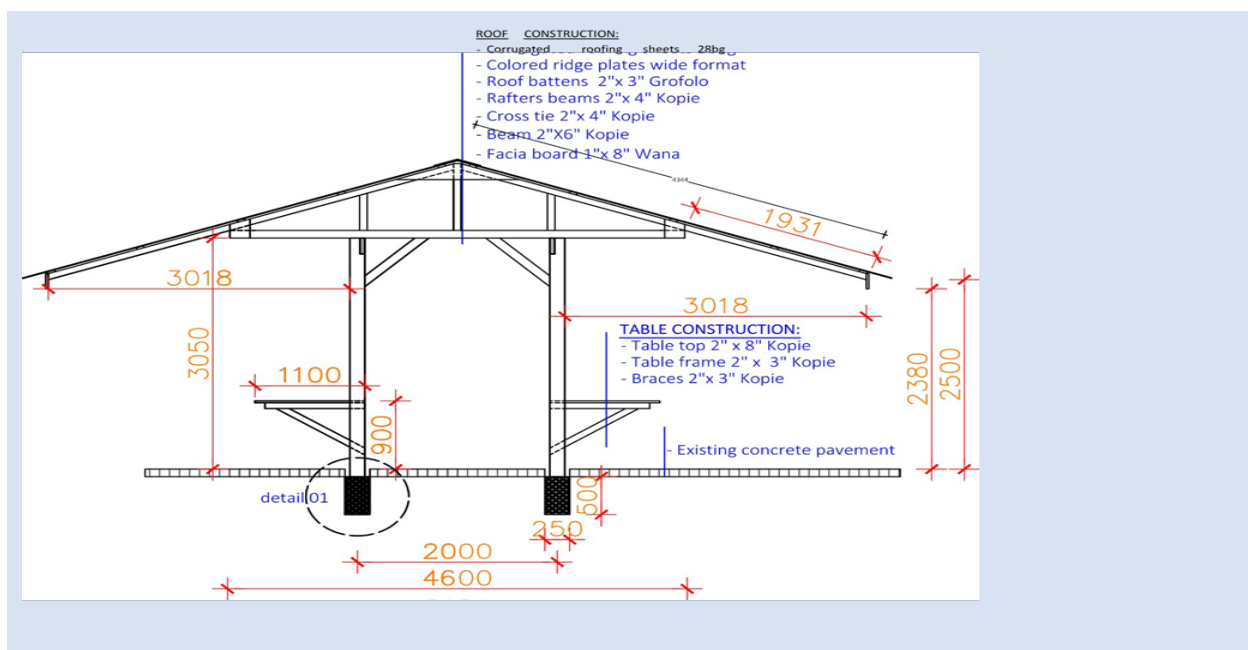


Figure 6: Specification of stalls at Kasimex terrain

Pictures of the current situation of the craft market can be seen in Appendix 19



Figure 7: Current Waterfront Craft market



Figure 9: Picture of alternative location where craft stalls will be set up (1)



Figure 10: Picture of alternative location where craft stalls will be set up (2)



Figure 11: Aerial view of alternative location

The alternative location will be set up and readily available for the crafters to place their goods. Furthermore, Crafters are eligible for one-time relocation support, which is estimated as follows:

- 2 days of ADI: 1 day for leaving to the alternative location and 1 day for returning to the newly renovated Waterfront. The one-time relocation support is calculated with the following formula:

$$2 * ADI$$

7.3 Financial Compensation to evacuate/ move out of the waterfront

Food vendors are eligible for one-time financial support, for the income loss associated to the days required to vacate the property and re-enter upon completion of works. This equals 4 days of ADI determined as follows:

2 days for leaving and 2 days for re-entering the Waterfront.

See further calculations in Appendix 14 - Compensation calculation Crafters for vacating.

7.4. Training Package for displaced Craft and food vendors

During the research it was brought to light that the craft and food vendors don't have a structured way of doing and keeping track of their business. To enhance their business capabilities the PAPs will be provided with tools to be better equipped for returning to the food stands at the newly rehabilitated Waterfront. In this regard a training program will be offered as part of the compensation package.

The program will consist of: Market Re-Entry, Food Safety & Hygiene, Basics of Business Accounting and New Permit Requirements Assistance be arranged for crafters and food vendors. The cost of each training that will be offered to the PAPs, is estimated at \$3,500, totaling U\$ 14,000. The proposed training program is an integral part of the compensation package, and the PAPs will be encouraged to attend these trainings as this will help with preparing for re-entering the Waterfront and comply with requirements of the new regulations and permitting the training package. The training sessions will be offered to the PAPs at no cost.

The following types of training as part of the compensation package, are planned to be offered to the PAPs as part of the LRP implementation:

Table 13: Training package

Training	Details	Beneficiary
Multi-day training on hygiene and food safety	Modules on hygiene in preparing food, Government requirements and training in HACCP measures in food operations	Food vendors & workers
Multi-day training on Market Re-entry	Modules on helping businesses re-enter the market successfully after a downturn: including strategies to regain and re-establish a strong presence.	Crafters and food vendors
Multi-day training on basics of business accounting	Modules on skills and knowledge needed to keep track of their	Crafters and food vendors

	company's accounts and to create a clear overview	
Multi-day training on new permit requirements	Modules focusing on new government permit requirements that may arise during or after the renovation	Crafters & food vendors

8. Implementation of the Plan

This Chapter provides information for preparing, implementing, and monitoring the livelihood restoration activities. It describes the institutional structure, the capacity building requirements, stakeholder engagement (including grievance redress and finalizes with the execution plan and budget.

8.1. Institutional Responsibilities and Structure

Within the PURP facility there is an existing governance structure which will be applicable for the implementation of this LRP. In this structure the PIU serves as the official executing entity of the MESC, resorting under the Directorate of Culture.

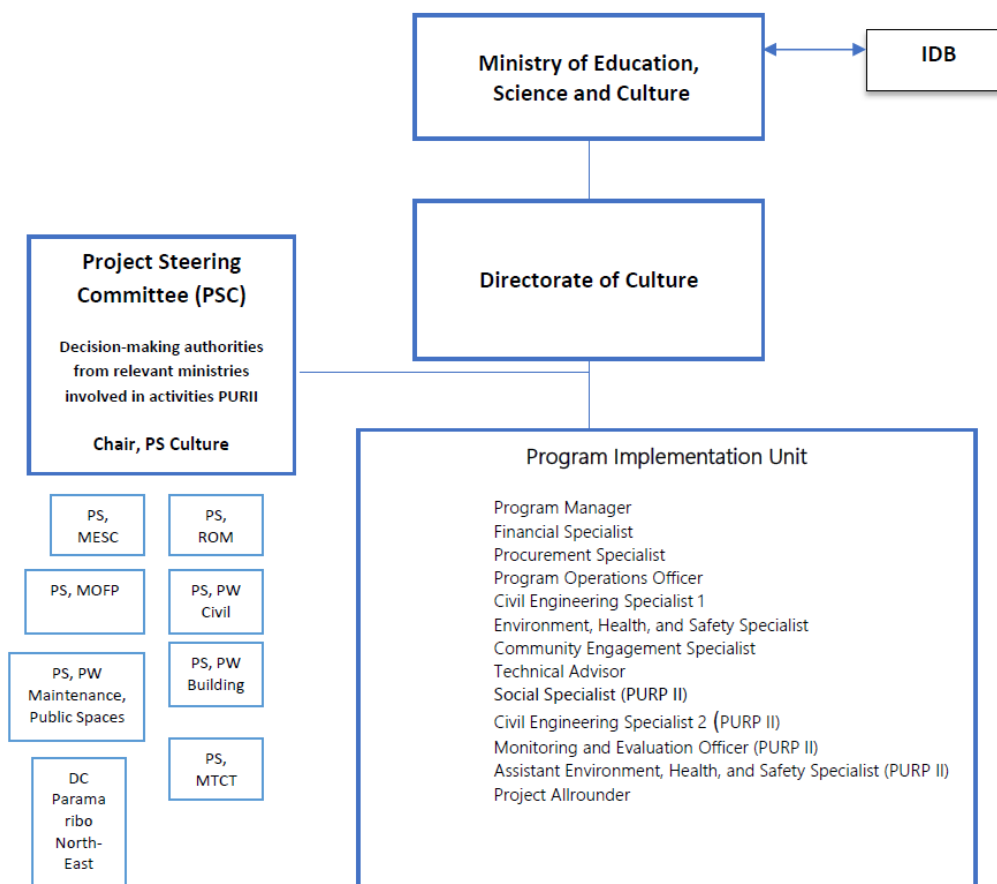


Figure 12: Institutional structure

The PIU will thus, supported by the various other entities, be responsible for the implementation of the LRP. Constant direct communication with the PAPs will also be monitored by the PIU, representation of the Community Liaison Officer. Table 14 lists the various institutions important for the implementation and their responsibilities.

Table 14: Institutions and their responsibilities

Institution	Responsibilities	Implementation
The Ministry of Education, Science and Culture	The implementation of the project	
PIU/PURP (Program Implementing Unit – Coordinated by the Community Liaison	<ul style="list-style-type: none"> • Preparation and execution of the LRP coordinated by the Community Liaison Officer with support of other PIU members. • Overseeing and monitoring the LRP implementation – spearheaded by the Community Liaison Officer • Through the Project Steering Committee, the PIU will liaison with Government level counterpart for implementation of the LRP • Provide policy guidance to Government level counterpart. • The community liaison, with support of the Project manager, Procurement Specialist and other PIU members, will identify and contract the consultancy to carry out the trainings offered within the compensation package • The following requirements should apply to the team: <ul style="list-style-type: none"> ○ experience implementing social plans which includes undertaking consultations and surveys of affected stakeholders in line with international standards and guidelines. ○ experience in involuntary resettlement and the multilateral financial institution's environmental and social performance standards ○ Experience related to the social dimension of infrastructure projects, as well as corporate and CSR projects. 	<ul style="list-style-type: none"> • Execution of the prepared project actions within a certain time • Regularly keep track of milestones and deliverables • Collaboration with specific Government counterpart • Share related information • Develop and implement Social Engagement Plan and GRM specifically for the PAPs through involvement of a Social Specialist
The Government level counterpart - Ministry of Regional Development and Sport (ROS) - District Commissioner North-East	<ul style="list-style-type: none"> • Emitting the licenses to the food vendors and crafters • Ensuring the security and housekeeping of the rehabilitated Waterfront 	<ul style="list-style-type: none"> • Provide the licenses • Increase security and housekeeping
Training Consultancy	<ul style="list-style-type: none"> • Providing training as suggested in this plan (see Table 13: Training package) 	<ul style="list-style-type: none"> • Encourage participation of all vendors to keep up with trends and standards.

8.2. Stakeholder Engagement and Grievance Redress

This section describes how engagement activities will be executed to adequately keep the PAPs informed regarding project progress and its related activities. The Grievance Redress Mechanism (GRM) will serve as a platform for the PAP stakeholders to raise project related complaints and/ or grievances, which will be addressed by the project. Furthermore, it includes the follow up on the compensation plans for vendors and their workers.

8.2.1 Stakeholder Engagement

In close consultation with the PAPs, the following engagement activities are being proposed, as seen in Table 15.

Table 15: Stakeholder engagement activities during livelihood restoration

Topic	Activity	Details	Outcome	Timing	Responsibility
Disclosure of Livelihood Restoration Plan (LRP)	Meeting on disclosure of final Livelihood Restoration Plan (LRP) with PAPs	LRP will be disclosed with PAPs in culturally appropriate manner with bilingual interpreters to make sure everyone is included and understands.	LRP known to PAPs	Within 2 months after preparation of LRP is finalized and has obtained the Bank's No Objection.	PIU / PURP
Entitlement/compensations	One-on-one meeting with each PAPs	Information about PAPs and their entitlements in culturally appropriate manner with bilingual interpreters to make sure everyone is included and understands.	Agreements with PAPs	Within 60 days before construction starts, not later than 30 days before construction starts	PIU / PURP
Evacuation and Relocation	Meeting with each PAP group to coordinate and provide instructions to move out from waterfront	Detailed information is provided about moving of PAPs. Includes a pamphlet with step by step	PAPs understand moving instructions and have pamphlet	Within 2 weeks before construction	PIU / PURP

	location, Specifically, crafters' relocation to alternate business site at Kasimex terrain	instructions			
Implementation and follow-up	Payment of financial compensations as stated and agreed on the Plan and specific agreements with each PAP group. Meetings addressing any on-going concerns/ GRM available for questions/ complaints	One-on-one meetings with PAPs	Properly resolve complaints and/ or grievances	During LRP implementation	PIU / PURP

8.2.2 Grievance Redress Mechanism

The design, implementation and monitoring of the Grievance Redress Mechanism (GRM) is shown in the stakeholder engagement plan in Appendix 8 - PAPs Engagement and Grievance Mechanism.

The GRM will be made available to the PAPs to use in the event of raised a complaint/ grievance regarding the project. Grievances and complaints can be submitted by the PAPs through various channels which will be publicized. Contact information of the complainant and a detailed description of the complaint and/ or grievance will be collected through a dedicated system. This will be followed by a thorough investigation in order to provide a suitable solution.

