



Prepared For:



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

Environmental and Social Assessment for the Paramaribo Urban Revitalization Program

Final

December 2016

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

www.erm.com



Prepared for:

Inter-American Development Bank



Environmental and Social Assessment for the Paramaribo Urban Revitalization Program

Final

5 December 2016

Peter Rawlings

Partner

Environmental Resources Management

1776 I (Eye) St. NW Suite 200
Washington, DC 20006

<http://www.erm.com>

TABLE OF CONTENTS

<i>EXECUTIVE SUMMARY</i>	<i>1</i>
<i>1.0 INTRODUCTION AND PURPOSE</i>	<i>3</i>
<i>1.1 INTRODUCTION</i>	<i>3</i>
<i>1.2 OBJECTIVES AND SCOPE</i>	<i>3</i>
<i>1.3 PROGRAM DESCRIPTION</i>	<i>4</i>
<i>1.3.1 The Waterfront Project</i>	<i>6</i>
<i>1.3.2 The (re)construction of the Suriname National Assembly Building</i>	<i>6</i>
<i>1.3.3 Urban Mobility</i>	<i>8</i>
<i>2.0 METHODOLOGY</i>	<i>10</i>
<i>2.1 DOCUMENT REVIEW</i>	<i>10</i>
<i>2.2 SITE RECONNAISSANCE</i>	<i>10</i>
<i>3.0 FRAMEWORK REVIEW</i>	<i>15</i>
<i>3.1 WORLD HERITAGE SITE</i>	<i>15</i>
<i>3.1.1 Legal Framework</i>	<i>15</i>
<i>3.1.2 Governmental Agencies</i>	<i>16</i>
<i>3.2 ENVIRONMENTAL MANAGEMENT</i>	<i>17</i>
<i>3.3 IDB SAFEGUARDS AND COMPLIANCE</i>	<i>20</i>
<i>3.4 OTHER INTERNATIONAL STANDARDS</i>	<i>21</i>
<i>3.4.1 IFC</i>	<i>21</i>
<i>3.4.2 UNESCO/ICOMOS</i>	<i>22</i>
<i>4.0 IMPACT ASSESSMENT</i>	<i>23</i>
<i>4.1 LOSS OF LIVELIHOODS</i>	<i>23</i>
<i>4.1.1 Baseline Conditions</i>	<i>23</i>
<i>4.1.2 Impact Assessment and Recommendations</i>	<i>25</i>
<i>4.2 STAKEHOLDER ENGAGEMENT</i>	<i>36</i>

4.3	<i>NATURAL DISASTER RISK</i>	36
4.3.1	<i>Baseline Conditions</i>	36
4.3.2	<i>Impact Assessment</i>	46
4.3.3	<i>Conclusion and Recommendations</i>	65
4.4	<i>HERITAGE</i>	68
4.4.1	<i>Baseline Conditions</i>	68
4.4.2	<i>Site Protection and Management</i>	71
4.4.3	<i>Potential Impacts</i>	73
4.4.4	<i>Recommendations</i>	73
4.5	<i>OTHER POTENTIAL RISKS AND IMPACTS</i>	74
4.5.1	<i>Traffic and Transportation</i>	74
4.5.2	<i>Public and Pedestrian Spaces</i>	74
4.5.3	<i>Air Quality</i>	75
4.5.4	<i>Noise</i>	75
4.5.5	<i>Biodiversity</i>	75
5.0	<i>INSTITUTIONAL AND TECHNICAL STRENGTHENING</i>	76
6.0	<i>ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK</i>	77
6.1	<i>ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM</i>	77
6.2	<i>PRELIMINARY PLAN FOR LIVELIHOOD RESTORATION</i>	80
6.2.1	<i>Overview</i>	80
6.2.2	<i>Objective</i>	80
6.2.3	<i>Identification Process</i>	81
6.2.4	<i>Plan Principles</i>	81
6.2.5	<i>Eligibility and Entitlements</i>	81
6.2.6	<i>Eligibility cut-off dates</i>	94
6.2.7	<i>Valuation and Compensation</i>	95
6.2.8	<i>Compensation Payment Procedure</i>	95

6.2.9	<i>Strategy for public consultation and participation</i>	95
6.2.10	<i>Settlement of complaints and claims mechanisms</i>	96
6.2.11	<i>Budget</i>	96
6.2.12	<i>Execution calendar</i>	96
6.2.13	<i>Monitoring and Evaluation</i>	96
6.3	LIVELIHOOD RESTORATION PROGRAM	97
6.3.1	<i>Business Development Support Program</i>	97
6.3.2	<i>Capacity Building Program</i>	97
6.3.3	<i>Financial Management Program</i>	97
6.3.4	<i>Gender Considerations</i>	98
6.3.5	<i>Timeline for Implementation</i>	98
6.4	DISASTER RISK MANAGEMENT AND ADAPTATION PLAN	98
6.4.1	<i>Management Measures</i>	98
6.4.2	<i>Emergency Preparedness and Response</i>	100
6.5	STAKEHOLDER ENGAGEMENT AND CONSULTATION	103
6.5.1	<i>Overview</i>	103
6.5.2	<i>Objective</i>	103
6.5.3	<i>Stakeholder Analysis</i>	103
6.5.4	<i>Stakeholder Engagement Methods</i>	103
6.5.5	<i>Consultation Methods</i>	104
6.5.6	<i>Stakeholder Engagement</i>	104
6.5.7	<i>Community Grievance Mechanism</i>	105
6.5.8	<i>Monitoring</i>	105
7.0	REFERENCES	106

LIST OF FIGURES

Figure 1-1	Program Area (Core Zone of Paramaribo World Heritage Site).....	4
Figure 1-2	Urban Interventions	6
Figure 1-3	Proposed site of Reconstruction of National Assembly (site 2)	7
Figure 1-4:	Restoration of Heritage Buildings.....	8
Figure 1-5:	Urban Mobility.....	8
Figure 2-1:	UNESCO World Heritage Site delimitation of Paramaribo, Suriname.....	11
Figure 2-2:	Paramaribo waterfront circa 1860.....	11
Figure 2-3:	Paramaribo UWHS waterfront on September 2016.....	12
Figure 2-4:	Commuter boat landing area to the south of the UWHS.....	12
Figure 2-5:	Parking and Pedestrian Sidewalks at the Waterfront.....	13
Figure 2-6:	Paramaribo waterfront today.....	13
Figure 4-1:	Map of study area.....	24
Figure 4-2:	Average Monthly Temperatures for Three Stations	37
Figure 4-3:	Monthly Average, Maximum and Minimum Temperatures Registered at the Cultuurtuin Station (January 1971-December 2009)	37
Figure 4-4:	Intensity Duration Frequency (IDF) Curves for Cultuurtuin Station (1981-2015)	38
Figure 4-5:	Frequent and Seasonal Inundated Areas in Paramaribo based on Data from Masterplan Study Ontwatering Groot Paramaribo	41
Figure 4-6:	Inland Flooding in Paramaribo on March 2015.....	42
Figure 4-7:	Inland Flooding in Urban Paramaribo on October 2009.....	42
Figure 4-8:	Frequent Flooded Areas in Paramaribo (in red)	44
Figure 4-9:	Street Light Indicator for Risk Mapping.....	48
Figure 4-10:	Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 10-year return period	49
Figure 4-11:	Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 25-year return period	49

Figure 4-12:	Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 50-year return period	50
Figure 4-13:	Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 100-year return period	50
Figure 4-14:	Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 10-year return period.....	51
Figure 4-15:	Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 25-year return period.....	51
Figure 4-16:	Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 50-year return period.....	52
Figure 4-17:	Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 100-year return period.....	52
Figure 4-18:	Economic-based risk map under existing conditions for 10-year return period .	53
Figure 4-19:	Economic-based risk map with Climate Change for 10-year return period	53
Figure 4-20:	Economic-based risk map under existing conditions for 25-year return period .	54
Figure 4-21:	Economic-based risk map under with Climate Change for 25-year return period	54
Figure 4-22:	Economic-based risk map under existing conditions for 50-year return period .	55
Figure 4-23:	Economic-based risk map under with Climate Change for 50-year return period	55
Figure 4-24:	Economic-based risk map under existing conditions for 100-year return period	56
Figure 4-25:	Economic-based risk map with Climate Change for 100-year return period	56
Figure 4-26:	Population-based risk map under existing conditions for 10-year return period	57
Figure 4-27:	Population-based risk map under with Climate Change for 10-year return period.....	58
Figure 4-28:	Population-based risk map under existing conditions for 25-year return period	58
Figure 4-29:	Population-based risk map under with Climate Change for 25-year return period.....	59
Figure 4-30:	Population-based risk map under existing conditions for 50-year return period	59

Figure 4-31:	Population-based risk map under with Climate Change for 50-year return period.....	60
Figure 4-32:	Population-based risk map under existing conditions for 100-year return period	60
Figure 4-33:	Population-based risk map with Climate Change for 100-year return period	61
Figure 4-34:	Suriname River Bank Protection Project.....	62
Figure 4-35:	Existing Barriers along the Left Bank of Suriname River.....	63
Figure 4-36:	Chloride Concentrations along Suriname River for Different Discharges	64
Figure 4-37:	Maximum Wind Speed (m/s) Recorded at Cultuurtuin Climatological Station for 2015-2016 Period	65
Figure 4-38:	Location of Proposed Adaptation Measures for the Program	68
Figure 4-39:	Designated Conservation Zone (outlined, not shaded) and Buffer Zones (shaded) of the Historic Inner City of Paramaribo World Heritage Site.	70
Figure 4-40:	Essential Listed Monuments.	70
Figure 4-41:	Listed Monuments.....	71

LIST OF TABLES

Table 3-1.	Role of key environmental government agencies in Suriname.....	18
Table 3-2	IDB Safeguards.....	20
Table 4-1:	Incomes of study area enterprises and businesses.....	25
Table 4-2	Livelihoods Summary	29
Table 4-3:	Types of Natural Disaster and Population Affected 2004-2015 in Suriname	39
Table 4-4:	High Water Level Suriname River	43
Table 4-5:	Climate Change Projections for Suriname based on A2 IPCC Scenarios	46
Table 4-6:	Definitions of Flood Intensity for Hazard Flooding Maps	48
Table 6-1	Proposed ESHS management measures and monitoring programs	78
Table 6-2	Entitlement Matrix.....	83
Table 6-3	Application of the entitlement matrix to some example situations.....	94
Table 6-4:	Disaster Risk Management Framework	101

EXECUTIVE SUMMARY

The Inter-American Development Bank (IDB) is funding a loan amount of US\$20 million for the Paramaribo Urban Revitalization Program (the Program), which will have an execution period of four (4) years. The Program will be centered on the historic urban center of Paramaribo and will consist of three main components. Component 1 comprises the design and implementation of strategic urban interventions intended to reverse the physical deterioration of the historic center and trigger a sustainable revitalization process; Component 2's goal is to contribute to the revitalization process by turning the historic center into a lively part of the city attracting new residents and businesses; and Component 3 will establish and strengthen the institutions required to guide the historic center's revitalization process in a sustainable manner and allow the effective implementation of this program's activities.

This document presents an Environmental and Social Assessment (ESA) of the Program. While it is anticipated that the Program would have a benefit to the community, the potential exists for environmental and social impacts to occur, and this document seeks to identify these potential impacts and recommends an environmental and social management framework to be put into place to mitigate, manage, and monitor these impacts and risks for the life of the Program. The following risks and impacts have been considered:

- A livelihoods assessment has been performed to determine whether livelihoods of local businesses and traders might be affected by the proposed Program. A total of 396 businesses, organizations and individual traders were assessed. The main themes that have been identified include (i) Apprehension due to uncertainty as to what the Program will involve; (ii) Economic viability where 84% of the area enterprises have low incomes and make less than SRD 5,000 monthly (i.e., 686 USD); (iii) Attractiveness of the area which is currently leading to low current business incomes due to the lack of 'attractiveness' of the area to residents and tourists; (iv) Craft stall traders who have low incomes and seen as vulnerable; (v) Businesses with a regular customer base who are concerned as to whether they can maintain this customer base during the works; and (vii) Traffic which already affects trade and pedestrian movements. Based on the issues identified, a livelihood restoration plan has been developed and presented.*
- A stakeholder engagement event was held and was a useful event which allowed the Program to be presented and feedback to be solicited from stakeholders.*
- A natural hazard and risk assessment has been performed for the area, which has found that the Program area is currently vulnerable to natural hazards, and in particular to flooding. The Program is not anticipated to worsen or intensify the natural risks, however it will introduce more visitors and residents into the areas of higher risk, as well as bring new infrastructure and construction, thereby increasing the exposure profile. These negative impacts could be minimized, however, by the implementation of mitigation and adaptation measures developed in consultation with the relevant government and non-governmental stakeholders. ERM has proposed a program of adaptation measures to build future resilience to future natural hazards comprising (i) Expansion and upgrade of the flood protection measures along the waterfront; (ii) Enhance the flood protection measures through integration of complementary green infrastructure measures such as the use of vegetation; (iii) Surface water and drainage maintenance and upgrades; (iv) Development and implementation of a drainage and stormwater management plan; and (v) Integration into the Program design of various measures including wet flood-proofing techniques, design to account for salinity and use of building codes.*

- *The Program is intended to positively impact the physical integrity of city's cultural heritage, however it is also recognized that if the design and construction is unsympathetic, it could adversely affect the historic character or authenticity of individual listed monuments and/or the historic landscape as a whole. Impacts could then be offset by implementing management measures such as ensuring ongoing consultation with the UNESCO World Heritage Committee related to the Program, utilize national standards or internationally recognized standards, specifically the ICOMOS "International Charters for Conservation and Restoration" (www.icomos.org/charters/charters.pdf), for the restoration and/or rehabilitation of listed monuments, avoid changes to the historic landscape of the World Heritage Site, and update the Paramaribo World Heritage Site Management Plan (PWHSMP) 2011-2015 and ensure adequate budget and personnel for its implementation.*
- *Other potential impacts such as traffic, noise, air quality and pedestrians have also been assessed.*

Based upon these findings, a framework for an Environmental and Social Management System (ESMS) has been presented, along with outlines for a series of key management plans, namely a Livelihood Restoration Plan, a Disaster Risk Management Plan (DRMP) and a Stakeholder Engagement Plan (SEP) including a grievance process.

1.0 INTRODUCTION AND PURPOSE

1.1 INTRODUCTION

The Inter-American Development Bank (IDB) is funding a loan amount of US\$20 million for the Paramaribo Urban Revitalization Program (the Program), which will have an execution period of four (4) years.

The Program will be designed as a single investment operation, conceived to tackle the most urgent problems affecting the Historical Center and promote a sustainable revitalization process. As such, the program will support the establishment of a management structure for the area, implement strategic urban interventions - including public spaces and buildings rehabilitation - and develop new models for housing production and business development. The positive results of this first operation in the context of the continuing dialogue between the Government and the IDB could lead to additional financial support for consolidating the institutional and socioeconomic achievements of the revitalization process.

This document presents an Environmental and Social Assessment (ESA) of the Program, which is a requirement for IDB-supported projects. While it is anticipated that the Program would have a benefit to the community, the potential exists for environmental and social impacts to occur, and this document seeks to identify these potential impacts and recommends an environmental and social management framework to be put into place to mitigate, manage, and monitor these impacts and risks for the life of the Program.

1.2 OBJECTIVES AND SCOPE

ERM has been contracted by the IDB to prepare an ESA for the Program. This document identifies potential environmental and social risks associated with the Program activities. Specifically, the ESA has been developed based on the following:

- A document review including the documentation and information ERM is collating for the Paramaribo Emerging and Sustainable Cities (ESC) program study and additional documentation.
- A site reconnaissance including visual observation of the relevant areas directly and indirectly affected by the Program, meetings with relevant individual/groups/ organizations, data and information collection.
- Evaluation of the legal and regulatory framework applicable to the Program (particularly related to the management of the World Heritage Site), including IDB requirements.
- Assessment of the potential environmental, social, cultural, health and safety, and labor impacts and risks associated with the Program, and the planned urban interventions; focusing primarily on livelihoods; flood risk; heritage and other risks.
- Assessment of the institutional and technical strengthening needs for the Executing Agency to manage environmental, social, cultural, health and safety and labor issues involved with the Program.
- Recommendations for mitigation, management and monitoring plans required at the level of the Program, in an Environmental and Social Management Framework (ESMF).

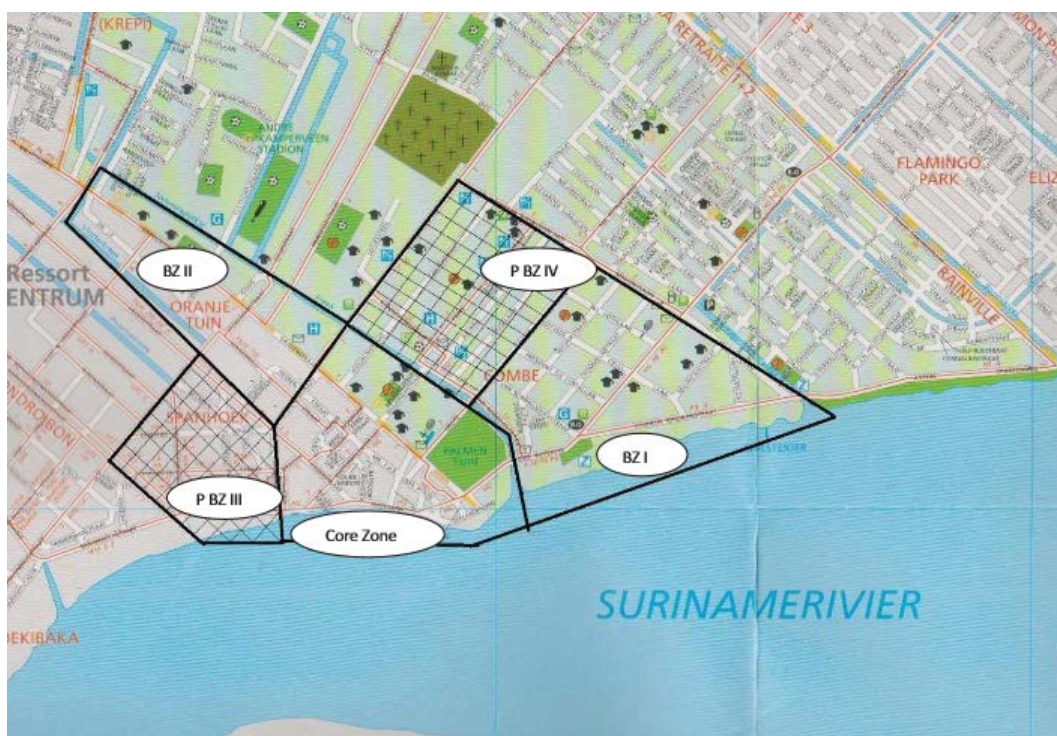
- Participation in a consultation event in which the Borrower will present the Program, the main impacts and risks, the results of ESA and will seek feedback from the public on the Program and the proposed ESMF.

1.3 PROGRAM DESCRIPTION

The IDB is funding a program – Paramaribo Urban Revitalization - and its implementation to assist with UNESCO’s recent recommendations for maintaining Paramaribo’s historic center status as a World Heritage Site (WHS).

The Program will be centered on the historic urban center of Paramaribo in the Core Zone (Figure 1-1):

Figure 1-1 Program Area (Core Zone of Paramaribo World Heritage Site)



Source: Inter-American development Bank (IDB), 2016

The Program is intended as a positive contribution to the local area, and will consist of three main components:

- **Component 1 – Urban Interventions:** it comprises the design and implementation of strategic urban interventions intended to reverse the physical deterioration of the historic center and trigger a sustainable revitalization process. It will have three subcomponents:
 - Redevelopment of public spaces:* will focus on the renewal and upgrading of emblematic public spaces in the central area, including the comprehensive street and other public space improvements and provision of recreational and cultural facilities;
 - Restoration of heritage buildings and construction of new public buildings:* will focus on the rehabilitation and reconstruction of heritage buildings currently in a state of decay and with a high

risk of collapse, putting them back into residential and/or commercial use, as well as new public buildings; and

- iii. Urban mobility: aims at implementing traffic management and infrastructure solutions to improve mobility within the historic center and its connection with the rest of the city.