8.3 Execution Plan

This section presents the activities that were already undertaken and the activities that still need to be executed for successful implementation of the LRP.

Table 16: Execution Plan

Phase	Timeline	Activities
Preparation	Already executed by the submission of this LRP by February 2024	<ul style="list-style-type: none"> • Socio-economic Survey with the PAPs. This survey was conducted to capture the baseline data which formed the basis for developing the entitlements of the PAPs • Consultation with PAPs. Several rounds of stakeholder consultations were carried out with the PAPs to: i) capture the perceptions about the project, ii) to discuss the livelihood options • Preparation of Entitlements. Specific entitlements for each category of impacts have been developed
Implementation	To be undertaken with the submission of this plan in February 2024	<ul style="list-style-type: none"> • Disclosure of the LRP. The LRP should be disclosed to the PAPs to provide their consensus on the way forward. • Database of eligible PAPs. The list of PAPs and their eligibility for relocation or compensation is compiled. • Financial compensation Agreements. MESC/PIU will prepare financial compensation agreements for the PAPs, with the following content: <ul style="list-style-type: none"> - Impacted category - Entitlement benefits - Legal provisions - Payment disbursement schedule • Payment of financial compensation. MESC/PIU will include: <ul style="list-style-type: none"> - All financial compensation payments shall be paid through a commercial bank. In case the PAPs don't have a bank account, the DC may consider paying livelihood support by bank cheque - Payment will be made only to the affected/displaced PAP (to the business owner such as the Crafter/ Food vendor and the identified workers) - Once payment has been received, the PAP will sign a receipt of acknowledgement . • Preparation of alternative site for selling. PURP/DC will prepare the alternative locations for the PAPs. An instruction meeting will be held about the relocation and PAPs receive a pamphlet with step-by-step instructions. • Training will be provided for 8 months before the Waterfront re-opens. The training plan will be developed after the PIU PURP has found the agency which will provide the training package.

8.4 Payment Schedule

The initial payments will begin once the agreements are signed, allowing PIU PURP to prepare for the evacuation and relocation of the PAPs (only the craft vendors). The PIU PURP will follow with monthly payments as agreed with the PAPs every first week of the month. Training, set eight (8) months before the renovated Waterfront reopens, will be planned once the PIU PURP selects the agency responsible for training. This ensures a structured approach to reopening the Waterfront.

8.5 Indicative Budget for Livelihood Restoration Activities

The indicative budget provided for the implementation of the LRP is presented in Table 17. This budget is based on the Livelihood Restoration Activities described in Chapter 7.

Table 17: LRP Implementation Budget

No.	Compensation type	PAPs	Budget per month(SRD)	Budget for 12 months (SRD)	Budget per month (USD)	Budget for 12 months (USD)	Remark
1	Displacement and relocation	Crafters (18)	9,000	N/A	N/A	N/A	To be paid in 2 terms: prior to vacating (SRD250,-p/crafter) and upon re-entrance (SRD250,-p/crafter)
2	Financial Compensation for evacuation/vacating project site	Food vendors (11)	47,580	N/A	N/A	N/A	One-time payment per Food vendor to vacate the location
3	Financial compensation for loss of business income	Food vendors (11)	291,500	3,498,000	7,738	92,862	Monthly payment to each Food vendor SRD 26.500
4	Workers financial compensation	Workers (24)	170,400	2,044,800	4,530	54,300	Monthly financial compensation to be paid at the beginning of each month.
5	Training package	Crafters & Food vendors	N/A	536,680	N/A	14,000	4 Types of potential training of which 1 is only intended for food vendors. Trainings based on 3 day sessions per topic and will be offered in the compensation package for PAPs as option to participate
Estimated Total Costs of Entitlement			518,480	6,079,480	12,268	161,162	

8.6 Monitoring and Evaluation

Monitoring will be conducted to assess the LRP progress in execution. It will also serve as a tool to identify any problems or issues during implementation and suggests remedial measures before these escalate to become a greater social conflict that will put the project at risk. Monitoring will include quarterly reports made by PURP. Below (Table 18) is the monitoring plan. for monitoring implementation of the LRP.

Table 18: Monitoring Plan

Implementation aspects	Milestones	Indicator	Timeline
Tracking LRP implementation to determine whether results have been achieved	1. Completion of temporary business site infrastructure (vending stalls) at Kasimex terrain; Provision of instructions/guidelines to craft vendors to maintain and secure their vending facilities.	1a. Inspection reports confirming readiness for occupancy (includes visibility of marketing sign)	After set up of structure at Kasimex terrain
		1b. Confirmation of availability and function of utility services (electricity, water, restrooms).	After setting up of structure at Kasimex terrain
	2. All Craft and food vendors have vacated their current business stalls timely. Completion of one-time payments for site evacuation/moving out the Waterfront	2a. Verification report of financial transactions for each PAP	After disbursement of payment to leave the waterfront
		2b. Signed acknowledgment from PAPs for receiving payments.	Upon payment to PAPs
	3. Crafters have transferred their goods and have relocated to Kasimex terrain	3a. Verification and inspection report of each crafter's move to the new location confirming stall setup and operational readiness	After all crafters are relocated
	4. Completion of monthly Financial compensation disbursement to all Food vendors and workers	4a. Compensation disbursement records	Beginning of each Month
		4b. Signed acknowledgment from food vendors for receiving payments.	Month
	5. Food and craft vendors confirm that they would like to return to the renovated waterfront to continue their business or have declined.	5a. Verification report of financial transactions for each PAP	After payment to re-enter the waterfront
		5b. Signed acknowledgment from PAPs for receiving payments	Upon payment to PAPs
	6. Completion of one time payments for re-entering the Waterfront to craft and food vendors who have confirmed their interest	6a. Payment receipts signed by PAPs	Upon payment to PAPs

	to return their business to the renovated site.		
Recording of issues raised by the PAP through the grievance redress mechanism	Grievances redressed timely and in accordance with the GRM requirements	GRM reports stating at a minimum: -Number of grievances received; nature of the complaint or grievance; who and how was it placed or communicated (disaggregated by gender) Who and how resolved or addressed it -Average resolution time for grievances. -Trends in types of grievances for continuous improvement.	Monthly
Periodic evaluation of the LRP and preparation of evaluation reports as part of the regular project-level operations. The recommendations and lessons learned will be included in the next round of project activities.	Bi-annual evaluation report	a. Identification of areas for improvement and adjustment in LRP.	Every 6 months
		b. Adjusted LRP	If required
Training reports will be prepared by a third party (training consultancy) to keep track of who participates in the training courses.	Completion of all training sessions and were attended by at least 80% of entitled PAPs	a. Signed agreement with trainer	Upon hiring of training consultant
		b. Approved training material	Prior to start of each training
		c. Attendance records or certificate issued for each training session.	After each training
		d. Participant feedback/evaluation report on the quality and relevance of training.	After each training

Appendix 1 - Survey Questionnaire

The Interview Questionnaire is linked below.


Double click Picture

ESIA Waterfront Socio-Economic Baseline/Livelihood Restoration Plan

Name Interviewer _____

Date and time _____
 yyyy-mm-dd HH:mm

Record your current location _____

Latitude (D°) _____ Longitude (D°) _____ Altitude (m) _____ accuracy (m) _____	
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Iedereen te Activiteit

- ☐ Ik verkoop handdoeken
- ☐ Ik verkoop visdier en drank
- ☐ Ik werk bij een overheidskantoor
- ☐ Ik volg een opleiding na school
- ☐ Ik ben leerling van een school
- ☐ Ik heb een bedrijf waarvoor ik werk bij een particulier bedrijf die actief is aan de waterkant
- ☐ Ik werk bij een stichting
- ☐ Ik ben verbonden aan een maatschappelijke organisatie e.g. groep, vereniging etc.
- ☐ Ik woon hier
- ☐ Anders _____

https://act.unleash.com/getform?test=2018/gt-43275-Gtkwvrry

Appendix 2 – Early consultation with PAPs

Stakeholder		Date	Location	Main Discussion Points on Livelihood	Consideration in the LRP
Group	Name				
Crafters	Mr. B. Simons, Ms. C. Arupa	14 th January 2023	Waterkant	Ms. C. Arupa would feel more secure with a signed agreement from both the crafters and the PURP/DC specifying that all crafters shall be returned to the Waterkant after construction. She feels that without any proof the crafters are vulnerable.	Included in the LRP
				She requests that the crafters are not separately placed after construction because being placed together as a group has economic benefits for them as well as they feel safer together since they are women.	Included in the LRP
				Her previous experience with relocation had left a trauma: when the time came for the crafters to move back to their spot, her name was not on the list, and she could not find a spot. Suddenly there was a new list with other names, and she was forced to find somewhere else.	This concern is covered with the proposed agreement
Food vendors	Mr. H. Omzichtig	7 th January 2023	Riverside, Waterkant	He explained that each of the stand holders and restaurants pays a fee to the Waterfront management, and that this should be used for general management (such as permanent security guard). However, this is not happening.	None. Concerns about voice/representation will be further addressed in a Management plan for the Waterfront
				The power balance within the WBR has been discussed since 2013. It is believed there are too many high-level Government officials in the board and that the local vendors are not well represented. An official request signed by local vendors was sent in 2013 but has not been addressed (this was shared with the team). -A few months ago, a long-term local vendor selling Javanese food was suddenly replaced by an Indian man which set a bad tone with the	

				vendors. According to Mr. Omzigtig, a bribe was paid to the DC.	
	Mr. R. Wimpel	21 th January 2023	Waterkant	Mr. Wimpel, 70 years old and now under dialysis, has been active at the waterfront since he was 26 years old of Age. Since COVID and the start of Waka Pasi, sales have reduced tremendously, which was the reason why he had to terminate the work relationships with all his workers.	Competition from Waka Pasi will be considered in LRP
				Mr. Wimpel uses one of the units to sleep and the other one to sell products. Among other reasons, he sleeps there because of the high price of gasoline to go to his home and back, without certainty that he will sell anything for that day.	None. This is not an involuntary resettlement case
	Mrs. M. Nahar	20 th January 2023	Waterkant	She prefers table seating around the food stand so that her customers can order and sit in close proximity.	None. Concerns about having enough seating place at new location should be addressed by PURP/Waterkant Beheersraad
				Currently everyone working at the Waterkant makes use of the public toilet and it costs SRD15 each time. This is costly and also long lines during public holidays which makes it difficult to run back and forth. A separate toilet for the food stand owners would work better for them.	None. Concerns about the public toilet at new location should be addressed by PURP/Waterkant Beheersraad
				What will happen to our "security bars" around our food stand? we spend money on this, and we expect that this will either be put back or replaced by the construction company.	None. Concerns about the "security bars" will be addressed by the DC

	Mr. M. Sewnath Manodjkumar	27 th January 2023	Waterkant	He proposes PURP make changes to the currently proposed design of the food stands in such a way that stakeholders can host their clients and play their music without disturbing each other.	None. Concern about noise nuisance in the new location should be addressed by PURP/Waterkant Beheersraad
	Mr. R. Heikerk	27 th January 2023	Waterkant	Mr. Heikerk has the following concerns: how will the food stands lock? through rolling shutters or other?	None. Concerns about the final design should be addressed by PURP/Waterkant Beheersraad. Update: Concerns have been discussed already. The design would be adapted to be able to install the roll down security windows. The food vendors will be responsible to install the roll down security themselves.
				The seating area in the final design will cause much conflict among food stand owners. because the seating area will be placed at the last food stand only, the last food stand will be favored by customers.	
				He wants to know if the food stands will have the possibility to place modern heated/cooled display cabinets with 110 AND 220V? these display cabinets are placed on the ground and not on an elevated counter (which is the case at present). This way, it's more hygienic and people will be able to sell baked goods as well. 220V is a must in each food stand	
				In case of compensation: will my personnel also be compensated? Will my items in the food stand be stored for me in case of compensation?	