- **Component 2 – Residential and Private Business Development:** this component’s goal is to contribute to the revitalization process by turning the historic center into a lively part of the city attracting new residents and businesses. It includes two subcomponents:
 - i. Pilot housing schemes: aims to develop operational and financial arrangements to promote the production of new housing in the historical center. It will finance the restoration of historical buildings that can be put back into residential or mix residential and commercial uses; and
 - ii. Pilot private business development models: will support the renovation of historical buildings that can be put into productive use, such as the installation of an incubator for small and medium size enterprises, and/or the development of business clusters.

- **Component 3 – Institutional Strengthening:** this component will establish and strengthen the institutions required to guide the historic center’s revitalization process in a sustainable manner and allow the effective implementation of this program’s activities. This includes:
 - i. Management Agency Implementation: providing support for the Suriname Built Heritage Foundation (SBHF), to perform its responsibilities as both the agency responsible for the management of the historical center and for the implementation of the present program. The support will include technical training, consulting services and a project management system. The goal of this activity is to qualify the SBHF to become de facto the Historic Center Management Agency;
 - ii. Planning instruments: will contribute to update, modernization and development of planning instruments that will facilitate the management of the PWHS; and
 - iii. Communication and Social Engagement: will design a Communication Plan and its implementation (including consultations and organization of academic, cultural and awareness activities about the program and the historical center in general; preparation of instructional and promotional material), and the implementation of the Livelihood Restoration Plan.

While the Program encompasses a number of components and areas, ERM’s scope for the current ESA focuses on the construction works associated with urban interventions (Figure 1.2), listed below:

- A waterfront development project;
- The (re)construction of the Suriname National Assembly Building, as well and the restoration of 5-6 historic buildings historic center (yet to be identified); and
- A series of smaller urban mobility works.

Figure 1-2 Urban Interventions



Source: Inter-American development Bank (IDB), 2016

1.3.1 *The Waterfront Project*

Based on information provided by IDB, Geografia Urbana and El Equipo Mazzanti (2016), the objectives of the Waterfront Project include:

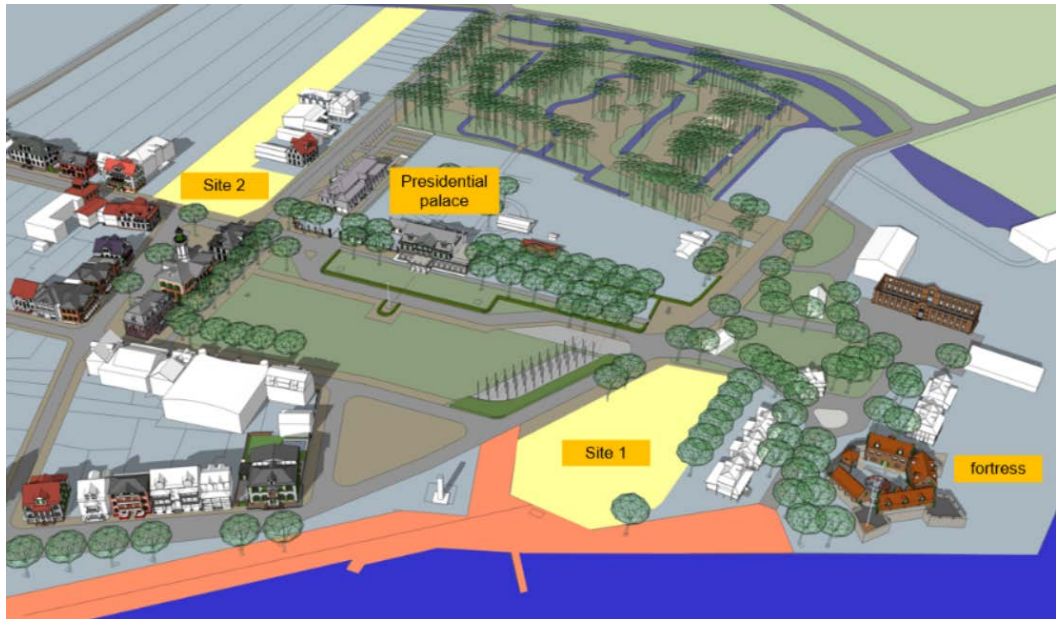
- Design a comprehensive strategy to revitalize the historic city center. To achieve this objective, the Program will consider and evaluate existing land uses, use of public spaces, preservation list of protected and historical spaces/buildings, identification of a transition belt and strategic areas with the potential to encourage urban revitalization and landscape strategy;
- Re-articulate the city with the Suriname River: Four main areas are part of intervention along Suriname River's left bank: 1. Market; 2. Transport Hub; 3. Der Waag; and 4. Fort Zeelandia; and
- Re-connect the metropolitan area to the historic city center. To achieve this objective, the Program will consider and analyze land uses, blocks, and strategic areas.

The Waterfront Program is divided in two phases and it is still at conceptual level. At this time, final designs and components have not been defined.

1.3.2 *The (re)construction of the Suriname National Assembly Building*

Comprised within the urban interventions, the reconstruction of the Suriname National Assembly Building (Figure 1-6), as well the restoration of 5-6 historic buildings historic center (yet to be identified) are considered. The aim is to rehabilitate heritage buildings currently in state of decay and risk of collapse, putting them back into residential and/or commercial use. (Figure 1-7)

Figure 1-3 Proposed site of Reconstruction of National Assembly (site 2)



Source: Inter-American development Bank (IDB), 2016

Figure 1-4: Restoration of Heritage Buildings



Source: Inter-American development Bank (IDB), 2016

1.3.3

Urban Mobility

Will focus at implementing traffic management and infrastructure solutions to improve mobility within the historic center and its connection with the rest of the city (Figure 1-8), solutions will include:

- Upgrading transit corridors to divert traffic from the historical center;
- Introducing traffic lights and signage;
- Creation of bicycle lanes and improving pedestrian paths;
- Developing parking strategies; and
- Reorganizing the bus terminal area.

Figure 1-5: Urban Mobility



Source: Inter-American development Bank (IDB), 2016

The Ministry of Education, Science and Culture of Suriname, through the Suriname Built Heritage Foundation (SBHF), will be the governmental entity responsible for implementing the Program. Also, a technical committee will be created to provide

technical advice and supervision. This committee will be formed by the Ministry of Education and Culture, Ministry of Public Works, Ministry of Transport, Communication and Tourism, and the District Commission.

2.0 ***METHODOLOGY***

2.1 ***DOCUMENT REVIEW***

To understand the Program's context and also support in the assessment of potential socioeconomic and environmental effects, relevant documentation has been reviewed. Key documents include:

- Paramaribo World Heritage Site Management 2011-2015;
- Paramaribo Urban Development Plan;
- Study on Preventive Conservation, Maintenance and Monitoring in the Historic Inner City of Paramaribo; and
- Restaureren met respect (Restoring with respect, A technical guide for restoring and expanding monuments in the historic inner city of Paramaribo).

Secondary data and information was also obtained from relevant national bodies and publically available databases.

2.2 ***SITE RECONNAISSANCE***

ERM experts visited the historic district area to conduct informal interviews, route walks, and visual recognition which helped to lay out an initial overview of the site context and the key environmental and social issues further developed in forthcoming sections.

According to UNESCO's webpage on the Historic Inner City of Paramaribo (<http://whc.unesco.org/en/list/940>), Paramaribo is a former Dutch colonial town from the 17th and 18th centuries planted on the northern coast of tropical South America. The original and highly characteristic street plan of the historic center remains intact. Its buildings illustrate the gradual fusion of Dutch architectural influence with traditional local techniques and materials, justifying its classification as World Heritage by the UNESCO in 2002.

The area of intervention is the waterfront of Paramaribo's UNESCO world heritage site (UWHS). The UWHS is comprised of approximately 20 - 25 city blocks in downtown Paramaribo that were configured in the early 17th century during Dutch settlement (see Figure 2-1). This area houses the main sites and buildings of Paramaribo's civic life, including Fort Zelandia, the civic park/plaza known as The Plain, the former Governor House and now Presidential Palace, the Palm park (formerly the Governor's garden), the Paramaribo Parliament, the Court House, the Orange Park, important churches and synagogues of the time and the homes and businesses of prominent families.

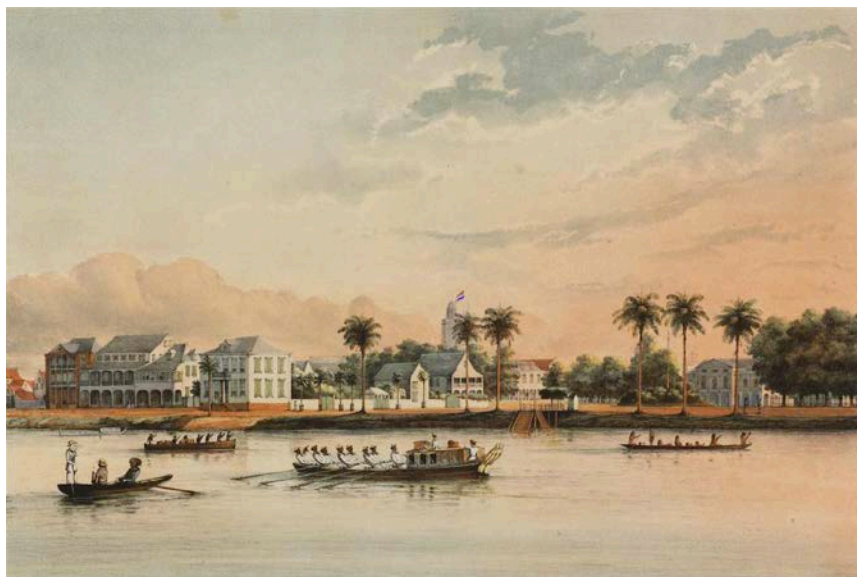
Figure 2-1: UNESCO World Heritage Site delimitation of Paramaribo, Suriname



Note: Area 1 corresponds to the proposed Program area, while areas 2 and 3 correspond to buffer zones, also protected.

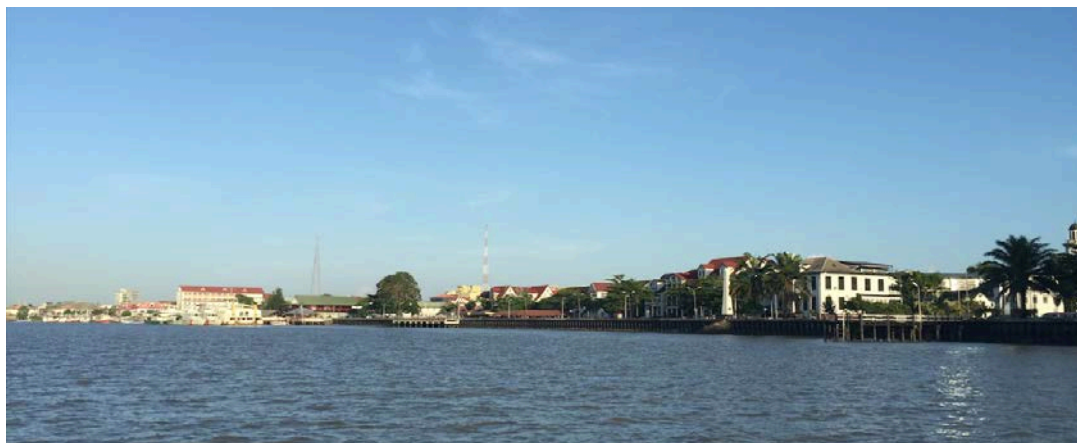
The UWHS waterfront corresponds to the riverbank of the Paramaribo River that runs, to the north, from the mouth of the Sommelsdyk Creek (between the Presidential Bureau and the Royal Torarica hotel), down southwards to Heulge Weg Straat (Holy Way Street), where the main Paramaribo market warehouses are located. Figure 2-2 and Figure 2-3 show how Paramaribo’s waterfront has shifted from a setting in which the different sites and buildings along riverbank could directly and seamlessly access the river, to one in which a retention wall of significant mass built to withstand maximum high tides enables only certain points of access to the water.

Figure 2-2: Paramaribo waterfront circa 1860



Source: G.W.C. Voorduin.

Figure 2-3: Paramaribo UWHS waterfront on September 2016



Source: Arturo Samper and ERM, 2016

These landing areas are a pier and set of stairs in front of the Parliamentary building, (see Figure 2-3) and the commuter boat landing area near the market warehouses and terrestrial transport hub, which can be viewed in Figure 2-4. Along this stretch of Suriname riverbank, there are also a number of private or controlled access points to the water, servicing mostly tourists and voyagers navigating to and from long-distance towns and tourist attractions.

Figure 2-4: Commuter boat landing area to the south of the UWHS



Source: Arturo Samper and ERM, 2016

The majority of buildings inside the UWHS area are currently utilized by private and governmental offices, retail stores, education centers, churches, and other activities servicing mostly workers during the daily hours. There are also some facilities and services directed at the small tourist population visiting Paramaribo, most of whom stay in the hotels north of the UWHS. Perhaps the most notable of such services is the artisans market, located on a permanent structure along the waterfront. The area is also marked by the presence of numerous empty lots of land. There are only very few families living in the area.

Because of these factors, the waterfront's 'life' is limited to pedestrians walking between the transport hub and their workplace two times a day, the few tourists and visitors, and the local merchants of the artisans' market (see Figure 2-5). While the built setting is comprised of exemplary Dutch and North American plantation-style

buildings, the fact that the majority are offices with no relationship to the street other than that of access contributes to that sense of limited life.

Figure 2-5: Parking and Pedestrian Sidewalks at the Waterfront



Source: Arturo Samper and ERM, 2016

In the downtown area and the waterfront, automobile parking is allowed on all streets; this affects the pedestrian experience significantly. But perhaps the most challenging element is the high tide retaining wall, whose specifications meant building it to approximately 1.5 m above the level of the sidewalk. The wall is made of steel panels crowned by a concrete curb, providing the pedestrian with a sense of almost entire isolation from the water.

These and other factors all converge to create the sense that the area is more a water-back than water-front, to the point that, as illustrated in Figure 2-6, parking takes place along the sidewalk.

Figure 2-6: Paramaribo waterfront today.



Note: The landscape is marked by the height of the high tide retaining wall, visible on the background, which blocks the continuous flow of space that was traditional in the early periods of Paramaribo.

3.0

FRAMEWORK REVIEW

This section evaluates the existing institutional and regulatory frameworks including IDB Safeguard Policies that are applicable to the Program. It includes a review of applicable legislation and institutions on the management of the World Heritage Site.

3.1

WORLD HERITAGE SITE

3.1.1

Legal Framework

Suriname has had legislation on historic environment since the 1950s. This section provides a summary of relevant regulations to the Program and broadly to the World Heritage Site.

- **The Monuments Act (1963, revised 2002):** This was the first legislation that focused on the protection of built heritage which include unique monuments and archaeological assets. This act was revised in 2002. In the revision, the act established the Monuments Committee. It also provides general guidance to maintain both designated historic monuments as well as city and town views. The International Council on Monuments and Sites (ICOMOS), SGES, and the Monuments Committee are collaborating on providing proposed revisions to the Act to accommodate the nomination of the Paramaribo World Heritage Site (PWS).
- **The Building Act (1958):** This act oversees licenses for new constructions and residential areas in Suriname.
- **The Town Planning Act (1972):** The act established that the Ministry of Public Works to be responsible for the execution of spatial planning and development of urban areas.
- **The Planning Act (1973):** Established that the Ministry of Planning and Development Cooperation would be responsible for a comprehensive and sustainable policy for spatial, ecological, and socioeconomic.
- **The Monuments List of Paramaribo:** This listed containing 244 monuments that were designated by the Ministerial Resolution of Paramaribo as protected.
- **The State Resolution for Monuments Registration (2000):** This registered all designated monuments as officially protected. The Monuments Committee maintains the registrar
- **The State Resolution for establishing an Aesthetic Building Committee (2001):** This resolution formally designated the Historic Inner City of Paramaribo as a conservation zone with two additional buffer zone and defined boundaries. It also created the Building Committee. The Building committee supervises building plans and was provided authority to evaluate building plans according to a special set of building criteria (building codes). These building codes were published in 2003 to control new constructions within the WHS and buffer areas.
- **State Resolution on the implementation of Article 4, Section 2 of the Building Code of 1956:** This resolution was approved by the President of the Republic of Suriname in 2011 (S.B. 31 October 2011 No. 74). The resolution established an Expert Building Committee (Special Advisory Committee) to review new building plans within the site according to

aesthetic criteria for modern architecture, which were published in the Gazette.

3.1.2 *Governmental Agencies*

There are several government institutions that are responsible for the legal guidance and responsibilities in the management of the World Heritage Site (WHS) in Paramaribo. This Program will be led by the Ministry of Education, Science, and Culture through the Suriname Built Heritage Foundation. Below is a brief breakdown of the relevant ministries and agencies and their responsibilities for the management of the World Heritage Site and the Program.

Ministry of Education, Science and Culture

The Ministry is responsible for the development of policies to enhance the protection of the Historic Site and its monuments. The Department of Culture, within the Ministry is also responsible for the maintenance of the historic pal Garden and the Fort Zeelandia Area within WHS.

The Program will be led by the Suriname Built Heritage Foundation (SGES, based on its Dutch name) within the Ministry of Education, Science and Culture. SGES was established in 1997 by the Ministry of Education. Its responsibilities include setting up an infrastructure to preserve and manage the historical build heritage in Suriname. It is the Site Manager of Paramaribo WHS. Further, SGES was responsible for the implementation of the Paramaribo World Heritage Site Management Plan 2011-2015. SGES is a non-for-profit organization constituted by different economic groups (banks, companies), with the mandate to purchase heritage buildings, restore them sell them or rent them to new tenants. This foundation has carried this activity in two buildings and is currently doing so for several others.

The Monuments Committee is another advisory board within the Ministry of Education, Science and Culture. It is responsible for monitoring the implementation of laws, formulating policies and administering the Monuments Register. The Commission, in turn, appoints a Site Administrator, whose role is to follow-up, verify, document, and manage the actions and performance of the different institutions and actors, under the regulations and parameters established in the World Heritage Site Management Plan that accompanies the UNESCO designation. In the process of creation of the UWHS, the Government of Suriname also established a Special Committee of Construction Experts, whose mandate is to provide guidance to the Ministry of Public Works regarding approvals for new development, restoration, public works, urban design, and other Programs of similar nature within the boundaries of the UWHS and its buffer zones.

Ministry of Public Works

The Ministry of Public Works (MPW) is 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. There is an Expert Building Committee within the MPW that is appointed by the Minister of Public Works. The Expert Building

Committee is responsible for new buildings in the preserved area of the WHS and its buffers.

Ministry of Regional Development – District Commissioner

Paramaribo is administratively divided into two geographic regions which are each headed by a District Commissioner. Further, the Paramaribo District is subdivided into twelve resorts. The District Commissioner is responsible for issuing licenses to all users of the resorts including but not limited to shops, parking, businesses, cultural activities, advertisements on public spaces. Further, the District Commissioner is also responsible for the monitoring the effects of the licenses and are charged with responsibility of applying sanctions.

Ministry of Transport, Communication and Tourism

The Ministry of Transport, Communication and Tourism is responsible for public transportation including the organization of public transport and placement of bus stops and the development of tourism.

3.2

ENVIRONMENTAL MANAGEMENT

Suriname is governed according to the 1987 Constitution of the Republic of Suriname. Suriname does not have a single comprehensive environmental policy and there is no legislation dealing specifically with environmental management. However, environmental legislation is currently being developed and draft regulations for environmental assessment have been released. Responsibility for environmental and natural resource management at the national level in Suriname is divided between different pieces of legislation and among different government institutions.

In the environmental field, responsibilities are spread over a number of government organizations. Environmental management and protection are the responsibility of the National Council for the Environment, the Ministry of Labour Technological Development and Environment and the NIMOS. NIMOS is an executing arm of the National Council for the Environment (President's Office). Under the Draft Environmental Act, the objectives for NIMOS are to act as the main governing body responsible for enforcing environmental laws and regulations as well as managing and effecting new laws and developing subsidiary legislation. The mission of NIMOS is to initiate the development of a national legal and institutional framework for environmental policy and management in the interest of sustainable development through the Office of Environmental and Social Assessment. The NMR, National Environmental Council, is an advisory body of the Government of the Republic of Suriname, established by Presidential Decree in 1997, which supports NIMOS in the area of policy and advice.

In addition, a number of agencies and departments in sectoral ministries hold responsibilities in environmental protection, such as enforcing existing environmental regulations and contributing to the Ministry of ATM's environmental planning activities, as summarized in Table 3-1.

Table 3-1. Role of key environmental government agencies in Suriname.

Government Stakeholder	Role
National Council for the Environment (Nationale Milieuraad [NMR])	<ul style="list-style-type: none"> • Environmental management and protection. • Preparation of environmental policy at the national level and exercise of control in its implementation.
National Institute for Environment and Development in Suriname (Nationaal Instituut voor Milieu en Ontwikkeling in Suriname [NIMOS])	<ul style="list-style-type: none"> • Environmental management and protection. • Main governing body responsible for enforcing environmental laws and regulations as well as managing and effecting new laws and developing subsidiary legislation.
Ministry of Labour, Technological Development and Environment (Ministerie van Arbeid, Technologische Ontwikkeling en Milieu [ATM])	<ul style="list-style-type: none"> • Enforcement of occupational safety law. • Development of a safe labour market. • Contribute to sustainable development and has a role in environmental management and protection.
Ministry of Natural Resources (Ministerie van Natuurlijke Hulpbronnen)	<ul style="list-style-type: none"> • Responsible for policy direction, legislation, issuance of permits, budget allocation and inter-ministerial coordination, and for all matters relating to natural resources (not fisheries).
Nature Conservation Division (Natuurbeheer) of the Suriname Forest Service	<ul style="list-style-type: none"> • Management of natural reserves and parks (not Brownsberg Nature Park). • Supports ROGB in management and law enforcement with regards to conservation, nature reserves and wildlife (below).
Foundation for Nature Conservation in Suriname (STINASU)	<ul style="list-style-type: none"> • A non-governmental organization established to assist the Forest Service in managing nature reserves. • Responsible for nature tourism, promoting public environmental awareness campaigns.
Ministry of Spatial Planning, Land and Forest Management (Ministerie van Ruimtelijke, Ordening, Grond en Bosbeheer [ROGB])	<ul style="list-style-type: none"> • Land use planning. • Management and law enforcement with regards to conservation, nature reserves and wildlife.
Ministry of Agriculture, Animal Husbandry and Fisheries (Ministerie van Landbouw, Veeteelt en Visserij [LVV])	<ul style="list-style-type: none"> • Management of land and water used for agricultural purposes; management of fish resources; control of water quality.
Sub-directorate of Fisheries (Onder Directeur van de Visserij Dienst)	<ul style="list-style-type: none"> • Management of fish resources. • Enforces Fish Protection Act and Sea Fisheries Decree.
Ministry of Health (Ministerie van Volksgezondheid [VGZ])	<ul style="list-style-type: none"> • Management of environmental health (infectious diseases, food quality, water quality, industrial waste disposal, water-soil-air quality standards vis-à-vis human health).
Maritime Authority Suriname (Maritieme Autoriteit Suriname [MAS])	<ul style="list-style-type: none"> • Management of maritime traffic.
National Coordination Centre for Disaster Management (Nationaal Coördinatiecentrum voor Rampenbeheersing [NCCR])	<ul style="list-style-type: none"> • A Division of the Ministry of Defence that develops national policies on disaster management through coordination and prevention of potential threats and disasters.

Source: *Environmental and Social Impact Assessment for Exploratory Drilling in Block 52 Offshore Suriname – prepared for PETRONAS Suriname E&P B.V. prepared by CSA Ocean Sciences Inc. 2015*

There is currently no legal framework for EIA or SEA in Surinam. The new Environmental Law that is under development will establish a legal framework for EIA. Meantime, the Suriname government has acknowledged the importance of

EIA. The government signed the Convention on Biological Diversity and the Convention on the Law of the Sea, which address EIA. As part of the Biodiversity Strategy, the government aims to strengthen the government institutions, NGOs and private businesses engaged in the preparation of EIA. In addition, NIMOS has issued guidance on EIA, and been tasked with review of EIA reports. NIMOS also advises on the screening decision and scope of EIAs, albeit only a limited number of EIAs have been prepared and submitted, and these mainly relate to oil and gas and mining projects.

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

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

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

- United Nations Convention on Biological Diversity;
- The Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Western Hemisphere Convention);
- The Ramsar Convention (The Convention on Wetlands of International Importance);
- Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora;
- Amazon Cooperation Treaty (ACT);
- United Nations Convention on the Law of the Sea (UNCLOS);
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78);
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- United Nations Framework Convention on Climate Change (UNFCCC);
- World Heritage Convention; and
- Other relevant international conventions.

The IDB has a list of environmental and social safeguards, which serve as the standard to which environmental and social performance on the part of funding recipients is evaluated against. The safeguards provide guidance as to the best-practice implementation of projects. Table 3-2 details the guidance relevant to the activities associated with this Program.

Table 3-2 IDB Safeguards

Policy/Directive	Applicable aspect	Performance
IDB B1: Bank Policies	Environmental Management and Resource Management Operation	Has the Borrower/Executing Agency have legislation in place that promotes environmental management, training, and environmental governance and also promote conservation and sustainable use of natural resources?
IDB OP-703: B.4 International Best Practice	Governance capacity	Does the Borrower/Executing Agency exhibit weak institutional capacity for managing environmental and social issues?
IDB OP-703: B.6 IDB OP-102 International Best Practice	Consultation	Has the Borrower/Executing Agency developed a Stakeholder Engagement Plan that is scaled to the Program risks and impacts and development stage?
IDB OP-703: B9	Natural Habitats and Cultural Sites	The Borrower/Executing Agency will not support operations that significantly convert or degrade critical natural habitats or that damage critical cultural sites.
Resettlement Policy	Loss of Livelihoods	
International Best Practice	External communication and Grievance Mechanisms	Has the Borrower/Executing Agency established a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's E&S performance?
IDB OP-704: A-1	Risk Management through Programming and Operations	Does the Borrower/Executing Agency have frameworks or activities in place to reducing vulnerability the Program may face?
IDB OP-704: A2	Risk and Program Viability	Did the Borrower/Executing Agency evaluate the risk profile to natural hazards of the Program?
IDB OP-703	Community Health, Safety & Security	Did the Borrower/Executing Agency evaluate the risks and impacts to the health and safety of the Affected Communities during the Program life-cycle and will establish preventive and control measures consistent with good international industry practice?

Policy/Directive	Applicable aspect	Performance
IDB OP-710 IDB OP-761	Resettlement	Has the Borrower/Executing Agency done everything to minimize the need for physical and economic resettlement, and if it has, has it managed impact in such a way so as to ensure resettlement becomes a development opportunity?

3.4

OTHER INTERNATIONAL STANDARDS

3.4.1

IFC

Performance Standard	Applicable aspect	Performance
PS1	Assessment and Management of Environmental and Social Risks and Impacts	The borrower in coordination with other responsible government agencies and third parties as appropriate, will conduct a process of environmental and social assessment, and establish and maintain an ESA appropriate to the nature and scale of the Program and commensurate with the level of its environmental and social risks and impacts. The ESA will incorporate the following elements: (i) policy; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review.
PS3	Resource Efficiency and Pollution Prevention	The borrower during the Program life-cycle, will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention principles and techniques that are best suited to avoid, or where avoidance is not possible, minimize adverse impacts on human health and the environment.
PS4	Community Health, Safety, and Security	The borrower will evaluate the risks and impacts to the health and safety of the Affected Communities during the Program lifecycle and will establish preventive and control measures consistent with good international industry practice (GIIP), ¹ such as in the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines) or other internationally recognized sources.
PS5	Land Acquisition and Involuntary Resettlement	The borrower will consider feasible alternative Program designs to avoid or minimize physical and/or economic displacement, while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable.

Performance Standard	Applicable aspect	Performance
PS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	The Borrower should consider direct and indirect Program related impacts on biodiversity and ecosystem services and identify any significant residual impacts. This process will consider relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution.
PS8	Cultural Heritage	The Borrower in addition to complying with applicable law on the protection of cultural heritage, including national law implementing the host country's obligations under the Convention Concerning the Protection of the World Cultural and Natural Heritage, the client will identify and protect cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage are implemented.

3.4.2

UNESCO/ICOMOS

Article	Applicable aspect	Performance
International Charter for the Conservation and Restoration of Monuments Sites - Article 14	Historic Sites	The sites of monuments must be the object of special care in order to safeguard their integrity and ensure that they are cleared and presented in a seemly manner. The work of conservation and restoration carried out in such places should be inspired by the principles set forth in the foregoing articles.
Charter for the Conservation of Historic Towns and Urban Areas	Historic Town and Urban Areas	The borrower must comply with methods and instruments 5 through 16. (http://www.icomos.org/charters/charters.pdf)
International Cultural Tourism Charter - Principle 1	Cultural Tourism	The borrower must comply with principles 1 through 6. (http://www.icomos.org/charters/charters.pdf)
Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage	Structural Restoration of Architectural Buildings	The borrower must be familiar with the principles listed throughout the General Criteria, Diagnosis and Remedial Measures and Controls of this charter, complying with applicable principles. (http://www.icomos.org/charters/charters.pdf)

4.0

IMPACT ASSESSMENT

This section presents an impact assessment of the main environmental and social risks that have been identified associated with the Program. Sections 4.1 to 4.4 focus on the priority risk items as scoped in consultation with the IDB, namely potential loss of livelihoods, soliciting stakeholder engagement and feedback, risks due to natural hazards and cultural heritage risks. Section 4.5 then offers commentary on additional risks identified as part of this ESA study.

4.1

LOSS OF LIVELIHOODS

4.1.1

Baseline Conditions

ERM, and its local partner, Culturecom, have completed a livelihoods assessment in order to acquire relevant data to establish an accurate baseline. Given the evolving nature of the Program, ERM and the IDB have selected a study area (see Figure 4-1) that reflects current understanding as to where the main businesses and traders are located. As the Program specifics evolve, if it is found that additional areas of businesses and traders could be affected by the Program (beyond those assessed here), then additional livelihood surveys will need to be undertaken.

The purpose of the livelihoods assessment is to determine whether livelihoods of local businesses and traders might be affected by the proposed Program. The study surveyed both formal and informal business activities, and other factors that are relevant to the Program. These include, but are not limited to:

- Type of business;
- Property tenure;
- Socio-economic profile, gender, race and ethnicity of owners;
- Socio-economic profile, gender, race and ethnicity of the employees;
- Characterization of customers; and
- Sources and levels of income.

Culturecom's draft report of the survey and findings is presented in Appendix A, and a summary of the key findings is presented in this section. A total of 112 structures containing 396 businesses, organizations and individual traders have been assessed. These enterprises and businesses appear to have different range of status – there is a combination of legal and ownership status, as some own and operate their respective registered business, while others rent the space to operate their registered business, while yet some do not do either.

To facilitate the study, the study area has been split into seven zones (see Figure 4-1) in order to capture the very different social and physical characteristics of these spaces and the associated structures.

Figure 4-1: Map of study area.



These areas have been subdivided into separate blocks.

Area I - Waterkant North covers the stretch from the Suralco Cornerhouse (Waterkant #2) to Oemrawsingh Jeweler at the beginning of Watermolenstraat. This area is a combination of private residences and commercial fronts – the latter of which includes museums, the Central Bank of Suriname, and a casino.

Area II - Waterkant South is Waterkant proper, an open public space lined with almond trees and views of the Suriname River. The historic waterfront stretch has always been the public space of choice for Surinamers to walk along the Suriname River and enjoy cultural celebrations. Independence Square is also a significant public space, but it is used mainly for official functions. Recently the river-side embankment has been upgraded with sheet piling and concrete, giving the waterfront a more structured and geometric appearance. This area is filled with twelve small bars and restaurants, over forty vendor stands (primarily Indigenous), the Suriname Shipping Company (SMS), and several miscellaneous rotary clubs.

Area III - Heiligenweg is the main public bus stop. This is an open rectangular space where the buses park. The west side of the terminal is lined with numerous commercial buildings housing stores, telecommunications offices, a bank and services (fire department, police). Several businesses have shut down, reflecting the impact of the current economic crisis. The east side houses a bank, the fire department and several other government buildings and a hair salon. This is one of the busiest areas in Paramaribo, because the buses attract thousands of passengers during weekdays and Saturdays.

Area IV is the first part of the Watermolenstraat, originating at Waterkant. This is an area of business, services, leisure and some residences. Parts of this street section contain many classical buildings which house bars and hotels. There are also prominent businesses in this area, such as the Jamaludin Pharmacy and clinic, and

the Government Labor Inspection Office and the Water Service Department of the Ministry of Natural Resources.

Area V is the first part of the south side of Keizerstraat, originating at Waterkant. This area includes commercial spaces (i.e., Brakke Clothing store that has been recently restored), a police station (significant architectural monument with outstanding design attributes which is in urgent need of restoration), and a large parking lot.

Area VI is Valliantplein is also a prominent public space. There is a large round fountain in the center of this public space, and the bell tower (which appears not be in use). This area primarily contains residential structures, in addition to Telesur, the government owned telephone company. At least three building on this square have been beautifully restored, giving this public space significant potential for further restoration and development

Area VII is the north side of the Keizerstraat. Most of the classical buildings have been replaced by more modern style structures. There are many open spaces and parking lots.

4.1.2 *Impact Assessment and Recommendations*

The livelihood survey provides more in-depth understanding of the perception of the key stakeholders and will help identify opportunities for positive interventions. The following represent the main themes that have been identified from the interviews and surveys performed:

(i) *Apprehension*

Based on initial engagement, it is clear that many business owners are apprehensive of the Program. This apprehension appears linked to a lack of information and understanding as to what the Program comprises, a fear that they will have to incur tax increases to fund it, and concerns that income losses will be incurred. These sentiments are understandable given the early stage planning of the Program. A public meeting and engagement exercise is being planned on October 27, 2016, hosted and led by the government and IDB, and this will present an opportunity to try and address some of this apprehension. It is noted that this apprehension is also fostering some collective action – for example, the stall owners have said that they are now organizing themselves into an association, in the hope that their problems and concerns can be heard and addressed as soon as possible.

(ii) *Economic Viability*

As stated above, there are 396 enterprises and businesses in the study area – 25 of which are government entities. Table 4-1 captures an overview of these entities reported incomes.

Table 4-1: Incomes of study area enterprises and businesses

Monthly Net Income (SRD)	Number of Entities	Percentage
500,000	3	0.81%
50,000	0	0.00%
10,000	8	2.16%

Monthly Net Income (SRD)	Number of Entities	Percentage
500,000	3	0.81%
5,000	45	12.13%
1,000	253	68.19%
500	41	11.05%
50	21	5.66%

Note: Government entities account for an additional 29 enterprises in the study area; however, they have been omitted from this analysis as there is no risk of loss of income.

Eighty-four percent of area enterprises have low incomes and make less than SRD 5,000 monthly (i.e., 686 USD). The craft stand, bus and canoe owners have the lowest incomes, in part due to the fact that fares are set by the government. There are, however, some notable exceptions such as Telesur of the De Waag restaurant. There appear to be ten high-earning enterprises in the study area, while most of the other businesses operate under the SRD 500,000 range per year (i.e., 68,000 USD).

(iii) Attractiveness of the Area

A number of the businesses have indicated that current business incomes are low, and this is attributed to the lack of 'attractiveness' of the area to residents and tourists. This lack of attractiveness stems from the overall condition of the buildings (more than 56% of the buildings in the area need to be repaired) and the lack of appropriate public infrastructure (e.g., sewage and effluent pumps malfunctioning) that cause recurrent flooding.

Business owners see the revitalization Program in general terms as a positive and beneficial opportunity to attract more visitors, inhabitants and tourists to the area, which in turn will benefit their businesses. The caution that is linked to these views is more specific to what the revitalization may mean for them in terms of their specific businesses (see below).

(iv) Craft Stall Traders

On Waterkant, there are 42 craft stalls/stands, which are mainly earmarked for indigenous, female craftersⁱ and craft vendors. Of the 42 stalls, only about 20 are used on a regular basis. The following insights have been gained from the survey to date:

ⁱ Only 3 stands are operated by men, most of them are the source of income for female indigenous crafters.

- A number of vendors have only been at this location for less than six months, and therefore only limited trading history will exist upon which to judge livelihood impacts against;
- Most vendors are one-person enterprises (eenmanszaak) and are owner operated. Some stand owners work together with their spouse or with an immediate relative (sister, niece);
- The turnover of the owners interviewed is reported to be less than US\$500 per month. The best months (August, December) were between US\$ 300 and 500. The stand owners pay SRD 100 (US 13.70) rent per month to the Waterkant manager;
- The customer base is mixed, with a general sense that more customers were female, between the ages of 25 and 60, and most customers are Surinamese and Dutch, followed by French tourists;
- When asked to discuss concerns due to the Program, some vendors suggested that closure for a brief period is unlikely to be a major impact, in that they could stay at home and produce crafts. However, anything over a few weeks becomes a major issue, as they would lose income. Some vendors said that they would want compensation if they are shut down, and some said that they would want to be provided with a temporary trading location if the Program were to affect their current stalls;
- Dust was identified as a potential concern, especially in the dry season. The vendors already are experiencing problems due to the construction of the playground next to the crafts stand, which generates a lot of dust which in turn dirties their goods, especially cloths, which affects their sales; and
- Many of the vendors were united in their views of the problems and challenges they face now, and these insights represent an opportunity that should be considered by the IDB and the Government in the design of the Program. These include:
 - Transportation is a major burden and cost item. There is no onsite storage and so vendors have to move their wares back and forth to their stands on a daily basis;
 - Rain is also a major concern in that there are no shelters or structures to protect their stands and wares;
 - The absence of nearby toilets and washrooms; and
 - The issue of homeless people is also seen as an issue.

(v) *Business with a Regular Customer Base*

Several businesses in the Waterkant area rely on repeat customers for their business, and their major concern is that the Program may impact their ability, even temporarily to serve these customers. As an example, one of the bars present has been operating at its location for over 40 years. Their concern is that if the Program meant that their business has to be interrupted for a period of time, they would want another temporary location where they can continue to operate, because they do not want to lose their customer base. They cited that as an example, in the early 1990s, they shut down for over one year for renovations, and they lost customers, which took many years to recover and have business back to the pre-renovation levels.

Business continuity is seen as the priority need in case disruption is to occur, and not financial compensation. Establishing customer loyalty and good will takes a lot of effort to re-establish, which money (by way of compensation) cannot solve.

In terms of opportunities that could be built in to the Program, some emerging themes include:

- Security, in terms of making the area feel safer and more attractive to a broader range of visitors; and
- Addressing the issue of homeless people, who are seen as a nuisance to their customers.

(vi) *Gentrification*

This is seen as a concern in terms of whether, after the Program and revitalization is complete, the same opportunities still exist for stall and business owners. There is a concern that rent prices will be increased to attract other businesses, which in turn will price current traders and businesses out of the area. There is also fear that low-income groups experience greater cost of living, breakdown of their social networks and the ultimate risk of being displaced from an area that has traditionally catered to them. Mentions to the Riverside Harbor Village Program were provided as an example of the latter.