Appendix 3 - PAPs Socioeconomic overview

Overview Crafters

#	Sex M/F	Age	Ethnicity	Religion	Educational level	Female headed household	Type of business	Structure	Area of Impact	Estimated Monthly Income	Regular Operational Timing of Businesses	Years Active at site	Preferred Option for Livelihood Restoration	Vulnerable Households	
														Based on Income	Based on female- headed with dependents
1	F	35	Maroon	Roman Catholic	IMEAO	x	Crafter	Vending Table	4m ²	5000	8:00-21:00	6	Relocation	x	X
2	F	59	Maroon	Weslyan Church	IMEAO		Crafter	Vending Table	4m ²	4000	16:00-18:00	8	Relocation	x	
3	F	51	Indigenous	Latter-Day-Saints	Kweekschoo		Crafter	Vending Table	4m ²	Un- specified	15:00-20:30	5	Relocation		
4	F	57	Mixed	Seven Day Adventist	VOJ		Crafter	Vending Table	4m ²	Un- specified	8:00-15:00	3	Relocation		
5	F	41	Maroon	Latter-Day-Saints	VOJ		Crafter	Vending Table	4m ²	4000	10:00-19:00	0-1	Relocation	x	
6	F	59	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	7000	8:00-16:30	3	Relocation		
7	F	60	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	9000	8:00-13:30	4	Relocation		
8	F	57	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	Un- specified	8:00-19:00	2	Relocation		
9	F	44	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	1250	8:00-14:00 or 15:00- 20:00	More than 10 years	Relocation	x	
10	F	35	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	7500	7:00-19:00	7	Relocation		
11	F	75	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	6000	8:00-19:00	3	Relocation		
12	F	65	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	8000	7:00-19:00	0-3	Relocation		
13	F	57	Maroon	Roman Catholic	No education		Crafter	Vending Table	4m ²	Un- specified	10:00-19:00	0-1	Relocation		
14	F	50	Maroon	Latter-Day-Saints	No education		Crafter	Vending Table	4m ²	5000	10:00-18:00	10	Relocation	x	
15	M	38	Creole	Atheist	VOJ		Crafter	Vending Table	4m ²	4000	13:00-20:00	More than 10 years	Relocation	x	
16	M	54	Indigenous	Winti Religion	Natin/AMTO		Crafter	Vending Table	4m ²	15000	10:00-20:00	8	Relocation		
17	F	N/A	Indigenous	Roman Catholic	GLO/BO		Crafter	Vending Table	4m ²	7000	8:00-16:00	5	Relocation		
18	F	N/A	Indigenous	Roman Catholic	Kweekschoo	x	Crafter	Vending Table	4m ²	5000	7:00-19:00	3	Relocation		

Overview Food Vendors

#	Sex M/F	Age	Ethnicity	Religion	Educational level	Female headed household	Type of business	Structure	Area of Impact	Estimated Monthly Income	Regular Operational Timing of Businesses	Years Active at site	# Workers	Preferred Option for Livelihood Restoration	Vulnerable Households	
															Based on Income	Based on female- headed with dependents
1	F	62	Javanese	Islam	VWO/HAVO	x	Food vendor	Stand	16m²	30000	8:30-23:00	More than 10 years	3	Compensation		x
2	F	38	Mixed	Roman Catholic	IMEAO	x	Food vendor	Stand	16m²	30000	10:00-20:00	7	2	Compensation		x
3	F	57	Maroon	Latter-Day- Saints	VOJ	x	Food vendor	Stand	16m²	30000	19:00-23:00 or later	More than 10 years	2	Compensation		x
4	F		Maroon	Roman Catholic	GLO/BO		Food vendor	Stand	16m²	67500	24/7	More than 10 years	4	Compensation		
5	M	71	Creole	Moravian Church	VWO/HAVO		Food vendor	Stand	16m²	Un- specified	Weekends 13:00-03:00	More than 10 years	1	Compensation		
6	M	54	Creole	Roman Catholic	Natin/AMTO		Food vendor	Stand	16m²	100000	8:00-23:00			Compensation		
7	M	64	Mixed	Roman Catholic	VOJ	x	Food vendor	Stand	16m²	Un- specified	Un- specified	More than 10 years	2	Compensation		x
8	M	54	Hindustani	Hinduism	VOJ		Food vendor	Stand	16m²	Un- specified	18:00-23:00	2	3	Compensation		
9	M	49	Creole	Moravian Church	Natin/AMTO		Food vendor	Stand	16m²	35000	8:00-23:00	More than 10 years	2	Compensation		
10	M	54	Creole	Roman Catholic	GLO/BO		Food vendor	Stand	16m²	4250	Weekdays 13:00-18:00 & Weekends 24/7	7	2	Compensation	x	
11	M	50	Creole	Roman Catholic	GLO/BO		Food vendor	Container		40000	11:00-04:00	More than 10 years	3	Compensation		

Overview Workers

#	Sex (M/F)	Ethnicity	Other income (Y/N)	Monthly income	# Children	RELATIONSHIP STATUS (SINGLE - Y/N)	Way of Commuting	Education level	Frequency of income	Type of dwelling
1	M	Javanese	Yes	SRD 8100 - 9000	0	Yes	Car	Secondary	Weekly	Family property
2	M	Creole	No	SRD 7100 - 8000	4+	Yes	Car	Secondary	Weekly	Family property
3	M	Javanese	Yes	SRD 8100 - 9000	0	No	Car	Secondary	Weekly	Own property
4	F	Javanese	Yes	SRD 8100 - 9000	0	No	Car	Secondary	Weekly	Family property
5	F	Maroon	Yes	SRD 6100 - 7000	4+	No	Bus	Primary	Monthly	Property of spouse
6	F	Maroon	Yes	SRD 5100 - 6000	4+	No	Bus	Secondary	Monthly	Rental
7	M	Creole	No	> SRD 9000	2	No	Car	Secondary	Daily	Own property
8	F	Mixed	No	SRD 3000- 4000	4+	No	Bus	Secondary	Daily	Rental
9	M	Mixed	Yes	SRD 4100 - 5000	2	No	Car	Primary	Weekly	Family property
10	F	Maroon	No	SRD 3000 - 4000	0	Yes	Bus	Secondary	Monthly	Rental
11	F	Maroon	No	SRD 3000 - 4000	0	Yes	Bus	Secondary	Monthly	Rental
12	F	Maroon	Yes	SRD 3000 - 4000	0	Yes	Car	University	Monthly	Family property
13	F	Mixed	No	> SRD 9000	3	Yes	Bus	Secondary	Monthly	Rental
14	M	Cuban	No	> SRD 9000	1	No	Motorcycle	Secondary	Weekly	Rental
15	M	Dominican	Yes	> SRD 9000	2	No	Car	Secondary	Monthly	Rental
16	F	Creole	No	SRD 4100 - 5000	0	No	Bus	Secondary	Monthly	Family property
17	F	Hindustani	No	SRD 5100- 6000	4+	Yes	Car	Primary	Monthly	Own property
18	F	Hindustani	No	SRD 8100 - 9000	2	No	Bus	Primary	Monthly	Property of spouse
19	F	Hindustani	No	SRD 6100 - 7000	1	Yes	Car	Secondary	Monthly	Own property

**While 24 workers have been identified, this overview provides information of 19 workers which was verified during the research period.*

Information of the remaining 5 workers could not be verified because they were unavailable for interviews during indicated research period.

Appendix 4 – Summary Food vendors Accounting

Food vendor #1

June	Amount (SRD)
Income	110,398.75
Expenses	64,369.48
Profit	46,029.27
July	Amount (SRD)
Income	110,673.75
Expenses	65,369.43
Profit	45,304.32
August	Amount (SRD)
Income	113,423.75
Expenses	64,869.15
Profit	48,554.60
September	Amount (SRD)
Income	107,387.50
Expenses	64,555.75
Profit	42,831.75

Food vendor #2

July	Amount (SRD)
Income	127,307
Expenses	116,780
Profit	10,527.00
August	Amount (SRD)
Income	65,780
Expenses	93,500
Loss	27,720
September	Amount (SRD)
Income	75,595
Expenses	89,850
Loss	14,255

Food vendor #3

June	Amount (SRD)
Income	236,673
Expense s	65,519
Profit	171,154
July	Amount (SRD)
Income	139,870
Expense s	73,673
Profit	66,197
August	Amount (SRD)
Income	157,335
Expense s	78,071
Profit	79,264

Food vendor #4

June	Amount (SRD)
Income	81,750
Expenses	77,175
Profit	4,575
July	Amount (SRD)
Income	81,250
Expenses	78,250
Profit	3,000
August	Amount (SRD)
Income	77,000
Expenses	76,500
Profit	500
September	Amount (SRD)
Income	76,500
Expenses	77,800
Loss	1,300

Food vendor #5

June	Amount (SRD)
Income	112,800
Expenses	64,400
Profit	48,400
July	Amount (SRD)
Income	131,450
Expenses	66,950
Profit	64,500
August	Amount (SRD)
Income	120,750
Expenses	66,950
Profit	53,800

Food vendor #6

June	Amount (SRD)
Income	22,721
Expenses	47,098
Loss	24,377.00
July	Amount (SRD)
Income	58,507
Expenses	25,965
Profit	32,542
August	Amount (SRD)
Income	49,528
Expenses	37,903
Profit	11,625
September	Amount (SRD)
Income	53,127
Expenses	57,224
Loss	4,097

Appendix 5 – Submitted Food vendors Accounting

Handwritten accounting for July 2023.

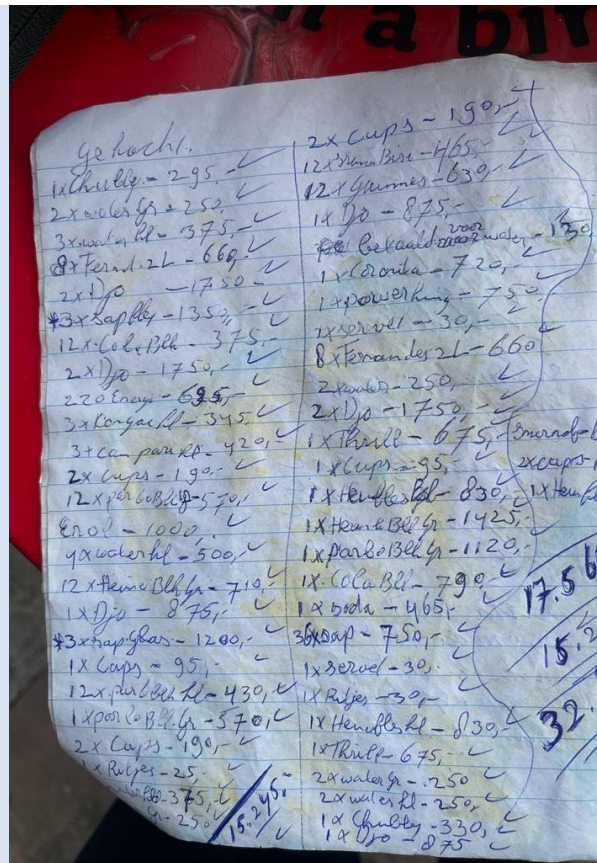
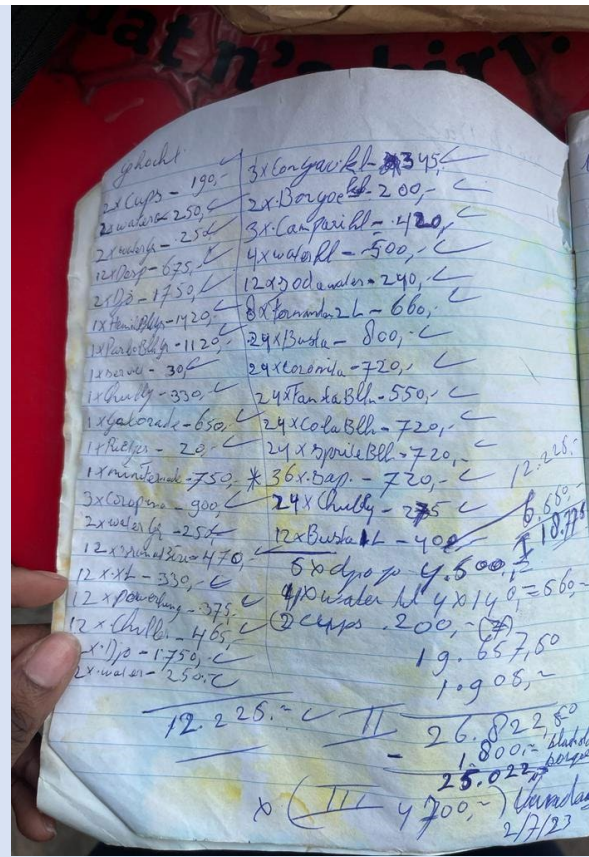
Juli 2023		
	mitgabe	inkommen
1-7	Srd 20.000	Srd 60000
3-7	Srd 7.000	Srd 5060
4-7	Srd 5000	Srd 2090
5-7	Srd 10.000	Srd 34157
6-7	Srd 3000	Srd 4070
7-7	Srd 8000	Srd 5090
9-7	Srd 6000	Srd 3080
11-7	Srd 4000	Srd 3670
13-7	Srd 9000	Srd 5650
15-7	Srd 3000	Srd 4590
17-7	Srd 5000	Srd 460
21-7	Srd 7000	Srd 378
20-7	Srd 4080	Srd 32
25-7	Srd 3700	Srd 27
26-7	Srd 5000	Srd 42
28-7	Srd 6000	Srd 39
30-7	Srd 4000	Srd 350
31-7	Srd 7000	Srd 45

Handwritten accounting for August 2023.

Augustus 2023		
	mitgabe	inkommen
1-8	Srd 8000	Srd 409
3-8	Srd 6000	Srd 39
4-8	Srd 4000	Srd 32
6-8	Srd 5000	Srd 42
7-8	Srd 3500	Srd 2
8-8	Srd 7000	Srd 4
10-8	Srd 6500	Srd 3
12-8	Srd 5000	Srd 1
14-8	Srd 4500	Srd 3
16-8	Srd 6000	Srd 1
18-8	Srd 7500	Srd 1
20-8	Srd 4000	Srd 1
21-8	Srd 3500	Srd 1
23-8	Srd 4500	Srd 1
27-8	Srd 7000	Srd 1
29-8	Srd 5000	Srd 1
30-8	Srd 6000	Srd 1
31-8	Srd 5000	Srd 1

Handwritten accounting for September 2023.