(vii) *Traffic*

Traffic has also been identified as an area of concern. Traffic in the area is already a challenge and affects trade due to difficulties people have in crossing the busy Waterkant lanes. If construction traffic and temporary road or lane closures are added to the mix, there are concerns at the impact this will have on foot traffic and business. Improving crossings and parking spaces in the area also represents an opportunity for the Program to be considering.

Based upon these findings, Table 4-2 provides the assessment of each business with respect to its livelihood vulnerability to the Program and the recommendations as to how the Program should consider responding to the business as part of the restoration plan (see Section 6.2 for further details).

Table 4-2 Livelihoods Summary

#	Name & Address	Description	Ownership status (land title)	Private or public domain	Business Income, monthly (SRD)	Business expenditures (SRD)	Socio-economic vulnerability to Program	Proposed compensation structure and mechanism
1		Mineral sector - corporate office	Formal	Private	Not provided	Not provided	Low - is not reliant upon passing trade and local activities	None - not expected to be adversely affected
2		Hotel	Formal	Private	1000	Not provided	Low - the hotel is already suffering very low occupancy. The Program may actually benefit the hotel	None - not expected to be adversely affected
3		Apartments	Formal	Private	5000	Not provided	Low - residential, so while might experience impacts during construction, no livelihood loss is expected	None
4		Residence, Daily News	Formal	Private	5000	Not provided	Low - residential, so while might experience impacts during construction, no livelihood loss is expected	None
5		Vacant	Formal	Private	N/A	N/A	N/A based on vacant status	N/A
6		Government Education	Formal	Public	N/A	N/A	N/A - Government	N/A
7		Government	Formal	Public	N/A	N/A	N/A - Government	N/A
8		Government	Formal	Public	N/A	N/A	N/A - Government	N/A
9		Government	Formal	Public	N/A	N/A	N/A - Government	N/A
10		Government	Formal	Public	N/A	N/A	N/A - Government	N/A
11		Government Services	Formal	Public	Not provided	N/A	N/A - Government	N/A
12		Government Services	Formal	Public	Not provided	N/A	N/A - Government	N/A
13		Cambio	Formal	Private	5000	Not provided	Low	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
14		Parking	Formal	Private	Not provided	Not provided	Low	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
15		River transport	Formal	Public-	Not provided	Not	Low	None - not expected to be adversely

				private		provided		affected
16		Casino	Formal	Private	10000	Not provided	Low	None - not expected to be adversely affected
17		Parking free	Formal	Private	Not provided	Not provided	Low	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
18		Store jewelry	Formal	Private	5000	Not provided	Low	None
19		Medical doctor	Formal	Private	1000	Not provided	Low	None
20		Craft stand (3)	Rental	Private	500	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
21		Craft stands (17)	Rental	Private	50	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
22		Bar	Rental	Private	10000	+5.000	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
23		Bar	Rental	Private	5000	+3.000	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
24		Restaurants (8)	Rental	Private	1000	Not provided	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
25		Sanitation	Rental	Private	50	Not provided	High	Relocate
26		Store (5)	Rental	Private	500	Not provided	High	Compensate
27		Restaurant	Rental	Private	10000	+5.000	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
28		Tour agent	Rental	Private	5000	Not provided	High - tours may be temporarily interrupted during Program works	Compensate
29		Bar & Restaurant	Use right	Private	1000	Not provided	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
30		Bar & Restaurant	Use right	Private	5000	Not provided	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base

31		Bus service (55)	Public land	Public-private	1000	Not provided	High - reliant on people gaining access to them, which could be affected by the Program works	Main focus is to look for a relocation to ensure customer base retained, and if this fails, consider compensation
32		Canoe service (34)	Public land	Private	500	Not provided	High - reliant on people gaining access to them, which could be affected by the Program works	Main focus is to look for a relocation to ensure customer base retained, and if this fails, consider compensation
33		Gold shop	Formal	Private	500000	Not provided	Low - is reliant on passing trade, but not as vulnerable as other traders	Compensate
34		Snack bar	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
35		Snack bar	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
36		Store Jewelry	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
37		Store Clothing	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
38		Store Clothing	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
39		Store Clothing	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
40		Store clothing	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
41		Snack bar	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
42		Store Jewelry	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
43		Store General merchandise	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
44		Store Music clothing	Rentall	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate

45		Store Jewelry	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
46		Snack bar	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
47		Store Jewelry	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
48		Store General Merchandise	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
49		Store Jewelry	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
50		Store Clothing	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
51		Store General merchandise	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
52		Telecom	Formal	Public-private	500000	Not provided	Low	None
53		Bank	Formal	Public-private	500000	Not provided	Low	None
54		Bus services (173)	Public land	Public-private	1000	Not provided	High - reliant on people gaining access to them, which could be affected by the Program works	Main focus is to look for a relocation to ensure customer base retained, and if this fails, consider compensation
55		Government Public service	Formal	Public	N/A	N/A	N/A	N/A
56		Parking private	Formal	Public-private	0	Not provided	Low	None
57		Salon hair & nails	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
58		Snack bar	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
59		Snack bar	Rental	Private	5000	Not provided	High - very reliant on passing trade which could be affected by the Program works	Compensate
60		Bar & snack;	Formal	Private	5000	Not	Medium	Compensate

		residence				provided		
61		Medical pharm.	Formal	Private	10000	Not provided	Low	None
62		Medical doctor	Formal	Private	5000	Not provided	Low	Non
63		Medical lab	Formal	Private	5000	Not provided	Low	Non
64		Bar (upper level vacant)	Formal	Private	1000	Not provided	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
65		Bar (upper level vacant)	Formal	Private	500	Not provided	High - reliant on existing customer base and passing trade	Relocate and/or provide temporary location - main concern is to protect customer base
66		Hotel residence 6 persons	Formal	Private	1000	Not provided	High	Compensate
67		Hotel sex (no utilities)	Formal	Private	500	Not provided	High	Compensate
68		Parking	Formal	Private	1000	Not provided	Low	None
69		Store General Merchandise	Formal	Private	500	Not provided	Medium	Compensate
70		Store clothing	Formal	Private	5000	Not provided	Low	None
71		Parking not in use	Formal	Private	Not provided	Not provided	Low	None
72		Government services	Formal	Public	N/A	N/A	N/A	N/A
73		Government service labor	Formal	Public	N/A	N/A	N/A	N/A
74		Store General merchandise	Formal	Private	1000	Not provided	Medium	Compensate
75		Store clothing closed	Formal	Private	Not provided	Not provided	Low	None
76		Legal services	Formal	Private	1000	Not provided	Low	None
77		Architect	Formal	Private	1000	Not provided	Low	None
79		Salon Hair	Formal	Private	1000	Not provided	Low	None
80		Store home furnishing	Formal	Private	10000	Not provided	Low	None

81		Government police	Formal	Public	N/A	N/A	N/A	N/A
82		Government services police	Formal	Public	N/A	N/A	N/A	N/A
83		Store clothing	Formal	Private	5000	Not provided	Low	None
84		Store General merchandise	Formal	Private	500	Not provided	Low	None
85		Office	Formal	Private	Not provided	Not provided	Low	None
86		Store clothing textiles	Formal	Private	5000	Not provided	Low	None
87		Store electronics	Formal	Private	5000	Not provided	Low	None
88		Residence	Formal	Private	Not provided	N/A	Low	None
88		Store clothing	Formal	Private	5000	Not provided	Low	None
89		Media newspaper	Formal	Private	1000	Not provided	Low	None
90		Chinese organization	Formal	Private	Not provided	Not provided	Low	None
91		Store music	Formal	Private	1000	Not provided	Low	None
92		Government services mail	Formal	Public	5000	Not provided	Low	None
93		Snack bar	Formal	Private	1000	Not provided	Low	None
94		Government	Formal	Public	N/A	N/A	N/A	N/A
95		Legal notary	Formal	Private	10000	Not provided	Low	None
96		Warehouse	Formal	Private	Not provided	Not provided	Low	None
97		Lottery	Formal	Public-private	N/A	N/A	N/A	N/A
98		Lottery	Formal	Public-Private	N/A	N/A	N/A	N/A
99		Store rental of units	Formal	Private	5000	Not provided	Low	None
100		Store party supplies	Formal	Private	5000	Not provided	Low	None
101		Store clothing	Formal	Private	5000	Not provided	Low	None

102		Store clothing	Formal	Private	5000	Not provided	Low	None
103		Store jewelry	Formal	Private	10000	Not provided	Low	None
104		Store clothing	Formal	Private	5000	Not provided	Low	None
105		Store shoes	Formal	Private	10000	Not provided	Low	None

4.2

STAKEHOLDER ENGAGEMENT

The Director of Culture from the Ministry of Education, Science, and Culture, Stanley Sidoel, in conjunction with Stephen Fokké, the Director of Suriname Built Heritage Foundation (Stichting Gebouwd Erfgoed Suriname - SGES) and Site Manager of the UNESCO World Heritage Site, presented the Paramaribo Urban Rehabilitation Program in a public consultation event hosted at De Waag on Waterkant on 27 October 2016. Further details on the event are provided in Appendix A (see Appendix IV of Culturecom's report), and a summary is provided below. The aim of the meeting was to provide attendees with an overview of the Program and to solicit feedback in relation to the Program and associated environmental and social concerns.

Some of the key themes with respect to environmental and social concerns raised include:

- Noise is a key issue, particularly from users of the bars and also the impacts due to construction noise;
- The number of homeless people living on Waterkant and sleep on the steps of the monumental buildings was another issue that needs to be addressed;
- The merchants of the Craft Stand complain that rain is a major problem due to the lack of protection afforded by their stalls;
- General hygiene including lack of ownership of cleanliness of the area and also the lack of local toilet facilities;
- The underground sewage urgently needs to be repaired, with concerns regarding local flooding due to blockages; and
- The issue of compensation was also raised with some subjects wanted to be compensated for a decline in business volume as a result of construction activities. However, some informants said that construction activities will always negatively impact the restaurant business, and that it always takes time to recover. Several informants suggested that the revitalization efforts should be carried out efficiently and as quickly as possible in order to prevent a significant decline in business volume.

4.3

NATURAL DISASTER RISK

4.3.1

Baseline Conditions

Climatological and Precipitation Conditions

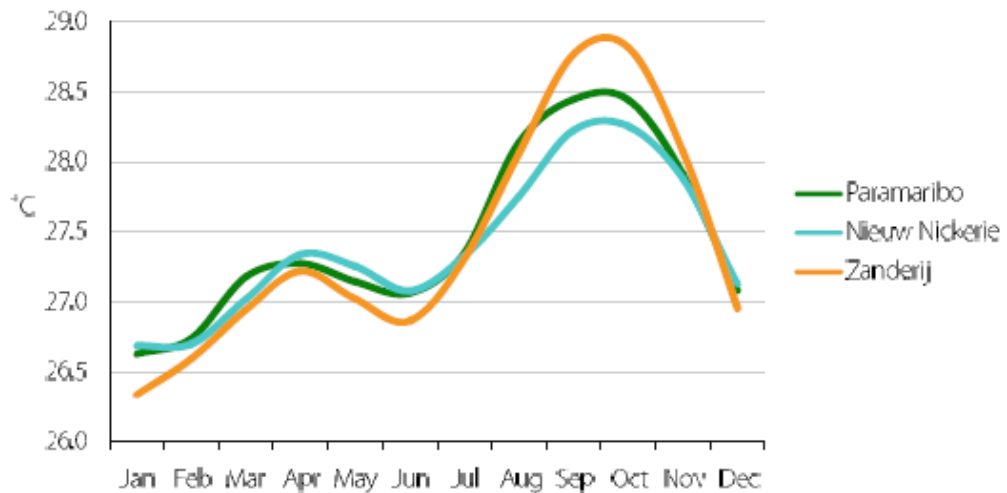
Even though Suriname is located outside of the hurricane area, hurricane effects are often experienced in the form of heavy rainfall. Sibibusies's (Sibi= sweep, Busie= forest), Inter Tropical Convergence Zone (ITCZ) and the El Niño phenomenon are climate systems that influence meteorological conditions in Suriname (Environment Statistics, 2016).

- Sibibusies are heavy winds events that occur during heavy precipitation with speeds between 70 km/hr and 100 km/hr.
- ITCZ is an area located close to the equator, where the northeast and southeast trade winds meet.

- El Niño phenomenon usually occurs 2-7 years lasting 12-18 months, but it can occur any time. Generally, climatological conditions associated to this phenomenon are dry in Suriname.

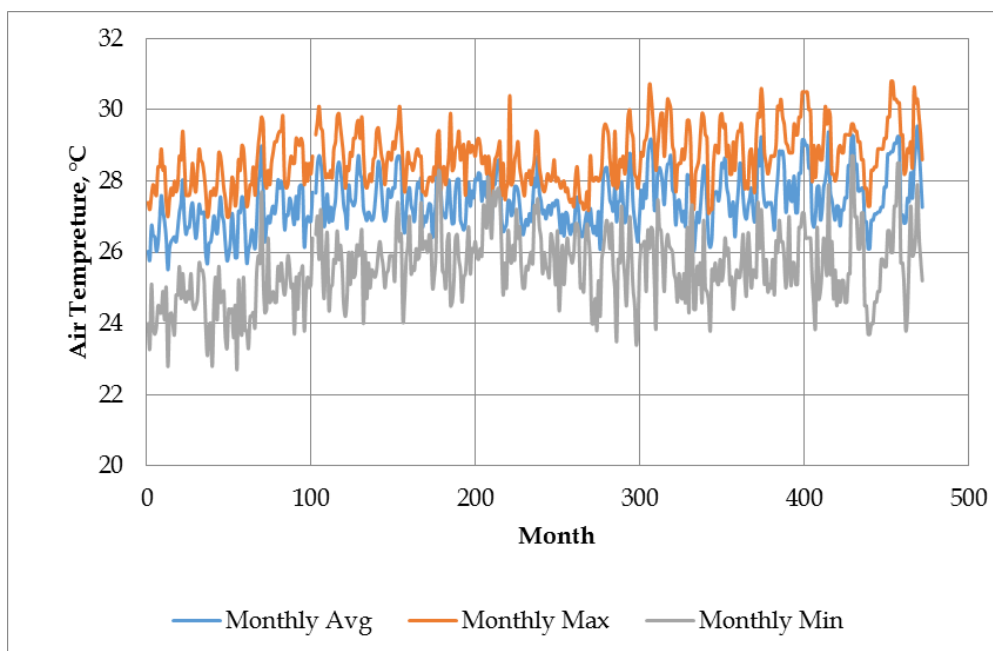
The Program’s area is part of the urban footprint of Paramaribo with an average daily temperature of approximately 27.4 °C, with daily variations of 5°C (MLTDE, 2013). Figure 4-2 shows the average monthly temperature for Paramaribo indicating that there is a small variation in air temperature along the year. The coldest month of the year in Paramaribo is January, while October is the warmest. Figure 4-3 shows historical average, maximum and minimum temperatures registered at the Cultuurtuin Station from January 1971 to December 2009.

Figure 4-2: Average Monthly Temperatures for Three Stations



Source: MLTDE, 2013

Figure 4-3: Monthly Average, Maximum and Minimum Temperatures Registered at the Cultuurtuin Station (January 1971-December 2009)

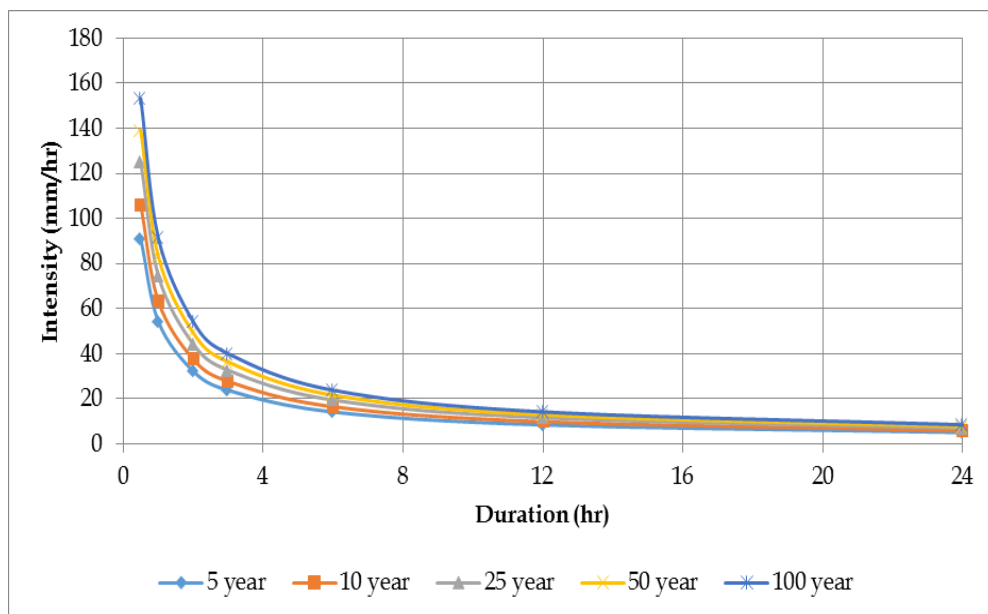


Source: Created by ERM, 2016 based on historical air temperature records provided by Meteorologische Dienst Suriname

Paramaribo presents two wet and two dry seasons with an annual average precipitation of 2,210 mm. The short wet season lasts from December to February while the long wet season occurs between May and August with an average monthly precipitation of approximately 200 mm for both wet seasons. On the other hand, the short dry season occurs between February and April while the long dry season occurs from August to December with an average monthly precipitation of 100 mm for both dry seasons. Classification of these four seasons is based on precipitation records from the Cultuurtuin meteorological station located in Paramaribo (Amatali, 2007; MLTDE, 2013).

Precipitation intensity depends on the duration of the storm and return period. The precipitation intensity decreases when the duration of the storm decreases (Amatali, 2007). Figure 4-4 shows the precipitation Intensity Duration Frequency (IDF) curves for different return periods for the Cultuurtuin station based on historical precipitation records for the 1981-2015 period.

Figure 4-4: Intensity Duration Frequency (IDF) Curves for Cultuurtuin Station (1981-2015)



Source: Created by ERM, 2016 based on historical precipitation records provided by Meteorologische Dienst Suriname

Historical Floods and Other Natural Disasters

According to the Environment Statistics (2016), Suriname experiences frequent floods in the coastal plain and rivers. Floods at the Program site occur when sea level rises during spring tide and during tropical storms by impacting low-lying riverine development and infrastructure. Also, flooding is caused by rainfall-induced accumulation of water due to its outdated and insufficient drainage system.

Table 4-1 **Error! Reference source not found.** shows a summary of the type of natural disasters and population affected between 2004 and 2015 in Suriname. The UNDP

considers Suriname in the list of the ten vulnerable countries with low-lying coastal plains that are threatened by Sea Level Rise (SLR) in this century.

Table 4-3: Types of Natural Disaster and Population Affected 2004-2015 in Suriname

Date	Natural Disaster	Affected Areas	Population
9/7/2004	Floods associated with rainfall from Hurricane Ivan	Not specified	Unknown
6/5/2006	Flood due to excessive rainfall	Gran Rio and Pikin Rio rivers, Paramacaans on the Marowijne River, upper Marowijne, Tapanhony and Lawa, (Mofina) Suriname and Sipaliwini River	25000 people
June 2006	Floods due to heavy rainfall	Villages along the upper Marowijne river and the upper Suriname River	20,000 people
2006/2007	Flood	Coropina triangle, Vier Kinderen, La Prosperite and Republiek	500 people
29/4/2007	Floods due to continuous rainfall	Paramaribo	
28/5/2000	Flood due to excessive rainfall	Sipaliwini, Northern Marowijne, Tapanahony River, Lawa and Curuni	5000 people
6/8/2008	Flood due excessive rainfall	Southern part of the interior: Djumu, Asidonhopo, Semoisi, Awaradam	Unknown
1/10/2009	Flood due to excessive rainfall	Paramaribo	Unknown
2/4/2009	Flood due to excessive rainfall	Paramaribo	Unknown
10/3/2009	Flood due to excessive rainfall	Paramaribo	Unknown
5/3/2009	Flood due to excessive rainfall	Paramaribo	Unknown
2009/2010	Drought	National level	Unknown
14/7/2010	Coastal flooding as a result of dam fail	Saramaca: La poule, Peperhol, north part of Wayambo	Unknown
24/4/2010	Flood due to excessive rainfall	Paramaribo	Unknown
16/4/2010	Flood due to excessive rainfall	Paramaribo: Margarethalaan	unknown
22/4/2010	Flood due to excessive rainfall	Paramaribo: Poelepantje	Unknown
1/6/2012	Storm	Nickerie: Nieuw Nickerie	55 houses
20/6/2012	Storm	Paramaribo, Marowijne: Galibi and Albina	35 people
17/5/2013	Flood due to excessive rainfall	Saramacca: Misgusnst	Unknown
16/5/2013	Flood due to excessive rainfall	Commewijne: Frederikdorp	Unknown
16/5/2013	Flood due to excessive rainfall	Para, Paramaribo, Marowijne (Cottica)	Unknown
20/6/2013	Tail of a heavy tropical storm/flooding (heavy rainfall)	Paramaribo, Wanica, Saramacca, Marowijne (Galibi). Roof were torn away (30 houses), trees uprooted and damaged power poles, advertising signs and Street lighting	300 people affected
27/12/2013	Flood due to excessive rainfall	Paramaribo, Wanica, Saramacca	Unknown
16/1/2016	Hailstorm	Paramaribo and surroundings	
6/7/2014	Storm	National: Paramaribo, Coronie, Commewijne, Saramacca en Nickerie	150+
7/6/2014	Storm	Nickerie: Nieuw Nickerie	100 houses
2/5/2015	Flood	Marowijne: Alale Kondre	Unknown
18/5/2015	Persistent rainfall	Wanica: Hanna's Lust	
21/6/2015	Storm	Paramaribo: Zorg en Hoop	1 injured and 35 homes affected
28/6/2015	Storm	Paramaribo	1 (death)
27/7/2015	Flood	Saramacca	unknown

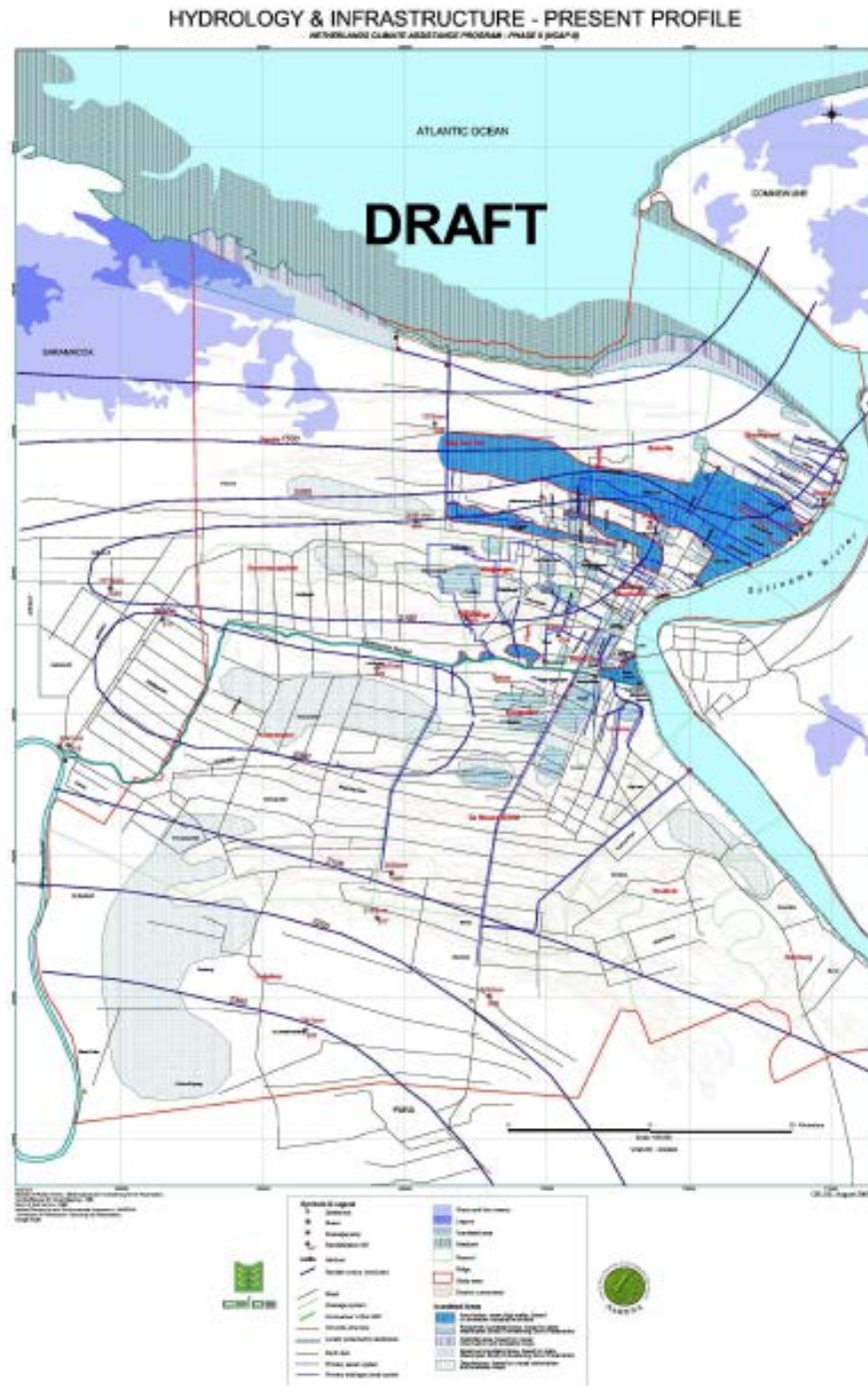
Source: Adapted from Environment Statistics (2016) and NCCR Situation Analysis

The Program area is located within the urban area of Paramaribo at the left bank of Suriname River (at km 52). Besides Paramaribo, there are other settlements along the left bank, including Domburg and Paranam while on the right bank of the river; New Amsterdam is located (Amatali and Naipal, 1999). The urban area of Paramaribo is considered highly vulnerable to floods due to sea level rise and increasing of intensity of precipitation (see Figure 4-8); loss of land due to coastal and riverbank erosion; longer and frequent severe dry periods; and uncontrolled urbanization towards the North area (Noordam, 2007). At the east side of Paramaribo City flows the Suriname River, which is a tidal influenced river with a catchment area of 16,500 square kilometers (km²). Its waters are discharged into the Atlantic Ocean and its flow has been regulated by the hydropower Afobaka Dam (Prof. van Blommenstein reservoir) since 1964 located approximately 194 km upstream of Paramaribo.

According to Karijokromo (2011), before the flood of May 2006, natural disasters were not frequent in Suriname. There were some historical normal floods produced by an outdated drainage system in different areas of Paramaribo City. The impacts of these normal floods were not as damaging as the flood that occurred on 2006. The Preventionweb (2016) reports that flooding represent an Average Annual Loss (AAL) of USD \$53.81M for Suriname.

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. According to MOGP (2002), in 2002, approximately 13% of the total urban area of Paramaribo was affected by this hazard causing economic damage and health conditions associated with stagnant water. The most recent severe floods in Paramaribo occurred in 2006 and 2008 but no records of economic or lives losses were available. Floods in Paramaribo are principally caused because large parts of the city were built on low-lying lands and the lack of an updated stormwater drainage system (see Figure 4-5 and Figure 4-6). The Program's area is prone to floods because it is located at low-lying lands and it is part of the left bank of the Suriname River. This river is tidal influenced and when high water level of the Suriname River is combined with runoff from impermeable areas produce floods affecting properties within the Program's study area.

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



Source: Taken from Amatali, 2007

Figure 4-6: Inland Flooding in Paramaribo on March 2015



Source: IDB staff

Figure 4-7: Inland Flooding in Urban Paramaribo on October 2009



Source: <https://www.youtube.com/watch?v=GZYORrohCVk>

Coastal and Suriname River banks are at risk for flooding due to higher water levels. According to the Country Study Climate Change, over 2,000 km² of coastal zones of Suriname are at risk for flooding. Historical Sea Level Rise is affecting the city and sometimes existing natural and artificial protections are insufficient. The Suriname River's left banks overflow (e.g., Anton Dragtengwe, Paramaribo North) during high water levels (MOGP, 2002).

Most of the floods in the Program area occur during spring tide. Breaching or overtopping of defensive structures, results in tidal flooding by saline or brackish water (Noordam, 2007). At the mouth of Suriname River, the mean tidal range is 1.8 m between neap tide and spring tide. A slightly positive increase of +0.6 mm/year on water levels in the Suriname River has been observed based on historical annual water level measured at Paramaribo station located at km 52 in Suriname River (Amatali, 2012). The inhabited areas along Suriname River banks, the land level is lower than the 10-year return (Tr) water level (see Table 4-2) producing potential risk for inundation from the river (see Figure 4-8.). Some of these flooding areas are shown in Figure 4-8 which also includes frequent inland flooding areas in Paramaribo.

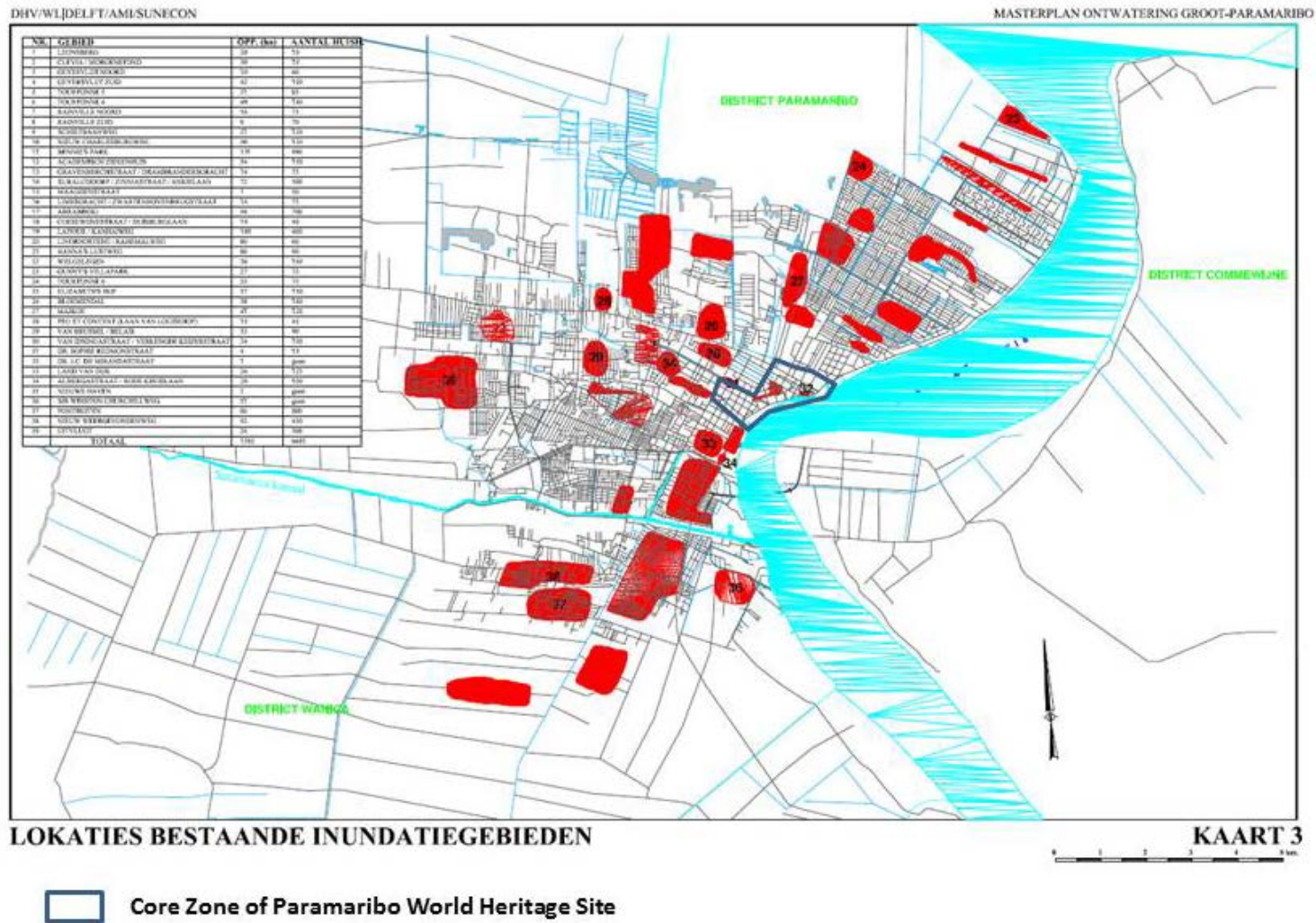
Table 4-4: High Water Level Suriname River

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

Tr= Return period; HHW= Higher High Water; cm= centimeters; NSP= Normaal Surinaamse Peil.

Source: Adapted from Amatali, 2012

Figure 4-8: Frequent Flooded Areas in Paramaribo (in red)



Source: Adapted from MOGP, 2002

Climate Change Projections

Climatological conditions in Suriname are affected by El Niño -Southern Oscillation (ENSO) that occurs once every 2-7 years. Studies such as Amatali (2012) indicate that El Niño events may cause reduction on precipitation. Historically when El Niño occurs in South America and there is excess precipitation on the west coast, Suriname presents dryer conditions (MLTDE, 2013).

Air temperatures in Suriname have increased during the last 47-50 years based on historical records from Cultuurtuin and Nickerie Airport meteorological stations. These stations have shown increasing trends on annual mean air temperatures of +0.016 °C/year and +0.008 °C/year, respectively while the Zanderij station has shown trends of annual mean air temperature of +0.004 °C/year (Amatali, 2012; MLTDE, 2013).

Precipitation records from Cultuurtuin climatological stations have shown decreasing trend on annual mean precipitation and maximum daily precipitation of -1.147 mm/year and -0.0247 mm/year, respectively. Amatali (2012) reports that dry seasons recorded at Cultuurtuin station has reported increasing trends of three weeks of dry seasons when the last 30 years are compared with the first 30 years of data from the previous century.

In the Second National Communication to the United Nations Framework Convention on Climate Change (MLTDE, 2013), climate change scenarios and projections, recognized for Suriname, are presented. These projections include Sea Level Rise (SLR), changes on precipitation, changes in temperature and possible changes in extreme events including wind speeds. All these projections are based on scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) and adapted for Suriname to describe how future conditions may be developed considering the driving forces and key relationships. Elements of A2 and B2 scenarios, specific data for the country, and data of extreme events and variations were used to develop the adapted projections for Suriname. Given these Climate Change Projections for Suriname, included in the Second National Communication, are for the 2100 horizon, and the natural disaster risk assessment conducted for Paramaribo is for the 2050 horizon, projections reported in the Caribsave Climate Change Risk Atlas (CCCRA, 2012) were used. Table 4-3 shows the climate change projections for Suriname and used on the natural disaster risks assessment presented in Section 4.2.

Table 4-5: Climate Change Projections for Suriname based on A2 IPCC Scenarios

Parameters	Value	Year	Source
Air Temperature overall annual mean	+2.6 °C (annual); +2.6 °C (December, January and February); +2.7 °C (March, April and May); +2.6 °C (June, July and August); +2.7 °C (September, October and November)	2050s	The Caribsave Climate Change Risk Atlas (CCCRA, 2012)
Precipitation	-6% (annual); -3% (December, January and February); -8% (March, April and May); -8% (June, July and August); -8% (September, October and November)	2050s	The Caribsave Climate Change Risk Atlas (CCCRA, 2012)
Wind Speed	+0.30 m/s (annual); +0.30 m/s (December, January and February); +0.20 m/s (March, April and May); +0.30 m/s (June, July and August); +0.30 m/s (September, October and November)	2050s	The Caribsave Climate Change Risk Atlas (CCCRA, 2012)
Weather extremes, including intensity	+8% (annual); +10% (December, January and February); +9% (March, April and May); +7% (June, July and August); +21% (September, October and November)	2050s	The Caribsave Climate Change Risk Atlas (CCCRA, 2012)
Sea Level Rise (SLR)	+0.5 meter	2050s	Estimated based on info from CCCRA, Sea Level Rise in the Caribbean and The Second National Communication.

4.3.2

Impact Assessment

According to UNISDR (2009), *hazard* is a dangerous phenomenon, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. On the other hand, *disaster* is defined as a serious disruption of the functioning of a community or a society involving widespread, human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

The Program itself is vulnerable to the natural disasters such floods, erosion and salt intrusion, which could affect it during both construction and operations. For example:

- Construction Phase –tropical storms and storm surges could significantly impact construction and result in damage to Program facilities (e.g., damage to facilities and construction equipment) and worsen impacts to the environment (e.g., increased risk of erosion, and sedimentation because of construction activities); and
- Operation Phase – natural disasters could damage the waterfront through floods, erosion and salt intrusion affecting facilities and population.

If appropriate management measures are not implemented as part of the Program, this can have the potential to exacerbate impacts associated to natural disasters. Some of these impacts could be erosion of river banks and increase of inundated areas at and around the Program site producing economic and human losses.

Risk is defined as the combination of the probability of an event and its negative consequences (UN, 2014). The components of risks for Program, people, and environment are:

- Exposure (probability and intensity of natural disasters and the number of people exposed or threatened by these disasters); and
- Vulnerability (considering susceptibility, coping capacity, and adaptive capacity).

According to the World Risk Index (UN, 2014), Suriname is ranked 49 of 174 countries in the world in terms of vulnerability with a WRI of 8.42%. Suriname is especially vulnerable to natural hazards for several reasons:

- Concentration of population located in hazard prone areas (low-lying);
- Weak institutional capacity to prepare for and respond to natural disasters; and
- High levels of poverty that limit the ability of the population to respond to natural disasters.

The above sections have presented the baseline hydrological and meteorological conditions for the Program area based upon available information and records. This has demonstrated vulnerability and risk due to natural hazards. Relevant climate change projections also illustrate a dynamic system with anticipated changes which could pose changes in the hazard and risk profiles. In order to evaluate the flooding hazards and risks in the area of the Program, ERM has taken this baseline and projection data, and performed a series of additional analyses, comprising of the following steps:

- Development of flooding hazard profiles;
- Assessment of vulnerability (exposed buildings and population);
- Estimation of losses; and
- Risk analysis framework.

Results of the coastal flooding hazard profiles for 10-year, 25-year, 50-year, and 100-year return periods are shown from Figure 4-9 to Figure 4-12 and results of the inland flooding hazard profiles are shown from Figure 4-13 to Figure 4-16. ERM is preparing these hazards profiles as part of the ongoing ESC study. Table 4-4 summarizes the criteria used to determine flood hazard levels by considering water depth and velocity parameters while Figure 4-8 shows the street light indicator used as level of risk on the economic and population risk maps.

The coastal and inland flooding natural hazard maps indicate that the area of the Program is prone to floods. It is important to mention that these hazard maps are based on a 2-m resolution Digital Terrain Model (DTM). These maps integrate a range of parameters including intensity precipitation events, climate change projections, land use, existing drainage conditions and the Suriname River bathymetry. Economic and population-based risk maps were also developed by using hazard profiles, exposure analysis (assets and population) and vulnerability index. Land use costs were used to create the economic-based risk maps based on existing land used data and its costs obtained from Suriname Real Estate Websites while population-based risk maps were created by using population density for Paramaribo from 2012 demography data. The economic-based maps are shown from Figure 4-18 to Figure 4-24 while population-based risk maps are shown from Figure

4-25 to Figure 4-32. Historical information related to floods within the urban Paramaribo area is included section 4.1.1 (Baseline Conditions).