September 2023		
	mitgabe	inkommen
1-9	Srd 5000	Srd 3900
2-9	Srd 4000	Srd 4500
4-9	Srd 6000	Srd 420
6-9	Srd 4000	Srd 32
8-9	Srd 3000	Srd 150
9-9	Srd 7000	Srd 450
10-9	Srd 3000	Srd 29
13-9	Srd 4000	Srd 35
15-9	Srd 5000	Srd 47
16-9	Srd 3500	Srd 3
17-9	Srd 5600	Srd 4
18-9	Srd 4750	Srd 3
22-9	Srd 5000	Srd 4
23-9	Srd 4500	Srd 4
24-9	Srd 3500	Srd 24
26-9	Srd 2500	Srd 300
27-9	Srd 5000	Srd 4
29-9	Srd 6000	Srd 5650
30-9	Srd 8000	Srd 750



Click icons below for Scans of other Accounting evidence:



Accounting FV.pdf



Accounting FV 2.pdf



Accounting FV 3.pdf



Accounting 4.pdf

Appendix 6 – Breakdown compensation costs Food vendors, Crafters & Workers

Table 19: Average monthly and daily business income for PAPs

Craft Vendors	SRD	Food Vendors	SRD	Workers	SRD
Average monthly business income (ABI)	6,800	Average monthly business income (ABI)	26,500	Average monthly income (AI)	7,100
Average daily business income (ADI)	250	Average daily business income (ADI)	915	Average daily income (ADI)	255

Table 20: Calculation total food vendors compensation

Food Vendors Compensation	Costs per Vendor(s) (SRD)	Total monthly compensation all vendors (SRD)	Compensation all vendors – 12 months (SRD)
One-time evacuation support for Food vendors (4 days of ADI)	3,660 (one time)	40,260	N/A
Monthly compensation vendors 29 ¹⁶ *ADI	26,500(monthly)	291,500	3,498,000

*Compensation for 11 food vendors

Table 21: Calculation total workers compensation

Workers Compensation	Costs per Vendor(s) (SRD)	Total monthly compensation (SRD)	Compensation all vendors – 12 months (SRD)
Worker compensation	7,100 (monthly)	170,400	2,044,800

*Compensation for 24 workers

Table 22: Calculation of one-time support for Crafters

Craft Vendors One time Support for evacuating	Costs
Vacating (2 days of ADI)	Per crafter: 2* SRD 250 = SRD 500 All crafters: 18 * SRD 500 = SRD 9,000

¹⁶ Average number of monthly working days for Food vendors.

Appendix 7 - Letter Food Vendors regarding financial compensation



Brief Food vendors
2023.pdf

Appendix 8 - PAPs Engagement and Grievance Mechanism

This PAP Engagement Plan aims to describe the strategy and program for engaging with the PAPs in the project “Redevelopment of the Waterfront and Improvement of Mobility Infrastructure”. The purpose of this plan is to ensure the timely provision of relevant and understandable information related to the implementation of the LRP and project works progress.

The concerning PAPs are the Crafters, Food vendors, workers currently operating their business and working in a business located at the Waterfront.

The following engagement strategy will be used:

1. **Regular Information Dissemination:** The PIU will provide PAPs with regular on project progress, estimated time to re-enter the waterfront, compensation payments and details, and any other pertinent information crucial for the PAPs.
2. **Dedicated Contact Person:** The liaison officer within the PIU will serve as the primary point of contact for PAPs. This individual will receive and address queries, complaints, or grievances promptly. Contact details of this person will be clearly communicated to the PAPs.
3. **Complaint and Grievance Mechanism:** The existing Grievance Mechanism within the PURP will be used to receive and address complaints and grievances from PAPs about the implementation of the LRP. This mechanism is set up with the possibilities to submit grievances through dedicated channels, including in-person, via phone, email, or written communication. The PIU commits to acknowledging complaints within 48 hours of receipt and initiating resolution procedures promptly. The GRM procedure is further elaborated in the following section.
4. **Resolution timelines:** The PIU is dedicated to swift resolution of reported issues. Missing or delayed compensations, health-related challenges hindering relocation timelines, or any other issues will be addressed within a maximum timeframe of 10 working days from occurrence. In case of extenuating circumstances requiring a longer resolution period, the PIU will provide regular updates to the concerned PAPs.

Grievance Mechanism structure within PURP Grievance Submission Channels: Grievances and complaints can be submitted through multiple channels, including a hotline, QR Code, website, email and information/help desk. The user’s name, contact information and description of grievance will be collected within the system. Upon receipt of a grievance, confirmation will be sent immediately to the user.

GRM Responsibility: The Ministry and the PIU PURP are responsible for implementing the GRM and maintaining communication with the citizens who submit grievances.

Complaint and Response Mechanism (GRM):

- Established for effective handling of community grievances, especially during construction phases.
- Managed by officers of the PURP-PIU.
- Diverse submission channels: hotline, QR code, website, email, and information/help desk.
- Ministry and PIU PURP responsible for implementation.
- Timely responses within a 3 to 14 working day timeframe.

System Activation:

- Multiple entry points: missed call interaction, QR code scanning, website navigation, hotline calls, and information/help-desk visits.
- Convergence of entries in a central database for review, escalation, and resolution.
- Widespread public information through social media, print ads, radio advertising, presentations, and the PURP website.

LRP Implementation Framework:

- Tailored actions and timelines for engagement with Project Affected People (PAPs).
- Consultation with PAPs throughout planning.
- Monthly tracking of LRP implementation.
- Regular recording of grievances.
- Third-party reviews every three months during construction and operations.
- Periodic evaluations every six months.
- Training reports generated after each training session.

Overall Objective:

- Foster a culturally sensitive and collaborative project environment.
- Ensure a responsive approach to community concerns.

Appendix 9 - Agreement Crafters

Agreement between CRAFTERS of Waterkant, Paramaribo, the Directorate of Culture of the Ministry of Education, Science and Culture, and the District Commissioner Paramaribo North-East

In this agreement, the parties involved are:

Mrs. Roseline Daan in the capacity of Director of the Culture Directorate of the Ministry of Education, Science and Culture, located at; and

Mr. Ricardo Bholá in the capacity of District Commissioner of the District Commissioner of Paramaribo North-East, located at,

Collectively referred to as: the Culture Directorate and the DC

And

Mr./Mrs., born on in and living at no. , with identity card number, hereinafter referred to as **CRAFTER(S)**;

Collectively referred to as the "Parties".

Considering that:

A. The Waterkant is being rehabilitated as part of the MESC's Paramaribo Urban Rehabilitation Program (PURP) and the rehabilitation work will last approximately 12 months to completion;

B. As a result of the aforementioned rehabilitation project, the Waterkant will not be accessible to the group of 18 CRAFTERS mentioned in appendix 1 and they will be economically displaced. To comply with the IDB Environmental and Social Safeguard policy, OP-710 and OP-703, a Livelihood Restoration Plan has been prepared in which the project determines that to minimize and mitigate the adverse impacts and risks on this target group, they will be provided with in-kind compensation and will relocate temporarily in another location to be able to continue their income-earning activities with selling of their crafts;

C. The parties have been in mutual consultation and have identified and agreed to relocate to a nearby location, Kasimex terrain, which is conveniently and centrally located about 150 meters from the Waterkant accordance with the Livelihood Restoration Plan (LRP) and the terms and conditions stipulated in this agreement. The responsible entity to implement the LRP is the Project Implementing Unit, PIU which belongs to the MESC.

D. The parties have mutually agreed that the CRAFTERS will move to and use the Kasimex terrain as a temporary location to continue with their small income-earning activities for a period of 12 months and that they wish to further determine the conditions under which the move will take place;

E. When the newly rehabilitated Waterkant reopens, the CRAFTERS will be guaranteed a selling stand/space, though he/she will have to comply with new applicable government rules. The PIU will facilitate a consultation between the District Commissioner and the craft vendors to discuss the new rules/regulations for permits once these guidelines have been developed.

The parties agree as follows with regard to the evacuation of Waterkant and the relocation to the Kasimex terrain:

Article 1 Moving and accommodation at temporary site, Kasimex terrain.

- a. The CRAFTERS agree to move temporarily or relocate for a period of 12 months from the Waterkant to the Kasimex terrain located at the corner of Waterfront and Keizerstraat, Centrum, Paramaribo, 150 meters from the current project site.
- b. At the location in Kasimex terrain, the CRAFTERS are provided with two temporary wooden structures. Each structure accommodates 10 crafters with a built-in table that can be used on either side with movable seating. The use of the selling space as well as the use of its infrastructure will be free of cost for the crafter during the 12-month period of construction of the Waterfront.
- c. The temporary location at Kasimex terrain will be secured 7X24 hours and will be accommodated to provide crafters with access to electricity, water, and restrooms, free of charge.
- d. The aforementioned facilities will be made available to the CRAFTERS no later than 5 (five) days before moving. Coordination for moving/relocating at Kasimex terrain will be communicated and coordinated between the parties.

Article 2 Relocation financial compensation

- a. Each CRAFTER receives a one-time cash relocation compensation of a total of SRD 500 (five hundred Surinamese dollars) to cover the costs of the relocation. This compensation will be paid in two parts. The first tranche of SRD 250 will be paid upon moving from the Waterkant, while the second tranche of SRD 250 will be paid upon return to the newly rehabilitated Waterkant. The payment will be financed by the Ministry of Education Science and Culture. In case the CRAFTERS decide not to move back to the Waterkant, after renovations, a written notice should be sent to the District Commissioner 1 month before the date for moving back and the second tranche of SRD 250 will not be paid.
- b. The CRAFTER agrees to participate in the trainings that is considered in the compensation package such as training on market re-entry, basics of business accounting and training on new permit requirements.
- c. The relocation compensation will be paid to each displaced CRAFTER, by cash, bank transfer or bank check. The payment is prepared by the PIU PURP.
- d. The relocation compensation will be paid personally and only in the name of the affected vendor.

Article 3 The closing out of Waterkant

- a. The CRAFTERS have to vacate their current business location at Waterkant no later than 2 days after receiving the first payment of the relocation compensation. He/She will be responsible to pack and moving all the business belongings and transfer these to the assigned vending space/stall at the Kasimex terrain.
- b. Displaced crafters must move out the Waterkant before any project works begin at the project site. If the CRAFTERS do not vacate their location at Waterkant within 2 days after payment of the relocation compensation, the PIU-PURP will send a reminder and will agree with the crafter a new date to carry out the move and relocation of their business.

Article 4 Responsibilities of the PIU PURP

- a. The PIU PURP is responsible for the full implementation of the LRP, therefore the supervision and coordination of the closing out of the Waterkant, the move/temporary relocation of the CRAFTERS to Kasimex terrain, as well as timely communication by providing them necessary information and support during the renovation period. In addition, the PIU PURP responsible of the GRM (outlined in Appendix L in the ESIA report) will register, manage, and resolve any grievances or complaints that displaced crafters may have.
- b. The PIU PURP will supervise the provision of the facilities and services referred to in Article 1(b) and (c).

Article 5 Responsibilities of the CRAFTERS

- a. The CRAFTERS will ensure that the tent, table, and seating provided to them on loan and cost-free are kept in good condition during the entire agreement period and that the aforementioned materials remain the property of the Culture Directorate.
- b. The CRAFTERS must strictly comply with all applicable rules and regulations regarding their activities on the Kasimex terrain and the renovation work (training and consultations on these rules will be provided to the vendors).
- c. The CRAFTERS will maintain open and timely communication with PIU PURP as the working arm of the Culture Directorate and the DC regarding any issues, concerns, or requests.
- d. The CRAFTERS will adhere to the relocation schedule and guidelines and will adapt their activities to the progress of the renovation work.
- e. The CRAFTERS will ensure that the space allocated to them on the Kasimex terrain remains clean and tidy.
- f. The CRAFTERS must indicate in writing no later than one month before the end of the renovation work whether they intend to return to the newly rehabilitated Waterkant location when this is ready for use. After confirmation of the absence of return, the location of the non-returning CRAFTER will be released for new registrations and the crafter will not receive the second payment offered to move her/his business belongings back to the rehabilitated Waterkant, as described in article 2 a
- g. In the event of damage or loss of the loaned materials described in point “a” above, the CRAFTER is liable to pay for their cost, which could be of at least SRD 300, to a maximum amount of SRD 1,500.
- h. The CRAFTERS declare that they have been fully informed in advance about the scope of this agreement and in particular the relocation from the Waterkant to the Kasimex terrain as well as the conditions under which the relocation will take place.
- i. The CRAFTERS declare that they have freely agreed to the conditions under which the relocation to the Kasimex terrain will take place, including the duration of the relocation, the granting of the relocation compensation as indicated in Article 2 sub a and other provisions stated in Article 1 sub b and c.