Table 4-6: Definitions of Flood Intensity for Hazard Flooding Maps

Flood Intensity	Maximum depth h (m)		Maximum depth h times maximum velocity v (m ² /s)	Hazard Level
High	$h > 1.5 \text{ m}$	OR	$v * h > 1.5 \text{ m}^2/\text{s}$	High
Medium	$0.5 \text{ m} < h < 1.5 \text{ m}$	OR	$0.5 \text{ m}^2/\text{s} < v * h < 1.5 \text{ m}^2/\text{s}$	Medium
Low	$0.1 \text{ m} < h < 0.5 \text{ m}$	AND	$0.1 \text{ m}^2/\text{s} < v * h < 0.5 \text{ m}^2/\text{s}$	Low

h=water depth; m= meters; m²/s= square meters per second; v=water velocity.

Source: Adapted from FLO-2D Reference Manual, 2004

Figure 4-9: Street Light Indicator for Risk Mapping

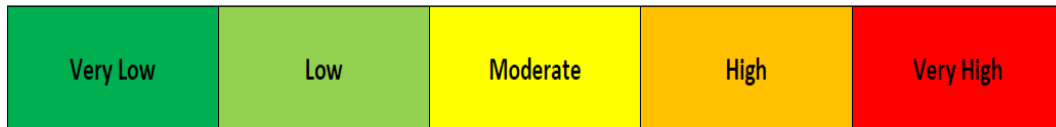


Figure 4-10: Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 10-year return period



Figure 4-9: Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 25-year return period



Figure 4-12: Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 50-year return period

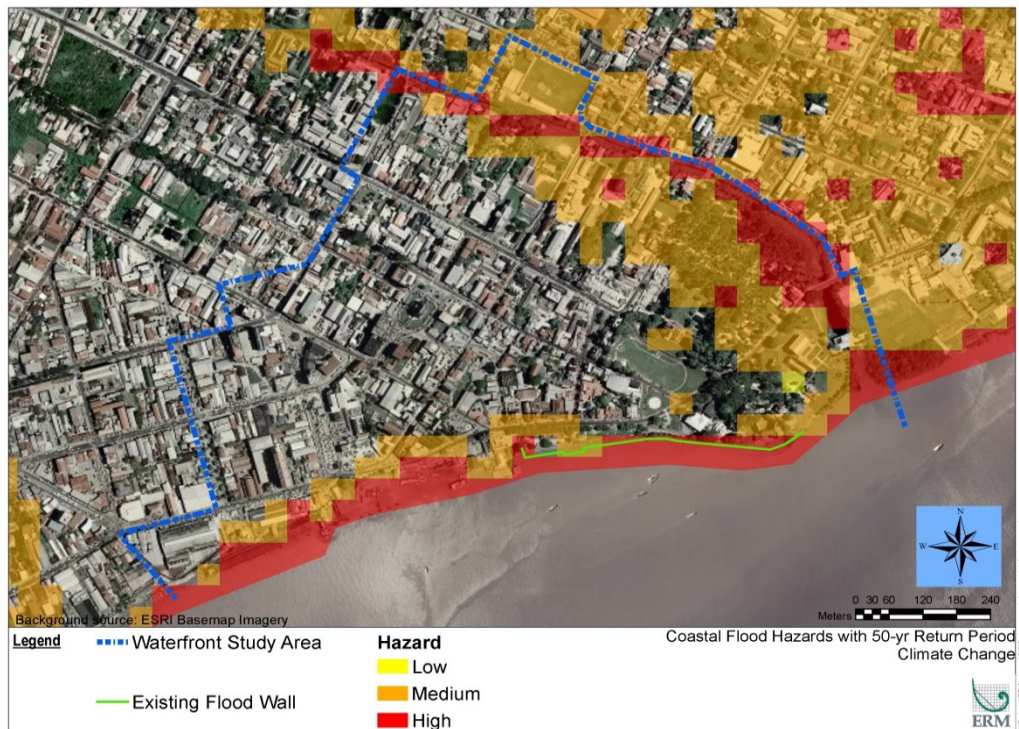


Figure 4-13: Coastal flooding hazard maps under existing land use and climate change (SLR +0.5 m) for 100-year return period

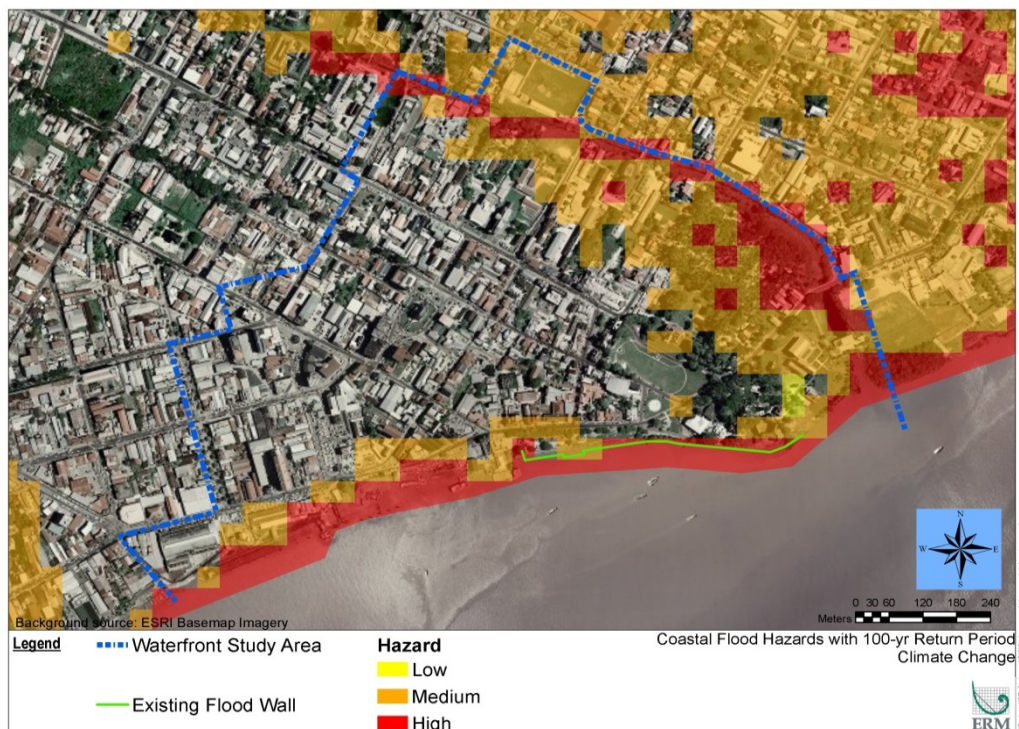


Figure 4-14: Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 10-year return period



Figure 4-15: Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 25-year return period



Figure 4-16: Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 50-year return period



Figure 4-10: Inland flooding hazard maps under existing land use and climate change (increase on intensity) for 100-year return period



Figure 4-11: Economic-based risk map under existing conditions for 10-year return period



Figure 4-12: Economic-based risk map with Climate Change for 10-year return period

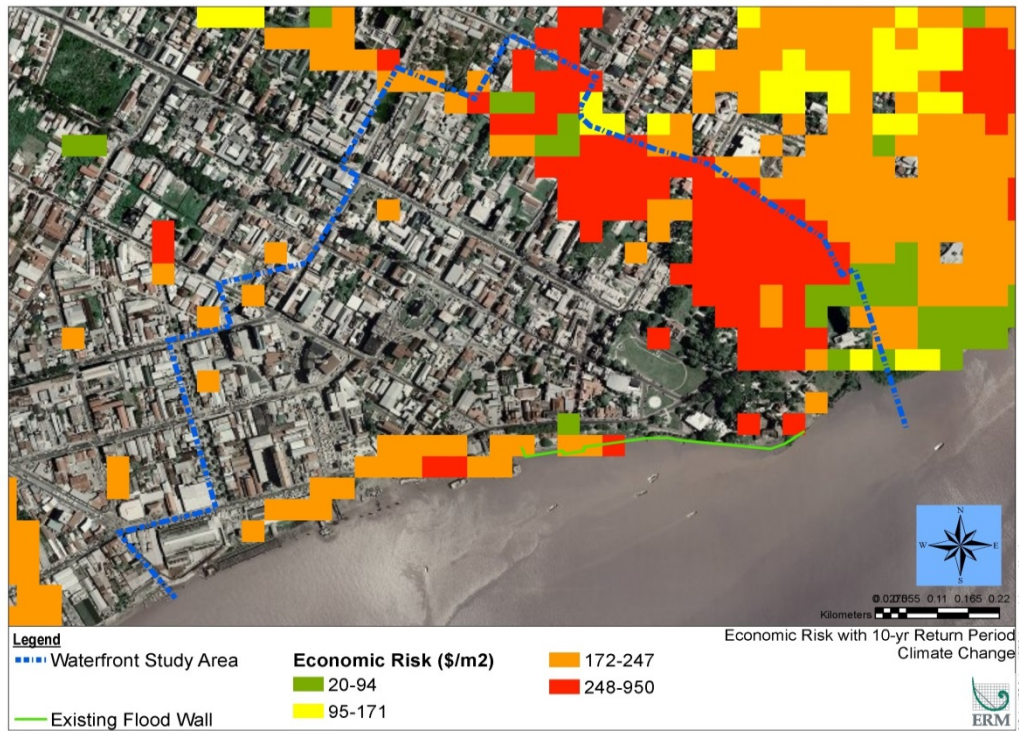


Figure 4-20: Economic-based risk map under existing conditions for 25-year return period



Figure 4-21: Economic-based risk map under with Climate Change for 25-year return period

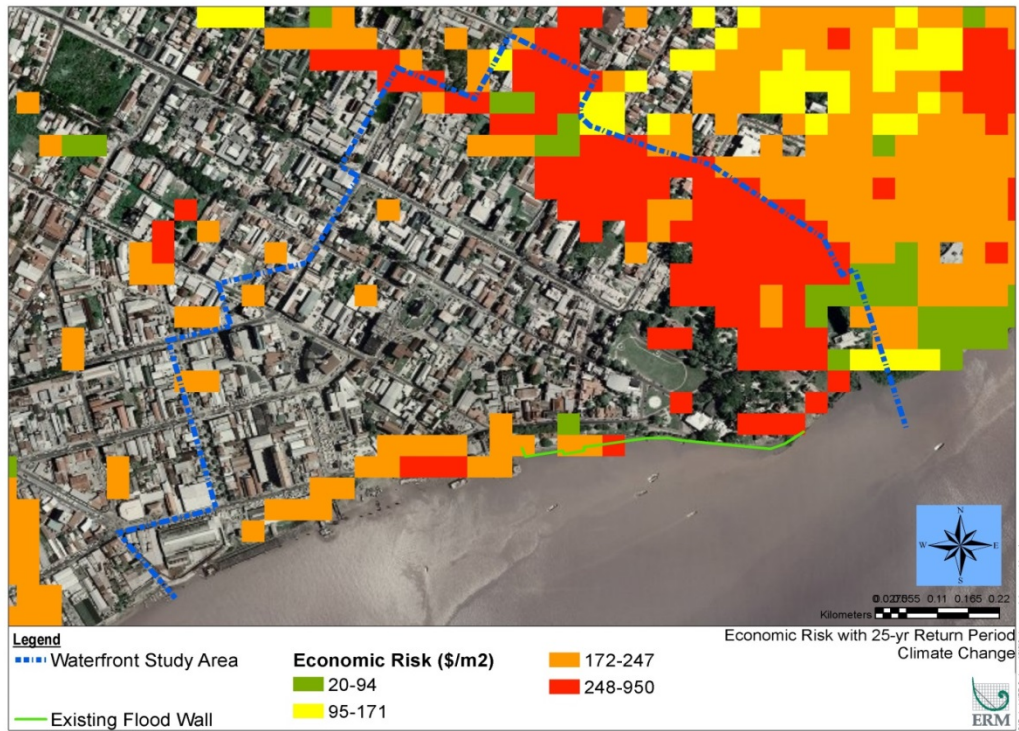


Figure 4-22: Economic-based risk map under existing conditions for 50-year return period



Figure 4-23: Economic-based risk map under with Climate Change for 50-year return period

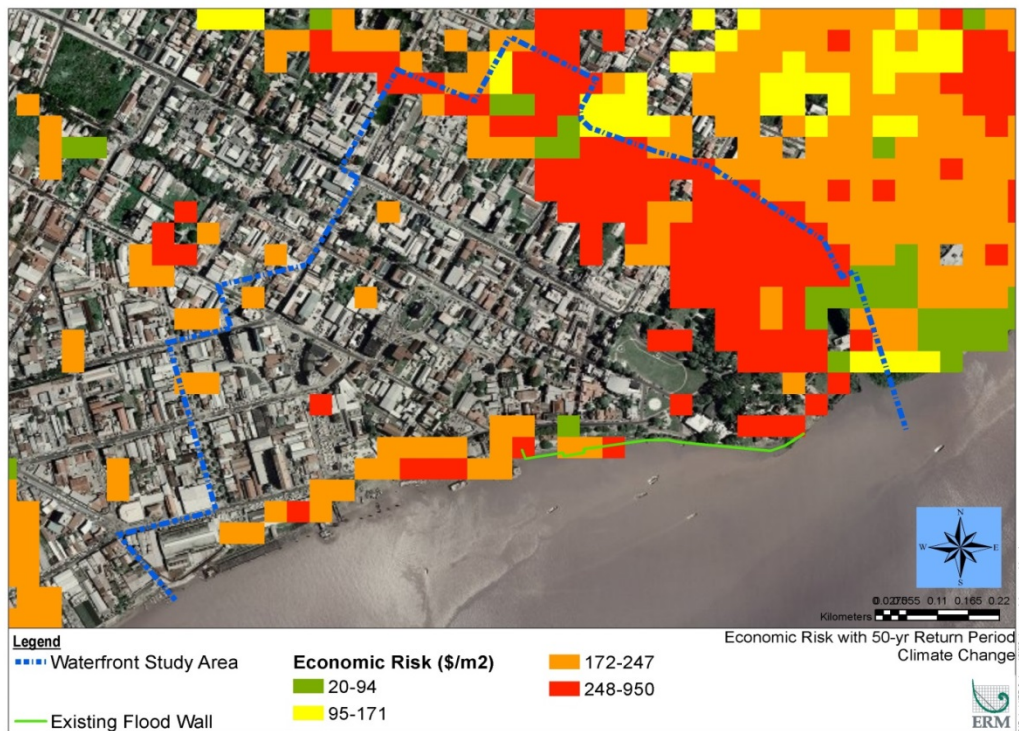


Figure 4-24: Economic-based risk map under existing conditions for 100-year return period

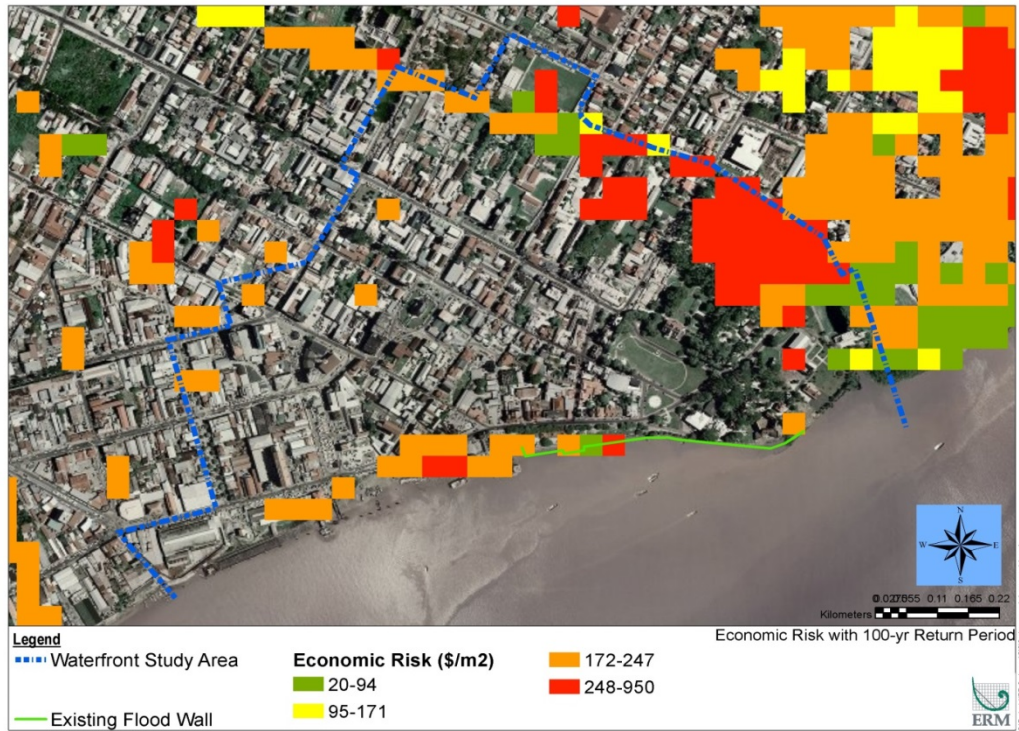


Figure 4-25: Economic-based risk map with Climate Change for 100-year return period

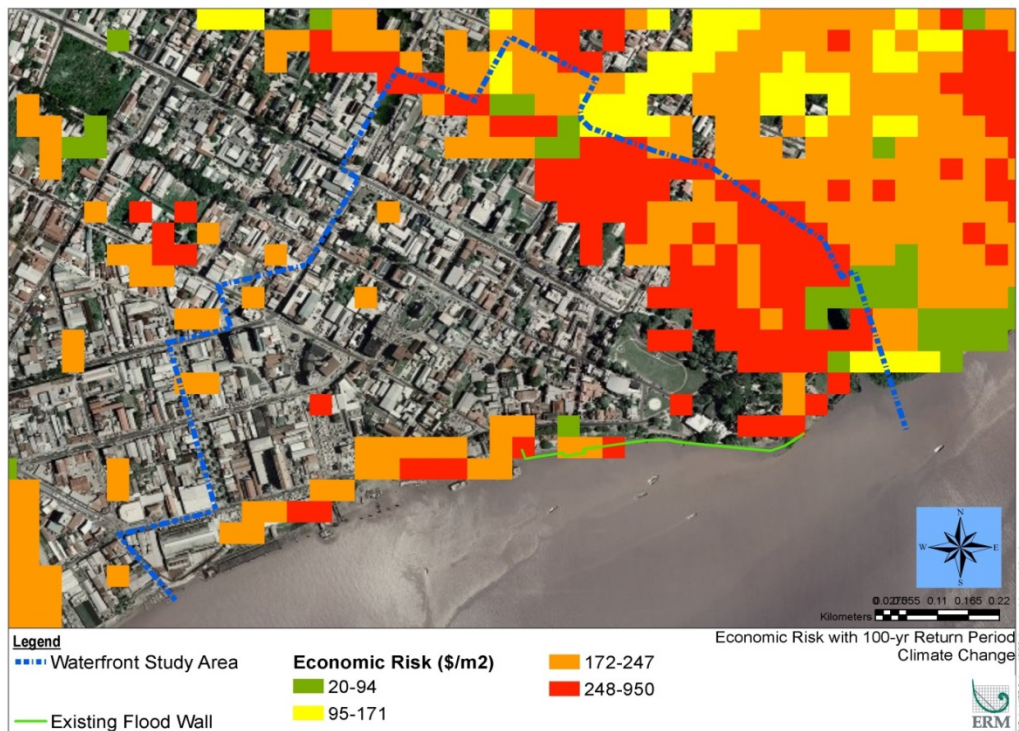


Figure 4-26: Population-based risk map under existing conditions for 10-year return period

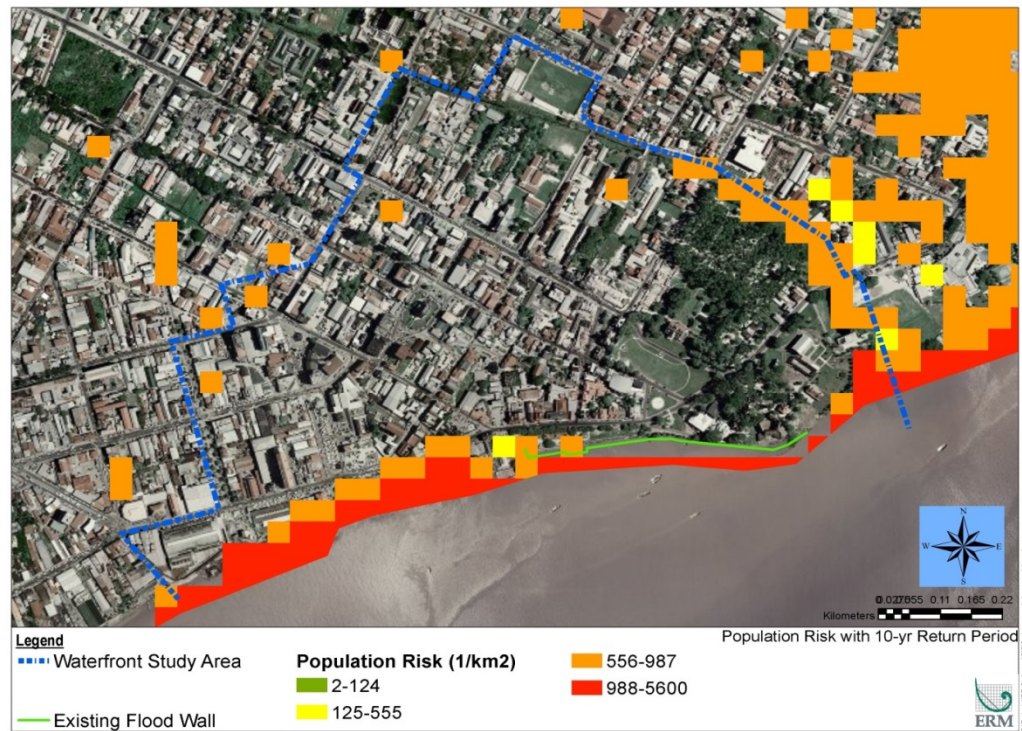
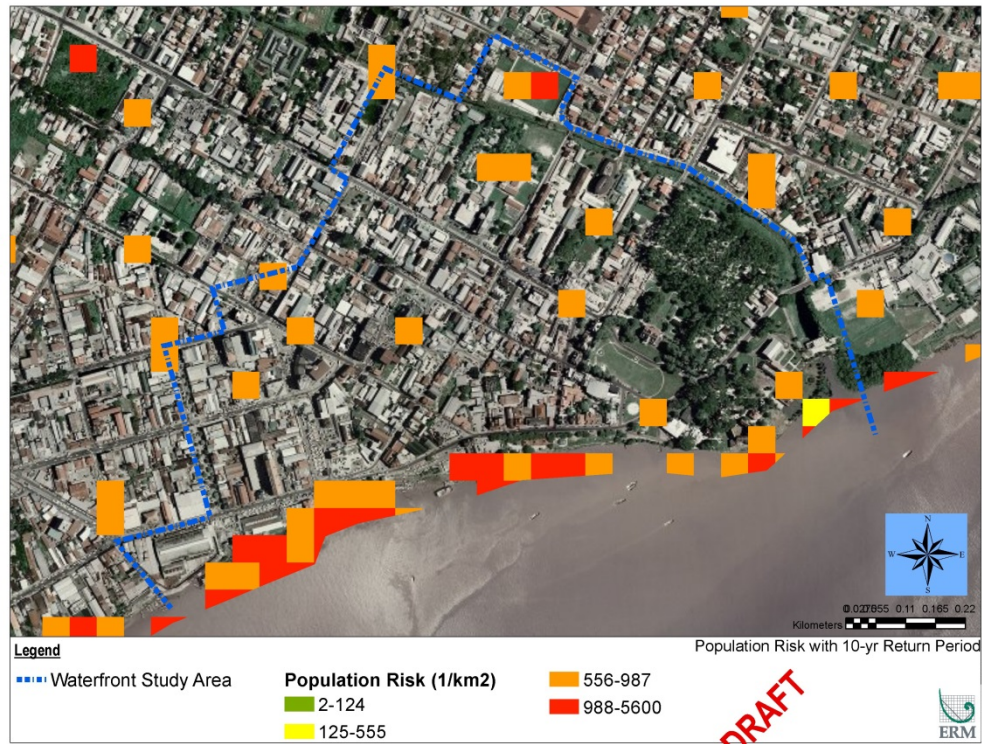


Figure 4-27: Population-based risk map under with Climate Change for 10-year return period

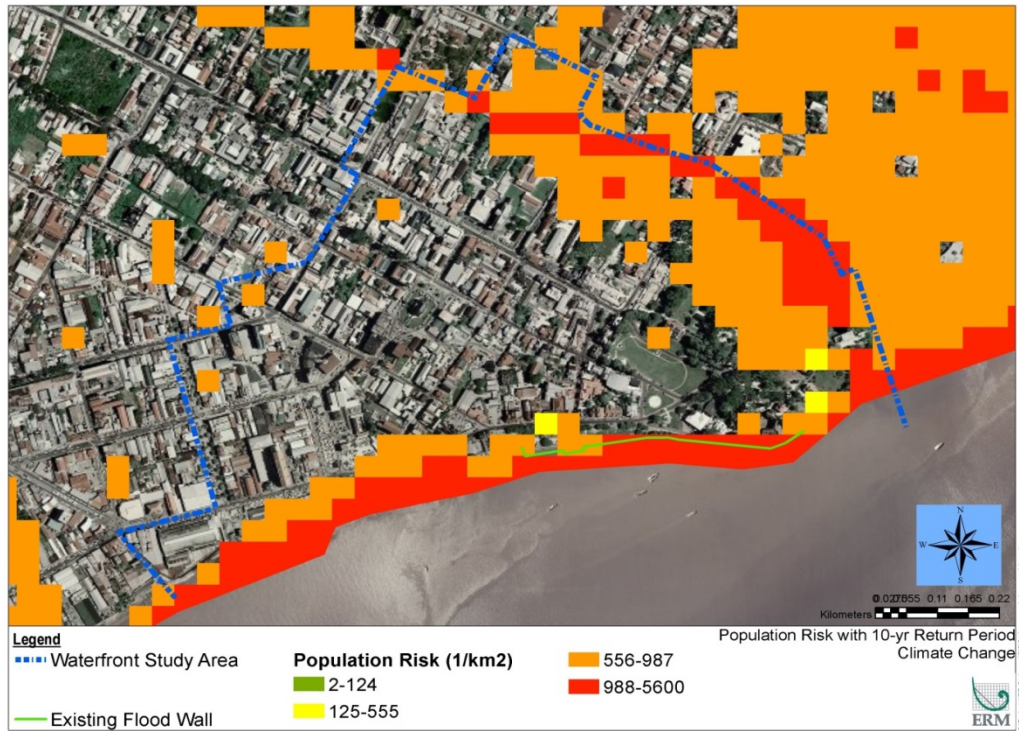


Figure 4-28: Population-based risk map under existing conditions for 25-year return period

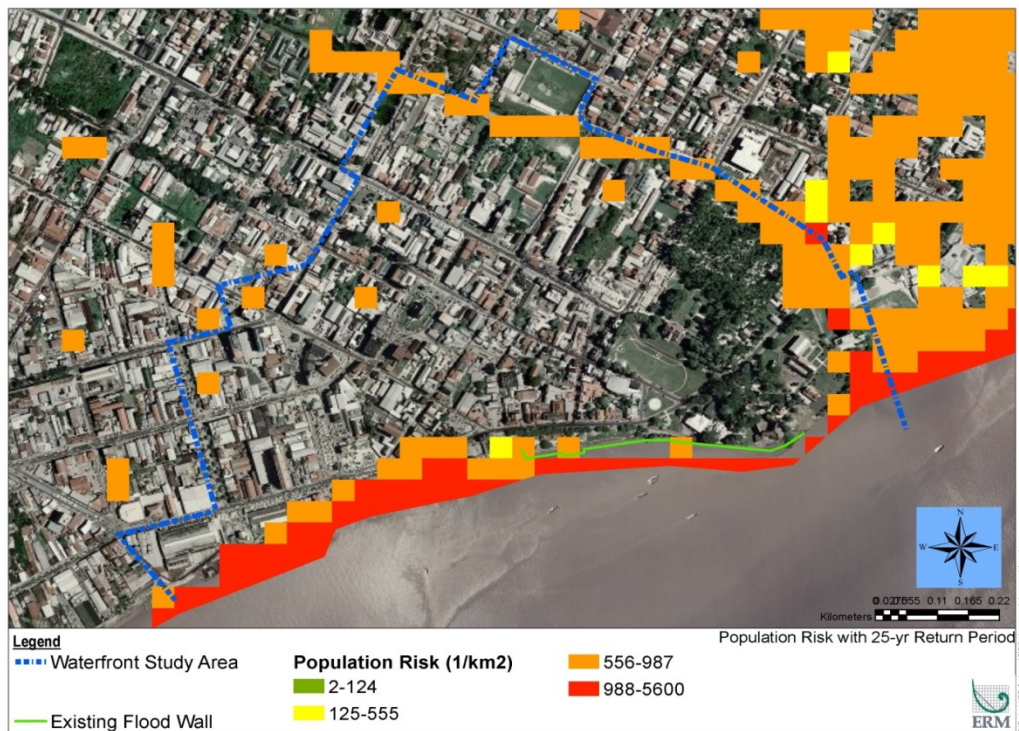


Figure 4-29: Population-based risk map under with Climate Change for 25-year return period

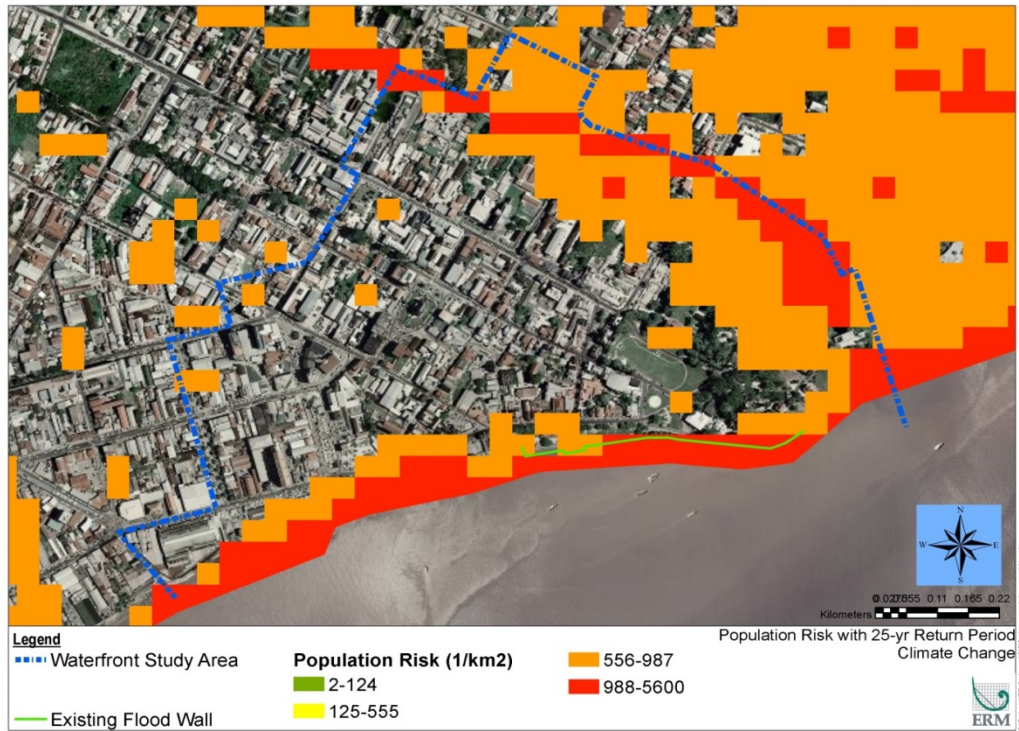


Figure 4-30: Population-based risk map under existing conditions for 50-year return period

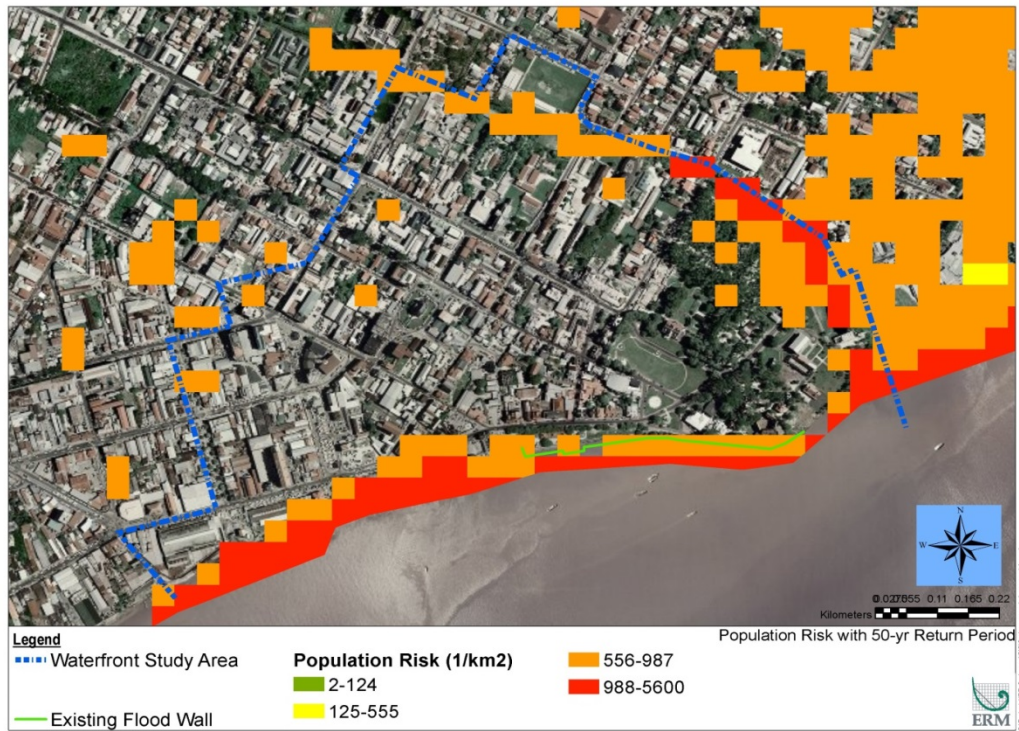


Figure 4-31: Population-based risk map under with Climate Change for 50-year return period

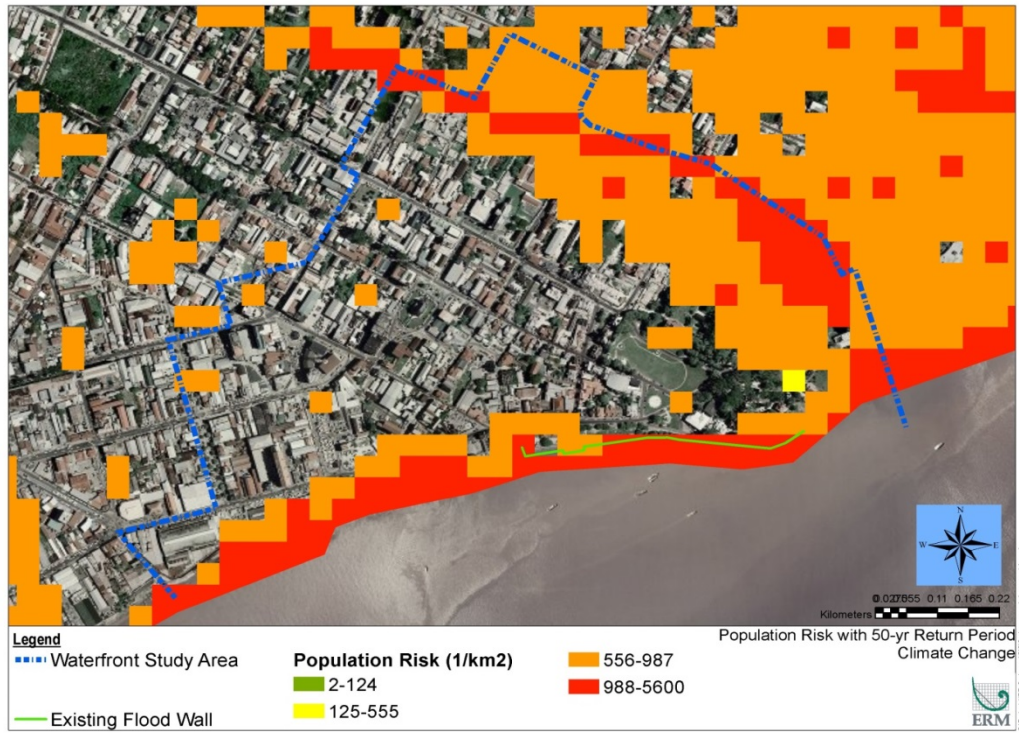


Figure 4-32: Population-based risk map under existing conditions for 100-year return period

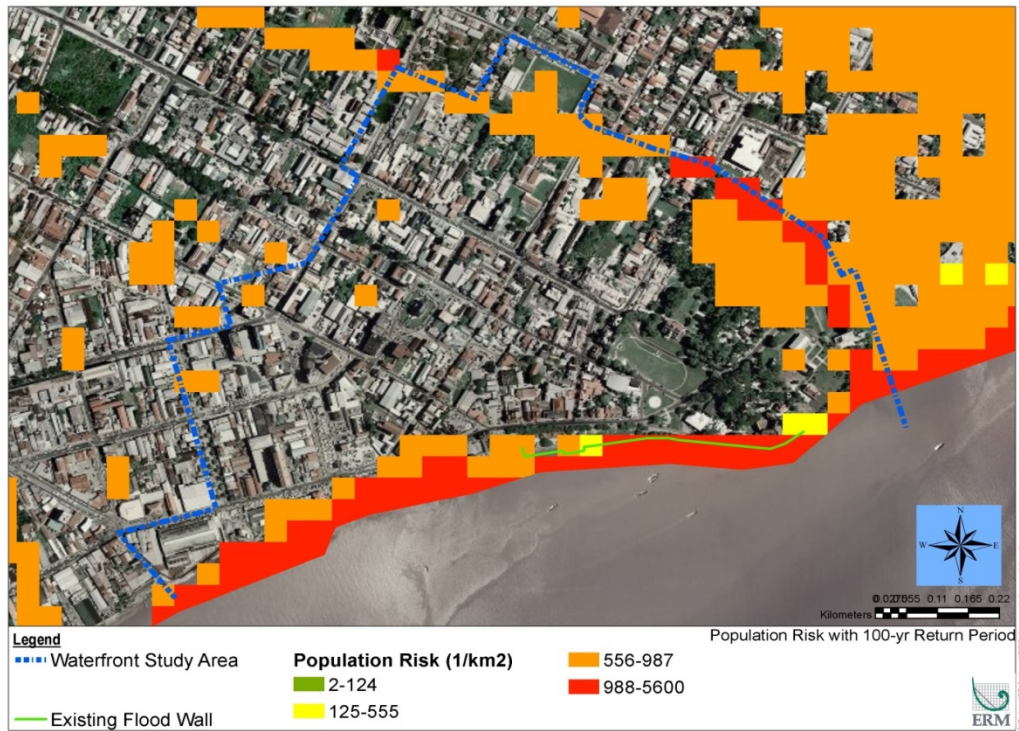
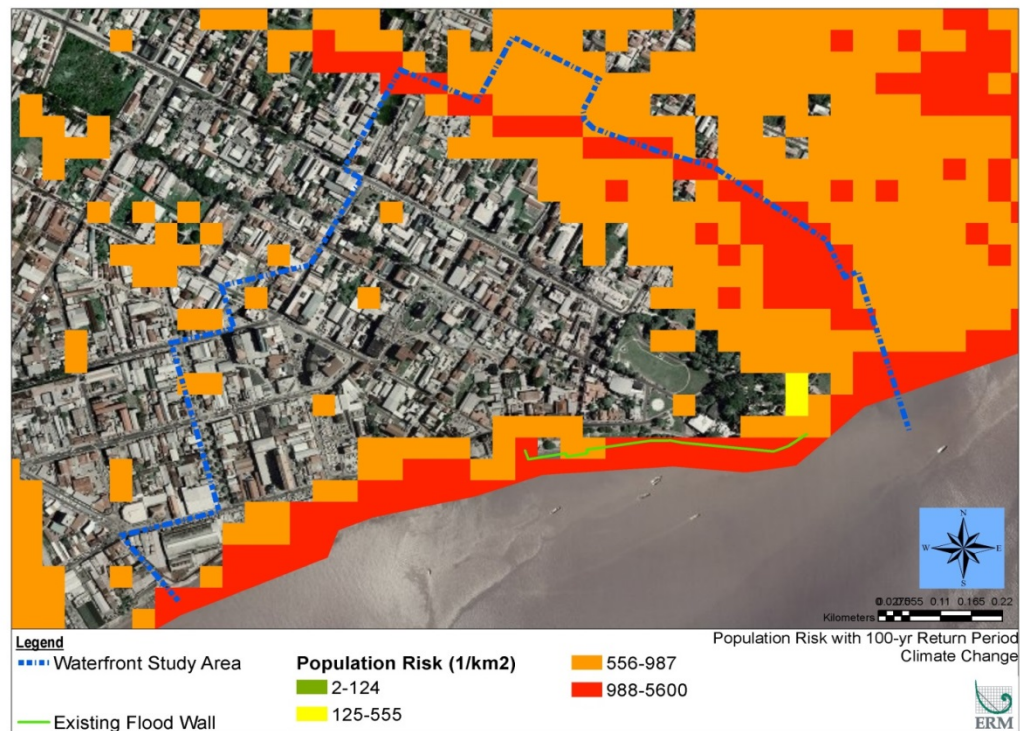


Figure 4-33: Population-based risk map with Climate Change for 100-year return period



In addition to flooding, the Program’s area of influence is exposed to erosion and salt intrusion natural hazards. If appropriate measures are not implemented, the Waterfront Program has the potential to exacerbate risks to human life, property, the environment, or the operation itself. These natural hazards (flooding and erosion) may pose risk to the investments made by the Bank, to the surrounding population and the environment. Details of the erosion and salt intrusion natural risks for the Program’s site are described in the following sections. Other natural risks may occur at regional level such as drought and extreme winds events but are not described in this study.