Article 6 Duration of the Agreement

- a. This agreement comes into effect on the date it is signed by the parties and will remain in force during the restoration work on the Waterkant for a period of an estimated 12 months starting March 2024. If the renovation of the Waterkant takes longer than this period, the Agreement will be extended for the remaining period. Notice regarding the amendment of the Agreement must be communicated by the PIU to the CRAFTERS at least two months prior to the termination of the Agreement.
- b. The agreement will be terminated when the crafters return to their renovated places on the Waterkant.

Article 7 Liability

The Culture Directorate is not responsible for any direct or indirect damage or cost of goods as a result from the closing out of Waterkant and the move to Kasimex terrain.

Article 8 Dispute resolution

- a. The parties shall ensure that any disputes arising regarding the fulfillment of this agreement are resolved by mutual agreement as much as possible. Situations not provided for in the agreement will be resolved by parties in good faith consultation as much as possible
- b. The legal basis used for the agreement is the Civil Code (abbreviated as BW) of Suriname, the LAW of December 28, 1859, concerning the introduction of new legislation in the West Indian Colonies (G.B. 1860 no. 4), as it stands after the changes made in it by SB 2004, no. 25, in particular Book III "Of Obligations" Title II "Of obligations arising from agreement."
- c. The following principles and provisions are hereby established as guiding:
- d. Article 1359 BW: An agreement binds the parties as if it were the law. All legally made agreements are binding on those who have entered into them and cannot be revoked except by mutual consent or for reasons recognized by the law. They must be carried out in good faith. Agreements bind not only to what is expressly stated in them but also to everything required by equity, custom, or law, based on the nature of such agreements.
- e. Article 1334 BW: An agreement is an act by which one or more persons commit themselves to one or more others.
- f. Article 1340 BW: All agreements, whether or not they have a specific name or are known by any particular name, are subject to general rules, which are part of the subject of this and the previous title.
- g. Article 1340 BW further refers to the mandatory conditions that an agreement must meet, including:
- h. Article 1341 BW: Four conditions are required for the validity of agreements: 1°. the consent of those entering into the agreement; 2°. the capacity to enter into an obligation; 3°. a specific subject matter; 4°. a lawful cause.
- i. Article 1342 BW: Consent is not valid if given through error, obtained by force, or obtained through fraud.
- j. Article 1350 in conjunction with Article 1352 BW: Everyone is entitled to enter into agreements unless the law declares them incapable of doing so. Those declared incapable of entering into agreements include: 1°. minors; 2°. those placed under guardianship; 3° in cases provided for by law, all those to whom the law has prohibited the conclusion of certain agreements.
- k. Article 1353 in conjunction with Article 1354 BW: Only things that are in commerce can be the subject of agreements. An agreement must have as its subject a thing that is at least specific in terms of its kind.

Thus, agreed and signed in Paramaribo, the date

Signatures of the Parties:

Name of the CRAFTER	Name of the Director of the Culture Directorate	Name of the District Commissioner of Paramaribo North-East
Signature Crafter	Signature of the Director of the Directorate for Culture	Signature of the DC

Update:

In article 1 C of the agreement, it is stated that the crafters will have 7X24 a day security at the temporary location (corner Waterkant/Keizerstraat, Paramaribo).

Due to constraints in resources, this 7X24 a day security cannot be implemented.

This issue was discussed within the PIU PURP and the Directorate of Culture, and the outcome is to have security at the new crafters 12 hours a day (from 18.00 hour till the next day 06.00 AM).

This option was then discussed with the crafters and the crafters agreed with this option.

After the crafters agreed on this, an amendment was drafted, shared with them and after their agreement on the draft amendment, the final amendment was presented to them to sign.

And all the 17 crafters have signed this amendment.

Appendix 10 – Agreement Food Vendors

[Organization/Letterhead (optional)]

Agreement between FOOD VENDORS of Waterkant, Paramaribo, the Directorate of Culture of the Ministry of Education, Science and Culture, and the District Commissioner Paramaribo North-East

In this agreement, the parties involved are:

Mrs. Roseline Daan in the capacity of Director of the Culture Directorate of the Ministry of Education, Science and Culture, located at; and

Mr. Ricardo Bhola in the capacity of District Commissioner of the District Commissioner of Paramaribo North-East, located at Van Sommelsdijckstraat no. 2, Paramaribo

Collectively referred to as: the Culture Directorate and the DC

And

Mr./Mrs., born on in and living at no. , with identity card number,

hereinafter referred to as **FOOD VENDOR**.

Considering that:

1. The Waterkant is being rehabilitated as part of the MESC's Paramaribo Urban Rehabilitation Program (PURP) and the rehabilitation work will take at least 12 months to complete.
2. As a result of the rehabilitation mentioned above, the Waterkant will not be accessible to the group of 11 FOOD VENDORS, mentioned in Appendix 1, to continue their usual business operation, thus they would be displaced involuntarily. In order to comply with the IDB Environmental and Social Safeguard policy, OP-710 and OP-703, it is necessary that impacts to this affected group are mitigated because they will not be able to carry out their business at the Waterkant through no fault of their own and their livelihoods or main source of income will be lost. Therefore, the PURP has prepared a Livelihood Restoration Plan (LRP).
3. The parties have agreed in mutual consultation that with regards to the rehabilitation works, the 11 FOOD VENDORS will vacate their current business location at the Waterkant in accordance with the Livelihood Restoration Plan (LRP) and the terms and conditions stipulated in this agreement. The responsible entity to implement the LRP is the Project Implementing Unit, PIU which works under supervision of the MESC, mainly the Directorate of Culture.

4. The parties wish to establish in writing the terms and conditions under which the temporary closure of the business will take place and the compensations they will receive.
5. When the newly rehabilitated Waterkant reopens, the FOOD VENDORS will be guaranteed a selling stand/space in the established food stands that can accommodate 12 vendors, though he/she will have to comply with new applicable government rules. The PIU will facilitate a consultation between the District Commissioner and the food vendors to discuss the new rules/regulations for permits, once these guidelines have been developed.

Parties agree as follows with regards to vacating of the Waterkant:

Article 1 The evacuation/close out of the food stand placed at the Waterkant

- a. The FOOD VENDORS will be responsible for closing out their food stands by completely removing all business belongings –products, equipment and furniture-- before the rehabilitation works start at the Waterkant. The FOOD VENDOR will not be allowed to use the food stands at the Waterkant during the rehabilitation works, which will last at least 12 months.
- b. The FOOD VENDORS will vacate their business location at the Waterkant no later than 7 days after receiving the first payment of the evacuation compensation (see article 2). This task would be communicated and coordinated with the PIU. If the FOOD VENDORS have not closed out and moved out their business belongings within 7 days after receiving the first payment of closing-out compensation, the PIU will send a reminder urging and giving them 24 hours to vacate the premises . If the notice is not complied with, the Directorate of Culture and the DC will independently proceed with the eviction of the food stands at the Waterkant. The Directorate of Culture and the DC are not responsible for any direct or indirect damage or cost resulting from the eviction.
- c. The Directorate of Culture and the DC will be responsible for overseeing and coordinating the closing out (and if required eviction) of the Waterfront.
- d. The FOOD VENDORS commit to avoid the eviction and comply and follow-up of closing out protocols and instructions provided by the PIU PURP.
- e. The FOOD VENDORS in good faith and compliant with this agreement will ensure that the current occupied food stand at the Waterkant will be completely vacated and left behind tidy.

Article 2 FOOD VENDORS Financial Compensation

- a. Considering the fact that the FOOD VENDORS will not be able to use the food stands at the Waterkant during the rehabilitation phase, through no fault of their own, after consulting with them and refusing to relocate their business elsewhere, the PIU has agreed to provide a package of financial compensation and training, as discussed in detail in the LRP.
- b. There are three important aspects to the financial compensation, which are as follows:
 - A one-time financial compensation of SRD 3,660.00 (three thousand six hundred and sixty Surinamese Dollars) for the demobilization and mobilization (including close out and removal of business belongings and return of business activities of the food stand at Waterkant). This compensation will be paid in two parts. The first tranche of SRD 1,830.00

(One thousand eight hundred and thirty Surinamese dollars) will be paid at the closing out of the stand places of the Waterkant, while the second tranche of SRD 1,830.00 (one thousand eight hundred and thirty Surinamese Dollars) will be paid upon return to the newly renovated and rehabilitated Waterkant. In case the FOOD VENDORS decide not to move back to the Waterkant, after renovations, a written notice should be sent to the District Commissioner within 1 month before the date for moving back and the second tranche of SRD 1,830.00 will not be paid.

- A monthly financial compensation of SRD 26,500.00 (twenty-six thousand five hundred Surinamese Dollars) will be paid to each identified food vendor. This compensation shall be granted for at least 12 months starting March 2024. In case of delays during construction, the FOOD VENDORS will receive extended financial compensation beyond the twelve months.
 - All vendors will be offered capacity building and skill training opportunities in the following areas: Hygiene and Food Safety, Market Re-entry, Marketing and Customer Service, Basics of Business Accounting, Inventory Management and Assistance in complying with permit preconditions as per the new management authority for the waterfront. All vendors would be encouraged to sign up for these trainings that would be free of charge.
- c. The financial compensation is prepared by the PIU PURP and funded by the Ministry of Education, Science and Culture
 - d. The financial compensation will be paid by check or per bank transfer in agreement with the FOOD VENDORS. Payments will only be made in the name of the registered FOOD VENDOR and cannot be transferrable to a third party.
 - e. The compensation package consists of financial compensation and a training package. By signing of this agreement or the acceptance of the financial compensation implies that the FOOD VENDORS commits and participates in all parts of the compensation package.

Article 3 Responsibilities of the PIU PURP

- a. Responsibilities of the PIU PURP to implement the LRP which includes coordination of the of the FOOD VENDORS business, as well as providing the necessary information and promised support and facilities as mentioned in Article 2 during the rehabilitation period.
- b. The PIU PURP is committed to providing priority or preference to FOOD VENDORS who wish to return and continue their food business on the newly developed Waterfront. However, it is important to note that the cost of leasing/renting a vending space in the new stands will be subject to revised municipal regulations imposed by the District Commissioner.
- c. The PIU is responsible for maintaining open and timely communication with FOOD VENDORS regarding any problems, concerns or requests regarding the compensation package mentioned in Article 2 as well as the re-commissioning of the food stands at the Waterkant.

Article 4 Responsibilities of the Food VENDORS

- a. The FOOD VENDORS will maintain open and timely communication with PIU PURP as the implementing unit of the Culture Directorate and the DC regarding any issues, concerns or requests.
- b. The FOOD VENDOR must indicate in writing no later than one month before the end of the renovation work whether they intend to return to the newly rehabilitated Waterkant location. After confirmation of the absence of return, the location of the non-returning FOOD VENDOR will be released for new registrations.
- c. The FOOD VENDOR is encouraged to participate in the trainings considered in the compensation package such as training on hygiene and food safety, market re-entry, basics of business accounting and training on new permit requirements.
- d. The FOOD VENDOR agrees to take responsibility for keeping permits up to date when re-instated.

Article 5 Communication

- a. The parties will be in regular contact during the close out/move out task, the provision of the compensation package as mentioned in Article 2 as well as the state of affairs with regard to the Waterkant project rehabilitation process.
- b. The FOOD VENDORS will maintain open and timely communication with the Culture Directorate and the DC regarding any problems, concerns or requests regarding the compensation package mentioned in Article 2 as well as the re-commissioning of the food stands at the Waterkant.
- c. In case of questions, remarks, or complaints regarding the project there is a Grievance Mechanism available to file these.
- d. Contact persons will be assigned for the purpose of communication between the parties

- From the PURP PIU: Mr./Mrs. ..

Contact :

Email :

- From the part of the FOOD VENDORS: Mr./ Mrs.

Contact :

Email :

- e. The parties declare that they will provide each other with prior, complete and correct information.

Article 6 Other provisions

- a. The FOOD VENDORS declare that they have freely cooperated and will continue to provide their cooperation and support with regard to the closing out of the Waterkant to the Cultural Directorate, the DC and possibly other responsible agencies.
- b. The FOOD VENDORS declare to have been informed in advance, completely and correctly about the scope of this agreement and in particular the closing and vacating of their business from the Waterkant
- c. The FOOD VENDORS declare that they have freely agreed to the terms for the closing out, the duration of the obstruction of their business activities at the Waterkant and the awarding of the financial compensation as previously described in article 2.
- d. The Parties declare to carry out the agreed-upon actions in this Agreement.
- e. After the rehabilitation of the Waterkant, the FOOD VENDORS will be given priority or preference to return their food business to the renovated stands at the Waterkant. If the FOOD VENDORS are not interested in occupying the stands at the Waterkant after the rehabilitation, this will be communicated in writing to the DC no later than one month before the determined date of return.
- f. Any modification of this agreement will be made in consultation between the parties and will be agreed in writing. All amendments shall be made in writing by mutual consent and added as an addendum to this Agreement.

Article 7 Duration of the Agreement

- a. This agreement comes into effect on the date of signature by the interested parties and will remain in force during the restoration work on the Waterkant for a period of an estimated 12 months. If the renovation of the Waterkant takes longer than this period, the Agreement will be extended for the remaining period. Notice regarding the amendment of the Agreement must be communicated by the PIU to the FOOD VENDORS at least two months prior to the termination of the Agreement.
- b. The agreement will be terminated when the project is completed and the displaced FOOD VENDORS return, if they wish to do so, to their renovated places on the Waterkant.

Article 8 Liability

The Culture Directorate is not responsible for any direct or indirect damage or cost of goods as a result from the closing out of Waterkant and the move to Kasimex terrain.

Article 9 Dispute resolution

- a. The parties shall ensure that any disputes arising regarding the fulfillment of this agreement are resolved by mutual agreement as much as possible. Situations not provided for in the agreement will be resolved by parties in good faith consultation as much as possible
- b. The legal basis used for the agreement is the Civil Code (abbreviated as BW) of Suriname, the LAW of December 28, 1859, concerning the introduction of new legislation in the West Indian Colonies (G.B. 1860 no. 4), as it stands after the changes made in it by SB 2004, no. 25, in particular Book III "Of Obligations" Title II "Of obligations arising from agreement."
- c. The following principles and provisions are hereby established as guiding:
- d. Article 1359 BW: An agreement binds the parties as if it were the law. All legally made agreements are binding on those who have entered into them and cannot be revoked except by mutual consent or for reasons recognized by the law. They must be carried out in good faith. Agreements bind not only to what is expressly stated in them but also to everything required by equity, custom, or law, based on the nature of such agreements.
- e. Article 1334 BW: An agreement is an act by which one or more persons commit themselves to one or more others.
- f. Article 1340 BW: All agreements, whether or not they have a specific name or are known by any particular name, are subject to general rules, which are part of the subject of this and the previous title.
- g. Article 1340 BW further refers to the mandatory conditions that an agreement must meet, including:
- h. Article 1341 BW: Four conditions are required for the validity of agreements: 1°. the consent of those entering into the agreement; 2°. the capacity to enter into an obligation; 3°. a specific subject matter; 4°. a lawful cause.
- i. Article 1342 BW: Consent is not valid if given through error, obtained by force, or obtained through fraud.

- j. Article 1350 in conjunction with Article 1352 BW: Everyone is entitled to enter into agreements unless the law declares them incapable of doing so. Those declared incapable of entering into agreements include: 1°. minors; 2°. those placed under guardianship; 3° in cases provided for by law, all those to whom the law has prohibited the conclusion of certain agreements.
- k. Article 1353 in conjunction with Article 1354 BW: Only things that are in commerce can be the subject of agreements. An agreement must have as its subject a thing that is at least specific in terms of its kind

Thus, agreed and signed in Paramaribo in 5 copies, dated

Signatures of the Parties:

Name of the FOOD VENDOR	Name of the Director of the Culture Directorate	Name of the District Commissioner of Paramaribo North-East
Signature FOOR VENDOR	Signature of the Director of the Directorate for Culture	Signature of the District Commissioner

Appendix 11 – Agreement Workers

[Organization/Letterhead (optional)]

Agreement between WORKERS of Waterkant, the Directorate of Culture of the Ministry of Education, Science and Culture, and the District Commissioner

In this agreement, the parties involved are:

Mrs. Roseline Daan in the capacity of Director of the Culture Directorate of the Ministry of Education, Science and Culture, located at; and

Mr. Ricardo Bholá in the capacity of District Commissioner of the District Commissioner of Paramaribo North-East, located at Van Sommelsdijckstraat no. 2,

Collectively referred to as: the Culture Directorate and the DC

And

Mr./Mrs., born on in and living at no. , with identity card number, hereinafter referred to as **FOOD VENDOR WORKER** .

Considering that:

1. The Waterkant is being rehabilitated as part of the MESC's Paramaribo Urban Rehabilitation Program (PURP), and the rehabilitation work will take at least 12 months to completion starting.
2. As a result of the rehabilitation mentioned above, the Waterkant will not be accessible to the 11 FOOD VENDORS that currently operate on site, and listed in Appendix 1, and who have collectively agreed to close out their business during the duration of the project works. This decision will result in the involuntary and indirect loss of jobs for these workers who depend on this income to support themselves and their families. In order to comply with the IDB Environmental and Social Safeguard policy, OP-710 and OP-703, it is necessary for the PIU to minimize and mitigate the adverse economic impacts and risks on this group, therefore it has prepared a Livelihood Restoration Plan (LRP) and decided to compensate workers for this loss in view of the fact that through no fault of their own they will not be able to work at the food stands at the Waterkant, or find another job elsewhere in the immediate future.

Parties agree as follows with regards to evacuation of Waterkant:

Article 1 The closure and evacuation of the food vendor employer of the workers operating at present at the Waterkant

- a. The Waterkant will be closed due to the rehabilitation works planned under the PURP, therefore, the FOOD VENDORS have agreed to also close the business temporarily for the duration of the project construction works and vacate the site. This situation will also impact adversely the 24 workers who will lose their job or will not be able to work at the food stands at the Waterkant during the rehabilitation work. They will have to find employment elsewhere or wait for 12 months if he/she wishes to be re-hired by the same food vendor once his/her food business returns to the newly renovated Waterfront.

Article 2 WORKERS Financial Compensation

- a. Considering the fact that the WORKERS will not be able to work at the food stands at the Waterkant during the rehabilitation phase, through no fault of their own, they will be financially compensated, as planned in the Livelihood Restoration Plan, LRP to support them for their hardship and in their transition to secure other employment elsewhere.
- b. The compensation consists of a monthly financial payment of SRD 7,100.00 (seven thousand and one hundred Surinamese Dollars). This compensation shall be granted for 12 months starting on the day the employer food vendor close out the business at the Waterfront.
- c. The parties have agreed in mutual consultation that with regards to the rehabilitation works, the 24 workers will vacate the location at the Waterkant in accordance with the Livelihood Restoration Plan (LRP) and the terms and conditions stipulated in this agreement. The responsible entity to implement the LRP is the Project Implementing Unit, PIU which belongs to the MESC.
- d. The financial compensation is prepared by the PIU PURP and funded by the Ministry of Education, Science and Culture.
- e. The financial compensation will be paid in checks in agreement with the FOOD VENDOR WORKER. Payments will only be made in the name of the registered FOOD VENDOR WORKER and could not be issued to a third party's name.
- f. The signing of this agreement or the acceptance of the financial compensation implies that the FOOD VENDORS WORKER commits and participates in the compensation.

Article 3 Responsibilities of the PIU PURP

- a. Responsibilities of the PIU PURP are providing the necessary information and promised support and facilities as mentioned in Article 2 during the rehabilitation period.

Article 4 Communication

- a. The PIU PURP will be in regular contact to coordinate with the workers affected by the project to inform them about the closing out of businesses from the Waterfront, and the provision of the financial compensation as mentioned in Article 2 as well as the state of affairs with regard to the project rehabilitation process.
- b. In case of questions, remarks, or complaints regarding the project there is a Grievance Mechanism available to file these.
- c. Contact persons will be assigned for the purpose of communication between the parties.

- From the PURP PIU: Mr./Mrs. ..

Contact :

Email :

- From the WORKERS: Mr./ Mrs.

Contact :

Email :

- d. The parties declare that they will provide each other with prior, complete and correct information.

Article 5 Other provisions

- a. The WORKERS declare that they have been informed in advance, completely and correctly, about the scope of this agreement.
- b. The Parties declare that they will always carry out the actions to be carried out under this Agreement in consultation.
- c. Any modification of this agreement will be made in consultation between the parties and will be agreed in writing. All amendments shall be made in writing by mutual consent and added as an addendum to this Agreement.

Article 6 Duration of the Agreement

- a. This agreement comes into effect on the date of this agreement and will remain in force during the restoration work on the Waterkant for a period of 12 months March 2024. If the renovation of the Waterkant takes longer than this period, the Agreement will be extended for the remaining period. Notice regarding the amendment of the Agreement must be communicated by the PIU to the WORKERS at least two months prior to the termination of the Agreement.
- b. The agreement will be terminated upon the completion and handover of the waterfront, allowing PAPs to return to the waterfront. Termination will be effective even if the worker decides to return to work for the food vendor.
- c. .
- d. Retroactive compensation for uncollected payments will not be provided.

Article 7 Dispute resolution

- a. The parties shall ensure that any disputes arising regarding the fulfillment of this agreement are resolved by mutual agreement as much as possible. Situations not provided for in the agreement will be resolved by parties in good consultation as much as possible
- b. The legal basis used for the agreement is the Civil Code (abbreviated as BW) of Suriname, the LAW of December 28, 1859, concerning the introduction of new legislation in the West Indian Colonies (G.B. 1860 no. 4), as it stands after the changes made in it by SB 2004, no. 25, in particular Book II "Of Obligations" Title "I "Of obligations arising from agreement."
The following principles and provisions are hereby established as guiding:
- c. Article 1359 BW: An agreement binds the parties as if it were the law. All legally made agreements are binding on those who have entered into them and cannot be revoked except by mutual consent or for reasons recognized by the law. They must be carried out in good faith. Agreements bind not only to what is expressly stated in them but also to everything required by equity, custom, or law, based on the nature of such agreements.
- d. Article 1334 BW: An agreement is an act by which one or more persons commit themselves to one or more others.
- e. Article 1340 BW: All agreements, whether or not they have a specific name or are known by any particular name, are subject to general rules, which are part of the subject of this and the previous title.

- f. Article 1340 BW further refers to the mandatory conditions that an agreement must meet, including:
- g. Article 1341 BW: Four conditions are required for the validity of agreements: 1°. the consent of those entering into the agreement; 2°. the capacity to enter into an obligation; 3°. a specific subject matter; 4°. a lawful cause.
- h. Article 1342 BW: Consent is not valid if given through error, obtained by force, or obtained through fraud.
- i. Article 1350 in conjunction with Article 1352 BW: Everyone is entitled to enter into agreements unless the law declares them incapable of doing so. Those declared incapable of entering into agreements include: 1°. minors; 2°. those placed under guardianship; 3° in cases provided for by law, all those to whom the law has prohibited the conclusion of certain agreements.

Thus, agreed and signed in Paramaribo in 5 copies, dated

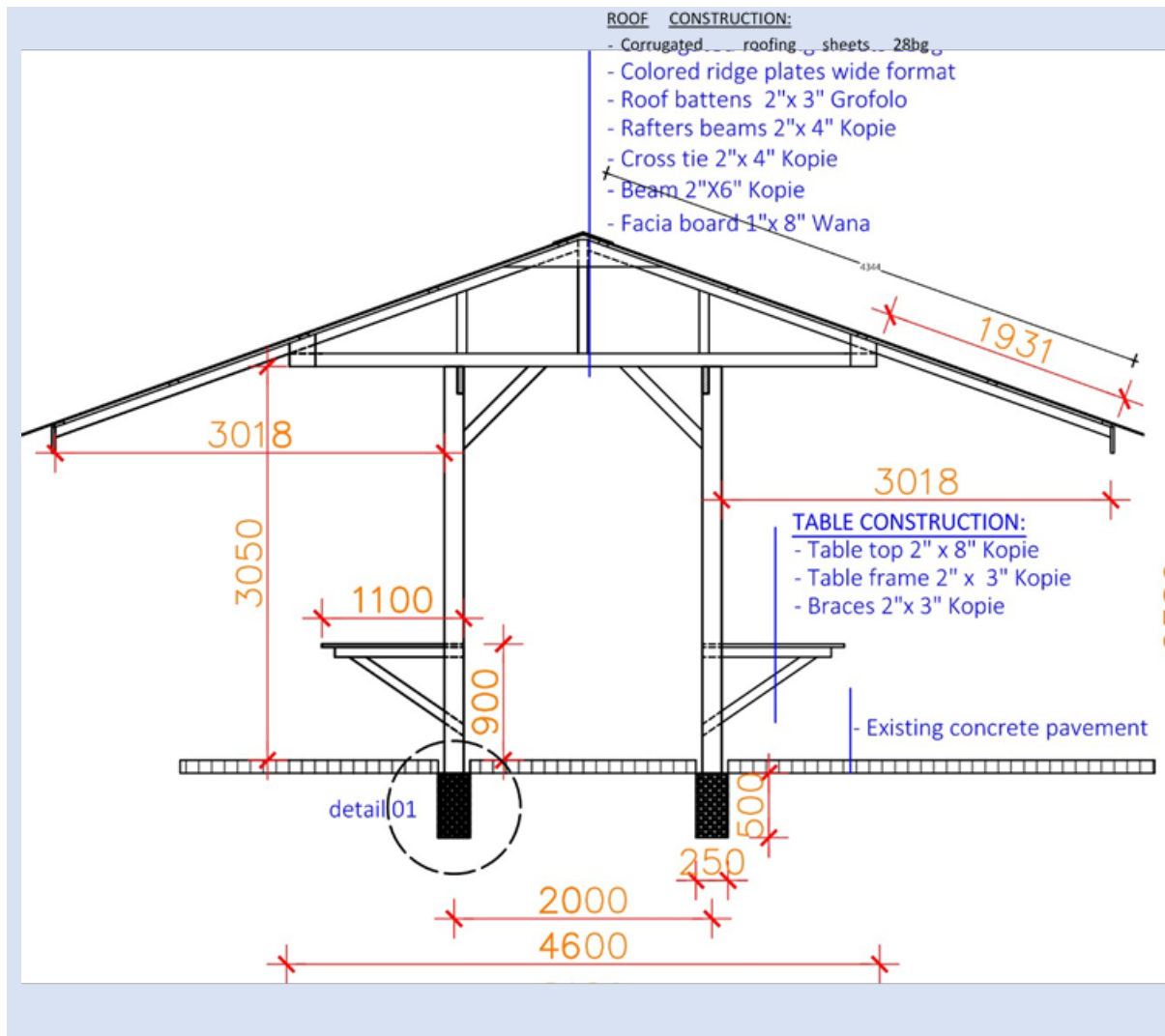
Signatures of the Parties:

Name of the WORKERS	Name of the Director of the Culture Directorate	Name of the District Commissioner
Signature WORKERS	Signature of the Director of the Directorate for Culture	Signature of the District Commissioner

Appendix 12 – Person Information Crafters, Food vendors and Workers

Because of confidentiality considerations, personal information is not included in the LRP. List of Food vendors, Crafters and Workers is separately provided.

Appendix 13 - Location and design of new structure



Appendix 14 - Compensation calculation Crafters

	Estimated Monthly Income Crafters
	5,000
	4,000
	4,000
	7,000
	9,000
	1,250
	7,500
	6,000
	8,000
	5,000
	4,000
	15,000
Total Income all PAPs (<i>outliers excluded</i>)	74,500
Average Business Income (ABI)	6,773
ABI rounded up	6,800

Outliers	
Higher incomes	Lower incomes
Crafters – BI above SRD 20,000	Crafters – BI below SRD 2,500

PAPs	Formulas	ADI
Crafters	6,800/29	234 rounded up 250

Appendix 15 - Compensation calculation Food Vendors

	Estimated Monthly Income Food vendors SRD
	30000
	37500
	30000
	67500
	100000
	35000
	4250
	40000
	8000
Total Income all PAPs (<i>outliers excluded</i>)	184,750
Average Business Income (ABI)	26,393
ABI rounded up	26,500

Exclusions
PAPs who did not specify their income were excluded in the calculation.

Outliers	
Higher incomes	Lower incomes
Food vendors – BI above SRD 50,000	Food vendors – BI below SRD 4,000

PAPs	Formulas	ADI
Food Vendors	26,500/29	913 rounded up 915

Criteria for calculating Food Vendors compensation

At first the following was considered for the calculation of the financial compensation of the Food vendors:

- Food vendors had to indicate their business income during interview sessions in Aug. 2023
- Food vendors could provide evidence of business income through bookkeeping papers of June, July, August, and September 2023.

While all food vendors could indicate an average business income during the interview round, the following concerns were determined after review of the provided bookkeeping information:

- Not all food vendors structurally kept their bookkeeping information and therefore could not provide these. Bookkeeping documents were obtained from 8 out of 11 food vendors. These records were incomplete.
- Only 6 of the food vendors were able to provide an overview of their income, expenses, and profit/loss, of which only 2 could partially proof this information through receipts and other evidence documents.
- Significant gaps in net incomes were determined verbally and in bookkeeping evidence.
- Workers of the food vendors were also not able to demonstrate their salary through receipts.

Based on these concerns the calculations for financial compensation for the Food vendors and their workers is based on the average of the 9 Food vendor Business Incomes which were indicated during interviews.

Appendix 16 - Compensation calculation Workers

Worker #	Average
1	8500
2	7500
3	8500
4	8500
5	6500
6	5500
7	15000
8	3500
9	4500
10	4000
11	4000
12	3500
13	10000
14	10000
15	10000
16	4500
17	6000
18	9000
19	6500
Average	7132
Average monthly income Food vendor worker	7100

Note: Calculations based on the verified information of 19 of the 24 workers who were available during the research period. All 24 workers will be compensated according to this calculation.

Criteria for eligibility of workers

- The worker is listed by the food vendors. The food vendors will have to sign a statement that the person indeed works for them.
- Only workers that have been working for a minimum of 6 months prior to the cut-off date and have been working for a continual period till the day of agreement signing, will be compensated. This information was gathered during the individual interviews with the food vendors and the workers.

Appendix 17 - Employment Declaration

This formal statement is to declare that [Name of Food vendor], situated at the Waterkant with stand number [insert food stall number], hereby attests that [Name of the worker] is worker in his/ her food stand. Furthermore, we affirm that the information provided pertaining to the employment status of [Name of the worker] is accurate and truthful.

Signatures of the Parties:

Name of the FOOD VENDOR	Name of the FOOD VENDOR worker
Date:	Date:
Signature FOOD VENDOR	Signature of the FOOD VENDOR worker

Appendix 18 – Residence Permit Food vendor worker



Appendix 19 - Crafters stalls with toilet facilities with water tank and septic tank



Picture A. The 2 crafters stalls, and B. Toilet facilities with water tank and septic tank.



Picture: C. Crafters stalls provided with electricity, and D. Official nameplate of the craft market in front of the location.

Appendix L



Paramaribo Urban Rehabilitation Program

(SU-L1046)

Grievance Mechanism Procedure

Prepared by	Version	Date	Approved by	Date
Program Implementation Unit	1	08-05-2024	Program Manager	

	Grievance Mechanism Procedure	Version	1
		Date	8 May '24

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1 INTRODUCTION

The availability of an effective and adequate grievance mechanism is important in the management of grievances from the affected local communities and other stakeholders for smooth implementation of the Paramaribo Urban Rehabilitation Program (PURP).

The PURP grievance process provides an avenue for stakeholders to voice their concerns and gives transparency on how grievances will be managed internally with appropriate corrective measures. By addressing and responding to grievances raised by the project affected people (PAP) and other relevant stakeholders in a fair, transparent, and timely manner, potential conflicts with the Program/projects may be reduced. Hence, the mechanism could positively enhance the relationships between Program Implementation Unit (PIU) of PURP and the stakeholders.

Grievances may take the forms of specific complaints about damages/ injury, concerns about project activities, or perceived future incidents or impacts of the project.

PURP personnel to be involved in the grievance mechanism implementation should go through appropriate training, in particular relating to handling the stakeholders' opinions, and the manners of providing information. The grievance mechanism should be broadly and regularly publicized, especially during the pre-construction and construction phase to ensure that comments, questions, and grievances are appropriately channeled, registered and resolved.

2 SCOPE

The grievance mechanism procedure applies to all external stakeholders that intend to submit a grievance to PURP if they believe the project practice is having a detrimental impact on the community, the environment, private businesses, or quality of life. Stakeholders may also submit comments and suggestions.

The procedure does not apply to the following claims which should be channeled outside project mechanisms:

- Grievances clearly not related to the project based on assessment of its legitimacy.
- Issues related to governmental policy and government institutions.
- Grievances concerning criminal activity or violence, which should be referred to the justice system.
- Commercial disputes (Internal stakeholders): Commercial matters should be stipulated for in contractual agreements and issues should be resolved through the commercial resolution mechanisms or civil courts.

	Grievance Mechanism Procedure	Version	1
		Date	8 May '24

3 DEFINITIONS

Term	Definition
Grievance	An issue, concern, problem, or claim (perceived or actual) that an individual or community group wants addressed by the PIU in a formal manner.
Grievance Mechanism	A formalized way to accept, assess, and resolve grievances concerning the performance or behavior of the PIU, its contractors, or employees. This includes adverse economic, environmental, and social impacts.
Grievance Owner	Groups or individuals within PURP investigating the grievance and liaising with the external stakeholder/s; and/or developing resolutions and actions to rectify any issues; and/or following up and tracking progress of the grievance; and documenting any interactions with external stakeholders.
Internal Stakeholders	Groups or individuals within a project who work directly within the project, such as employees and contractors.
External Stakeholders	Groups or individuals outside the project who are not directly employed or contracted by the project but are affected in some way from the decisions of the project, such as local communities, civil societies, NGOs, private businesses, and government agencies.

4 GRIEVANCE REPORTING CHANNELS

PURP will communicate with external stakeholders to create awareness of the grievance mechanism and hence, be transparent on how stakeholders can maintain their rights and voice their grievances. Communication regarding the grievance mechanism procedure will be conducted as follows:

a) For the general public:

- Information regarding the grievance mechanism will be placed at the PURP Facebook page¹ and Website². Furthermore, at each project site contact information of the PIU for grievance will be placed.

b) For key stakeholders and Project Affected People (PAP):

- At each stakeholder meeting, the grievance mechanism will be communicated.
- The CLS and/or SA will regularly keep the main parties who are involved in a grievance informed of progress and, where applicable, the outcome of the grievance specific to their involvement through the indicated preferred communication mean (see Annex 1: Grievance Mechanism Form)

¹ <https://www.facebook.com/purpsuriname>

² <https://purp.sr/en/home-2/>

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Any comments or concerns can be brought to the attention of the PIU verbally or in writing (by WhatsApp or e-mail) or by filling in a grievance form. All grievances will be received by the Community Liaison Specialist (CLS), the Social Assistant (SA), or the Operations Support (OS).

Grievances can be lodged by using grievance forms, which are accessible at each location and PIU PURP Office. The grievance form in both Dutch and English is attached in Annex 1 and will also be available online on the PURP website. Filled grievance forms then can be submitted to the PIU (see address in Table 1).

Other channels or media available for the external stakeholders to raise their grievances formally include telephone, WhatsApp, emails, and face-to-face meetings.

Table 1 - Addresses and Channels for Submission of Grievances


Name	Program Implementation Unit of PURP		
Address	Wagenwegstraat 64 (Upstairs), Paramaribo, Suriname		
Telephone:	+(597) 471879	WhatsApp:	+(597) 8565818
Email	community.engagement@purp.sr or info@purp.sr		

5 ROLES AND RESPONSIBILITIES

General roles and responsibilities of the Program Manager and the personnel involved in the implementation of the proposed grievance mechanism for PURP are briefly listed in Table 2.

Table 2 - Personnel Role and Responsibility

Position/Role	Responsibility
Program Manager (PM)	<ul style="list-style-type: none"> • Makes assessment and decision on course of actions on grievance resolution. • Works with the CLS on actions to be taken to resolve grievances. • Brings grievance to a higher management level when required.
Community Liaison Specialist (CLS)	<ul style="list-style-type: none"> • Evaluates grievances and liaises with the external stakeholders. • Develops resolutions and actions to rectify any issue. • Follows up and tracks progress of grievances.
Social Assistant (SA)	<ul style="list-style-type: none"> • Receives and investigates grievances, liaises with the external stakeholders. • Makes sure the grievance mechanism procedure is being adhered to and followed correctly. • Maintains grievance register and monitors any correspondence.

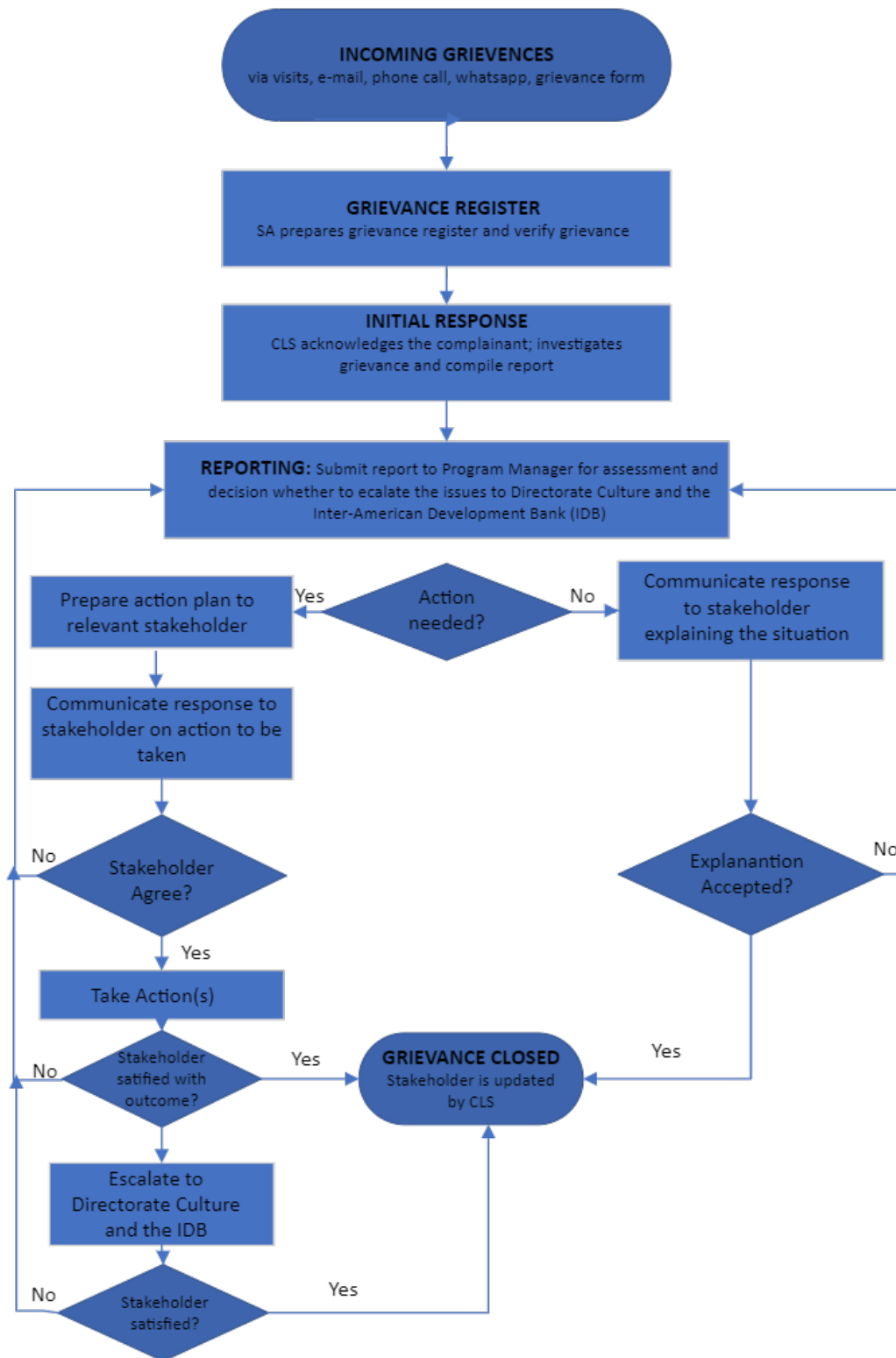
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	<ul style="list-style-type: none"> • Monitor grievances/trends over time and reports findings to the PIU. • Raises internal awareness of the grievance mechanism among employees and contractors. 		
Operations Support	<ul style="list-style-type: none"> • Receive grievances. • Report grievance to the CLS by lodging the Grievance Form. • May provide information and assistance in developing a response and close out of a grievance. 		

6 GRIEVANCE MECHANISM PROCESS

The grievance mechanism process flow for PURP is presented in Figure 1

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Figure 1 - grievance mechanism process flow for PURP.



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6.1 Receipt of Grievances

Grievance Form: The CLS, SA or OS receives, and processes grievance forms submitted to PURP at appointed locations i.e., Project Site Offices and PURP Head Office.

Over the Telephone/ Face to Face/ E-mail/ WhatsApp: When a grievance is received over the telephone, during face-to-face meetings, e-mail or by WhatsApp, and the external stakeholder wishes to address the grievance formally, it is the responsibility of the SA or OS who receives the grievance to complete a Grievance Form. Once the form is completed the SA or OS will then pass the form on to the CLS for processing.

Electronically: SA and/or OS receives all grievances that come through via email, online or from PURP's website. The CLS will review the grievance form and process the grievance in accordance to the procedure described in this chapter.

Disability: Individuals that are unable to provide a complaint in writing (disabled or illiterate persons), an alternative means of filing a complaint, such as a personal interview or a voice message of the complainant, will be made upon request. The CLS and/or SA will provide assistance in filing a complaint.

Anonymous Grievances: If an individual wish to report a grievance anonymously, such a grievance can be reported through the PURP website or FB-page, via telephone, or through a representative. Handling of the grievance will be according to the communication way indicated by the complainant (e.g., telephone, personal message at FB/website, via representative).

6.2 Recording

All formal grievances will be logged in the Grievance Register by filling-in the Grievance Log (see Annex 2) and saving the Grievance Form in the PIU PURP database for record of correspondence.

6.3 Screening

Grievances will be screened depending on the type and level of severity in order to determine grievance owner and the grievance resolution approach.

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Table 3 – Grievance Escalation Levels

Category	Description	Grievance Owner
Level 1	When a reply can be provided immediately and/or CLS and/or SA are already working on a resolution. When the grievance is out of scope. (Only formal grievances to be lodged in the Grievance Register, if an informal inquiry is received then the grievance will be filled by the CLS/SA)	CLS or SA
Level 2	Once off grievances that will not affect the reputation of PURP.	CLS
Level 3	Repeated, extensive and high-profile grievances that may jeopardize the reputation of PURP.	PM or Higher Level

The CLS or SA may contact the external stakeholder(s) for more details to be able to assess the acceptability of the grievance. If the external stakeholder does not provide the requested information within 2 weeks, the grievance will not be accepted, and the case will be closed.

If the grievance is not accepted, the CLS will inform the external stakeholder(s) of the reasons why the submitted grievance does not fall within the Grievance Mechanism's scope.

6.4 Acknowledgement

A grievance will be acknowledged by the CLS, within two (2) working days of a grievance being accepted. Communication will be made in written form or other preferred form of communication by the stakeholders as indicated in the Grievance Form.

The acknowledgement of a grievance should include a summary of the grievance, method that will be taken to resolve the grievance and an estimated timeframe within which the grievance is expected to be resolved. If required, the acknowledgment provides an opportunity to ask for any additional information or to clarify any issues.

6.5 Investigation

The CLS or SA is responsible for investigating the grievance within 2 weeks. The investigation may require site visits, consultation of employees, contacting stakeholders and other activities.

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Meetings, discussions and all other consulting activities need to be documented during the investigation.

Information gathered during the investigation will be analyzed and will assist in determining how the grievance is handled and what steps need to be taken to resolve the grievance.

6.6 Action

When the investigation has been concluded, the grievance owner will use the findings to create an action plan outlining steps to be taken in order to resolve the grievance, within a 2-week period. The owner is responsible for assigning actions to CLS/SA and/or other responsible parties within PURP, and monitoring actions to be undertaken. It is the owner responsibility to make sure deadlines are adhered to.

Once all actions have been completed and the grievance has been resolved, the owner will then formally inform the stakeholder via the preferred method of contact.

6.7 Follow Up and Close Out

The CLS/SA will contact the stakeholder/s within two (2) working days after the grievance is resolved. When contacting the stakeholder, the PIU will verify that the stakeholder was satisfied and gather any feedback on the grievance process. The interaction shall be documented, and the document be saved in PURP Grievance database.

If required, the PIU may need to follow up with the stakeholder on numerous occasions to confirm all parties are satisfied. Typically, a grievance is “closed” when a resolution satisfactory to both parties has been reached.

6.8 APPEAL

Nothing in this mechanism shall prevent any stakeholder from using the Surinamese judicial system to resolve conflicts if they are not satisfied with the proposed solutions.

If the stakeholder is not satisfied with the resolution and/or does not agree with the proposed actions, the grievance owner needs to forward the matter to the Directorate of Culture of the Ministry of Education, Science, and Culture (MESC). The PM together with the Directorate of Culture will review the grievance and all documentation gathered throughout the investigation and subsequently determine whether further actions are required to resolve the grievance.

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The PIU is fully committed in resolving stakeholder's *bona fide* grievances. Hence, if the PIU is unable to resolve a grievance or a stakeholder is unhappy with the outcome, PIU may seek advice from other independent parties including community leaders/elected representatives and other relevant authorities.

6.9 REPORTING

The Directorate of Culture will receive monthly updates on stakeholder grievances. Information outlining the number of grievances, time to resolution and outcomes of grievances will be communicated.

Consolidated statistical data on grievance cases will be posted monthly on the PURP website.

PIU will evaluate and update the Grievance Mechanism procedure every two years (or when required) to continually improve its stakeholder engagement.

6.10 FILING OF GRIEVANCES

All records, including grievance forms, investigation notes, interviews and minutes of meetings will be securely filed in PURP's database to ensure privacy and confidentiality is maintained for all parties involved.

6.11 MONITORING AND EVALUATION

The PIU will monitor and evaluate the following:

- The number of grievances it receives.
- The average time PIU takes to: respond to grievances; determine whether the grievances allege a covered violation that causes PIU to investigate; investigate the grievances; and reach a final decision regarding the grievance.
- If PIU and stakeholder(s) reached a resolution, whether the parties are satisfied with the resolution.
- If PIU and stakeholder(s) failed to reach a resolution, why the parties did not reach a resolution.

The records of the grievance register shall be updated every working week with the present status of the grievance. Once the grievance is resolved, and the same has been communicated to the grievant, the grievance shall be closed in the grievance register. The grievance register shall

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provide an understanding of the manner in which the grievance was resolved. These instances shall then serve as references for any future grievances of a similar nature.

PIU will share monitoring and evaluation results with the Directorate of Culture, IDB, Communities, and other stakeholders to demonstrate whether the grievance mechanism is functioning, accessible, and effective. It is important for PIU to evaluate the results as they may indicate the mechanism's effectiveness.

High rate of grievances could indicate poor relations between PIU and local communities, it could also indicate that the grievance mechanism is functioning as intended and is helping to improve relations between the two parties. Regardless, monitoring and evaluation results can improve the grievance mechanism.

6.12 CONSIDERATIONS FOR AN EFFECTIVE GRIEVANCE MECHANISM

Two important considerations when implementing the grievance mechanism to improve its effectiveness are accessibility as well as accountability and transparency.

6.12.1 Accessibility

Grievance mechanism will work if it is accessible i.e., present no or low barrier to project-affected people. The accessibility of the mechanism depends on:

1. Clear communication - availability of easy-to-understand information about the grievance process and how the mechanism works; and
2. Ease of use - simple, convenient, culturally appropriate means for filing grievances, and at no cost to complainants.

6.12.2 Accountability And Transparency

It is important to build the confidence in the project-affected people that their grievances are taken seriously and treated fairly. Hence, a grievance mechanism should provide a way for the community to hold PURP accountable, community inputs seriously dealt with through a clear and transparent process, follow through with actions, and communicate with the community.

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6.12.3 Training

The implementation of this grievance mechanism will be carried out mainly by the CLS and SA. Therefore, it is required that the CLS, SA, and other PIU-members directly involved in the Project receive an internal training for the implementation and management of the current Grievance Mechanism Procedure (GRP). The training will be provided by PIU members involved in the preparation of the current GRP.

In addition, contractors are also involved in or overseeing activities with stakeholders. Therefore, it is necessary that all on-site contractors received an induction training which also provides information about the grievance mechanism. The trainings will be given in the Induction Training session i.e., before the physical commencement of the Project at the Waterfront. All contractors are required to participate in the Induction Training session, and to sign-off their attendance. Only contractors, including supervision, that have attended and signed-off their attendance in the induction training session are allowed to the project site.

- The induction training will provide information about the Environmental, Social, Health and Safety requirements from the PIU and the IDB, such as: Risk Assessment/Job Safety Analysis
- Waste Management Plan
- Emergency Response Plan
- Safety Observations/Inspections
- Chance Find Procedure
- Grievance Mechanism Procedure
- Community Relations (general)
- Reporting

The Induction training will be provided by the PIU.

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Annex 1(English)

Grievance Form

PURP

Grievance No.:		Date:	
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(To be filled by PIU)

Name:		ID or Passport No.:	
Address:		Contact No.	
		E-mail	

Nature of Grievance	Environmental		Organisation:	
	Social			



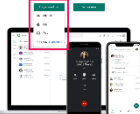

Provide details of the grievance:

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Potential solutions:

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Preferred Form of Communication:		Choose 1 Option
	Individual Meeting	
	Online Meeting	
	Phone/WhatsApp call	
	E-mail/WhatsApp message	

Signature:	
Date:	

THANK YOU

For Office Use:

Stakeholder Reference	Community		Contractors	
	Government		Others (please specify)	
	Business			
Comments:				

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(Nederlands)

Klachten Formulier

PURP

Klacht No.:		Datum:	
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(In te vullen door de PIU)

Naam:		ID or Paspoort No.:	
Adres:		Contact No.	
		E-mail	

Type klacht	Milieu		Organisatie:	
	Sociaal			



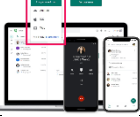

Beschrijving van de klacht:

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Mogelijke oplossingen:

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Voorkeur van communicatie vorm:		Kies 1 optie:
	Individual Meeting	
	Online Meeting	
	Phone/WhatsApp call	
	E-mail/WhatsApp message	

Handtekening:	
Datum:	

DANK U!

Voor Kantoor Gebruik:

Stakeholder Referentie	Gemeenschap		Contractors	
	Overheid		Anderen (aub specificeer)	
	Onderneming			
Commentaren:				

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Annex 2

Grievance Log

PURP

Grievance No.:			
Nature of Grievance	Environment		
	Social		
Summary of Grievances:			
Reported by:		Date:	
Summary of 2 nd Action taken & Response: (If applicable):			
Reported by:		Date:	
Summary of 3 rd Action taken & Response: (If applicable):			
Reported by:		Date:	
Overall Outcome:			

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Reported by:		Date:	
Date of Grievance resolved:			
Supporting Documents*:			

*Documents include witness statements, photographic documentation etc.