Riverine Erosion

Erosion takes place along the coastline and at some sections along the Suriname River. The main drivers for erosion at the Suriname River are floods from high tide; and human activities such as removal of mangrove areas and shipping. River bank erosion and deposition can have effects on navigation of the Suriname River and have impacts on residential areas and zones with light industry (Noordam, 2007). It can also cause damage and increase the vulnerability of waterfront property to storm surge, as well as threaten natural resources.

According to the River bank protection waterside Paramaribo, SMS pier project (Technische Programma van Eisen Oeverbescherming Waterkant te Paramaribo, SMS Pier-Knuffelsgracht) prepared by the Ministry of Public Works, the Suriname River’s left bank between Waterkant and Knuffelsgracht presents signs of erosion Figure 4-33 shows the location of cross sections along the Suriname River that are prone to river erosion and where the Suriname River’s bank protection waterside

Paramaribo, SMS pier project was conducted). The area represents bad conditions and protection measures are required to prevent further bank erosion, which causes instability and flood risk during high tide. General recommendations aimed to mitigate riverine erosion are described further in this document.

Figure 4-34: Suriname River Bank Protection Project



Source: Ministry of Public Works (published date not included)

Figure 4-35: Existing Barriers along the Left Bank of Suriname River



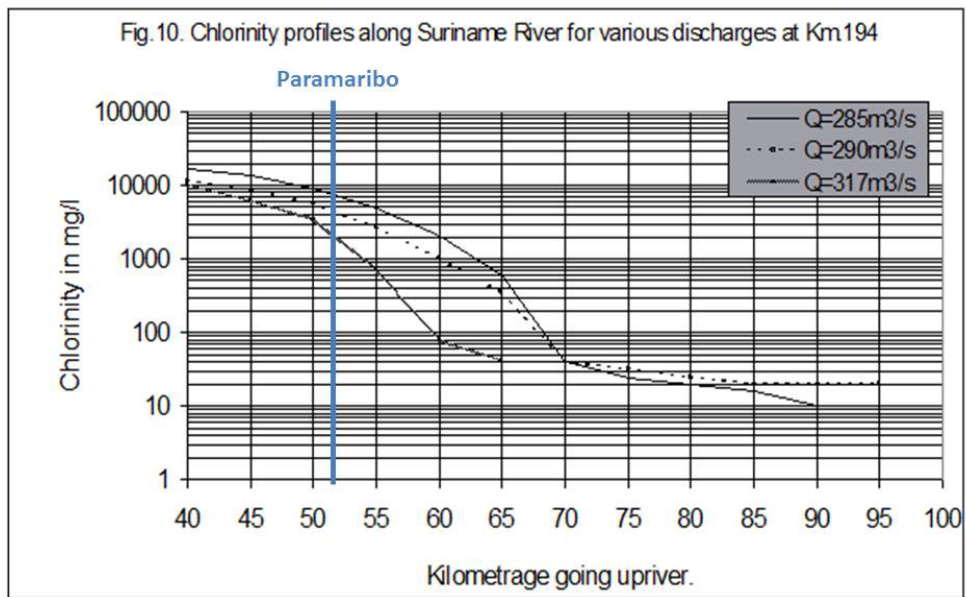
Source: ERM, 2016

Salt Intrusion

The Suriname River is considered one of the main freshwater sources in Suriname with a mean discharge at its mouth of approximately 426 cubic meters per second (m^3/s) and specific discharge of 25.8 liters per second per square kilometers ($\text{L}/\text{s}/\text{km}^2$). However, due to its tidal influence from the Atlantic Ocean and freshwater discharge from the Bokopondo Reservoir, the Suriname River near the Paramaribo urban area is not appropriate for drinking water purposes due to its brackish characteristics. The salt wedge (300 mg Cl⁻/L limit) along the Suriname River has historically identified near Domburg (approximately 10 km upstream of Paramaribo) during the dry season and near Doorsteek during the wet season (Amatali, 2007). Figure 4-35 shows the estimated location of the salt wedge along the Suriname River. The salt wedge can be further than Paramaribo (km 52) and reach Paranam at km 88 (Amatali and Naipal, 1999).

The levels of salinity along the Suriname River should be considered to decide the type of infrastructure or adaptation used and implemented for the Program. High levels of salinity can have the potential to damage and reduce the life of infrastructure such as roads and/or buildings. It can also impact vegetation around the riverbank. General recommendations to mitigate and prevent potential impacts associated with high levels of salinity in the Suriname River are summarized below in section 4.2.3 (Recommendations).

Figure 4-36: Chloride Concentrations along Suriname River for Different Discharges

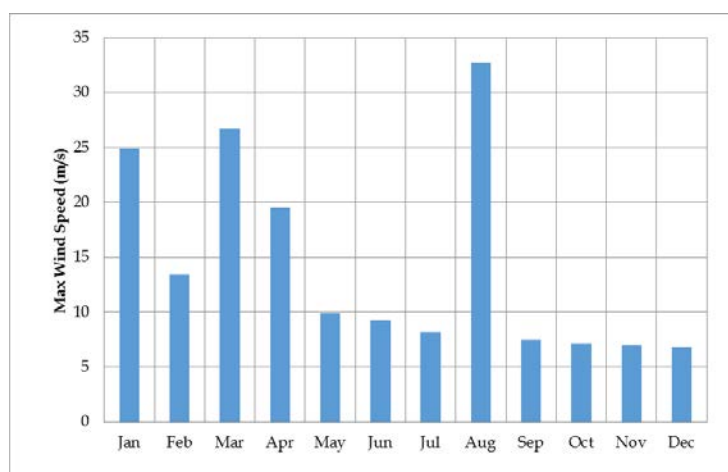


Source: Adapted from matali and Naipal, 1999

Extreme Wind

According to the Environment Statistics (2016) and conversations with local specialists (Sukarni Sallons Mitro, Meteorological Service Suriname, personal communication), Paramaribo has recently experienced severe weather conditions including high intensity wind or Sibibusies. These extreme wind conditions have caused partial destruction of Paramaribo's infrastructure. The Sibibusies occur during heavy rains and can present wind speeds between 20 meters per second (m/s) and 30 m/s. It is expected that with the projected increase in temperature, the energy in the atmosphere will increase as well as the maximum wind velocity (Amatali, 2008). Extreme winds have toppled trees, blown off roofs and snapped light poles. The National Coordination Center for Disaster Relief (NCCR) has provided help to people under extreme wind events at more than 35 places around Paramaribo (Hokstam, 2012). Figure 4-36 shows maximum wind speeds recorded at the Cultuurtuin Climatological Station for the last two years (February 2015 to August 2016).

Figure 4-37: Maximum Wind Speed (m/s) Recorded at Cultuurtuin Climatological Station for 2015-2016 Period



Source: ERM with data provided by Meteorological Service Suriname, 2016

4.3.3

Conclusion and Recommendations

The Program area is already prone to the natural risks described, and the Program is not anticipated to worsen or intensify the natural risks. The Program might however introduce more visitors and residents into the areas of higher risk, as well as bring new infrastructure and construction, thereby increasing the exposure profile. These negative impacts could be minimized, however, by the implementation of mitigation and adaptation measures developed in consultation with the relevant government and non-governmental stakeholders. Furthermore, residual impacts could be offset by implementing management measures that result in the positive impacts such as preventing floods and riverine erosion. It is therefore ERM's opinion that the Program could have a net positive impact on the area with respect to natural hazards.

The key to achieving a net positive impact will be the careful selection, combination and implementation of a series of adaptation measures that protect vulnerable areas, are cost-effective in their implementation, build resilience and confidently address the identified hazard, rather than just relocate it. For instance, flood protection should not create worse flooding downstream of the protected area. Based upon the analyses performed, ERM has identified the following program of adaptation measures, which is also shown in Figure 4-37; that it believes will ensure the Program area is resilient to natural hazards:

- i. **Physical Measures - Extension of Flood Protection Measures:** The major cause of identified flooding within the Program area is the inadequate design and extent of the existing flood wall on the Suriname River. The wall does not extend long enough and in parts is not high enough to protect against high water level events. The presence of the existing flood wall is also seen as controversial by some parties because it partially blocks views of the waterfront due to its height. ERM's focus has been to identify solutions that build upon the existing infrastructure and planning decisions to ensure an appropriate level of flood protection accounting not only for today's events, but also future events when considering climate change. Physical measures will be considered that fulfil the same functions as a traditional floodwall but with more sustainable and aesthetic design

considerations. These will address the need to consider the current inadequate height and extent offered by the existing flood wall. The solutions being considered will:

- Consider design options to maximize integration and usability within the context of the waterfront as a destination, such as use of viewing platforms and elevated walkways so that the solution becomes a feature rather than a barrier;
 - Install subtidal breakwaters and design flood protection topographies along the length of where protection is needed;
 - Integrating, where possible, green infrastructure measures into the solutions (see below);
 - Ensuring a full hydrological and sediment transport analysis of the Suriname River is performed that includes scour computations, geomorphic analysis and use of historical data regarding river movement. This will help determine the precise design parameters for any final solution and to also verify that it will not result in worsening of conditions downstream; and
 - A complementary environmental assessment may need to be performed for the final solution, in particular to manage potential biodiversity impacts associated with the river.
- ii. **Complementary Green Infrastructure Measures:** The flood solution as proposed in (i) could be enhanced and made more sympathetic with its setting and location by integrating green measures. In particular, reinforcement of the existing riprap streambank protection located along the left bank of the Suriname River should be considered using options such as vegetation and woody material for bank stabilization; pole plantings (or live stakes) and coir rolls.
- iii. **Drainage Maintenance and Upgrades:** The Paramaribo city area is served by an inland network of thirty five open and closed drainage canals and infrastructure. The canals can be characterized as mixed system because in addition to rainwater, they also receive discharges of domestic waste water (partially treated by septic tanks). The main drainage canal, that is part of the Program's area, discharges its waters to the Suriname River near the Kleine Water Street next to the Hotel Royal Torarica. Based on anecdotal comments, flooding within the Program area has been identified to be occurring through a combination of poor maintenance of the existing canal network (including waste deposition), lack of maintenance of outlet structures (sluices and pumping stations), unregulated development in areas intended to support drainage such as retention areas, and additional growth of the urban area meaning drainage infrastructure may be under-sized. ERM recommends that a localized drainage study and survey is performed for the catchment and network serving the Program area, and a maintenance and upgrade plan be developed.
- iv. **Management and Maintenance Measures:** A drainage and stormwater management plan should be prepared and implemented for the Program area which details the management and maintenance needs for the various measures described. This will need to include roles, responsibilities and frequency of actions. It will also need to consider potential training and capacity needs in support of the government entities who will be

responsible for this plan. This management plan must also be synchronized with existing and future urban development plans prepared for Paramaribo and stormwater management activities and plans (e.g., MOGP) conducted and prepared by the Minister of Public Works (Department of Hydraulics). For instance, the runoff capture within the Program's area should be conveyed directly to the Suriname River and/or to the drainage canal. These types of designs and activities should be coordinated together with current stormwater management activities conducted by the Minister of Public Work to avoid creating new flooding areas or worsen existing flooding areas.

- v. **Program Design Considerations:** The above described measures will all be key to the Program as it is developed further. In addition, the following recommendations should also be integrated as part of final design proposals:
- Consider the use of wet flood-proofing techniques, which refers to all construction materials and finishing materials that need to be water resistant;
 - Develop and implement a construction stormwater management plan to ensure during construction works all appropriate measures to protect against flooding and avoid pollution are in place;
 - Conduct a water quality monitoring campaign to measure salinity concentrations and other water quality parameters (e.g. nutrients and physiochemical) in the Suriname River. Results of salinity levels should be considered in the selection of construction materials, their maintenance, and selection of adaptation measures that will be used for the Program. For instance, if live vegetation is considered as a non-structural adaptation for riverine erosion, the vegetation should be resistant to salinity levels in the Suriname River. Results of water quality monitoring campaign will also serve to evaluate that construction activities associated to the Program are not producing changes on the Suriname River's water quality; and
 - Ensure appropriate extreme wind load building codes are met for the structures of the Program. This will lead to reduce vulnerability of new construction and avoid impacts on neighboring buildings. It is recommended that the Program's structures should be designed to resist extreme wind speeds with annual probability of exceedance of 1 in 100 years or greater. The criteria should be defined with the Minister of Public Works and by following the American Society of Civil Engineers (ASCE) and/or International Building Code (IBC) guidelines. Also, early warning systems and emergency preparedness plan should be implemented to prevent lives losses in case extreme winds events occur.

Figure 4-38: Location of Proposed Adaptation Measures for the Program



These measures would need to be supplemented by more detailed engineering design and further assessed by conducting cost-benefit analyses. Monitoring and reporting activities must be regularly conducted in order to verify that the implemented adaptation measures are achieving their objectives and/or if new adaptation measures are required.

4.4 HERITAGE

4.4.1 Baseline Conditions

The Program will include a series of Programs within the Historic Inner City of Paramaribo, which was inscribed as a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site on June 29, 2002. According to the nomination form, the site's inscription is based on the following two criteria, as stipulated in the Operational Guidelines for the Implementation of the World Heritage Convention, WHC 99/2, March 1999, paragraph 24:

- Criteria ii (Exhibit an important interchange of human values, within a cultural area of the world, on developments in architecture and town planning) – 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; and

- Criterion iv (Bear a unique or at least exceptional testimony to a cultural tradition, which has disappeared) – 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 in the 16th and 17th centuries.

According to the nomination form, there are seven “essential” listed monuments inside the site’s Designated Conservation Zone. These are:

1. Fort Zeelandia Area, which consists of Fort Zeelandia (operated as a museum), 4 former officer houses (used as office buildings), 2 former commander houses, a former guardhouse, a former military prison, and the ruins of “Gebouw 1790” (a former barrack);
2. Presidential Palace;
3. Ministry of Finance;
4. St. Petrus en Paulus (Roman Catholic Cathedral);
5. “Corner House”;
6. “De Waag” (1824); and
7. Reformed Church.

In addition, there are two “essential” listed monuments outside of the site’s Designated Conservation Zone but within Buffer Zones. These are:

1. Luthern Church; and
2. “Neve Shalom” Synagogue (Ashkenazi Jewish Community).

Based on a map in the nomination form, the Corner House and De Waag are the only essential listed monuments located within the Study Area (Figure 4-38).

Figure 4-39: Designated Conservation Zone (outlined, not shaded) and Buffer Zones (shaded) of the Historic Inner City of Paramaribo World Heritage Site.

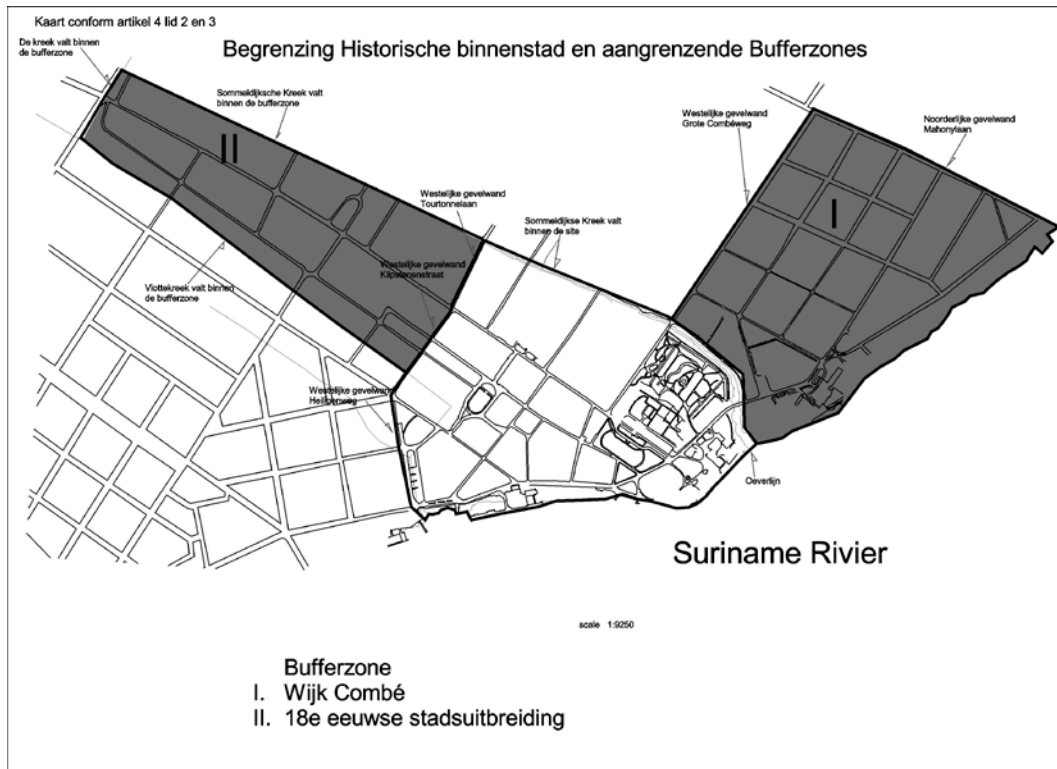
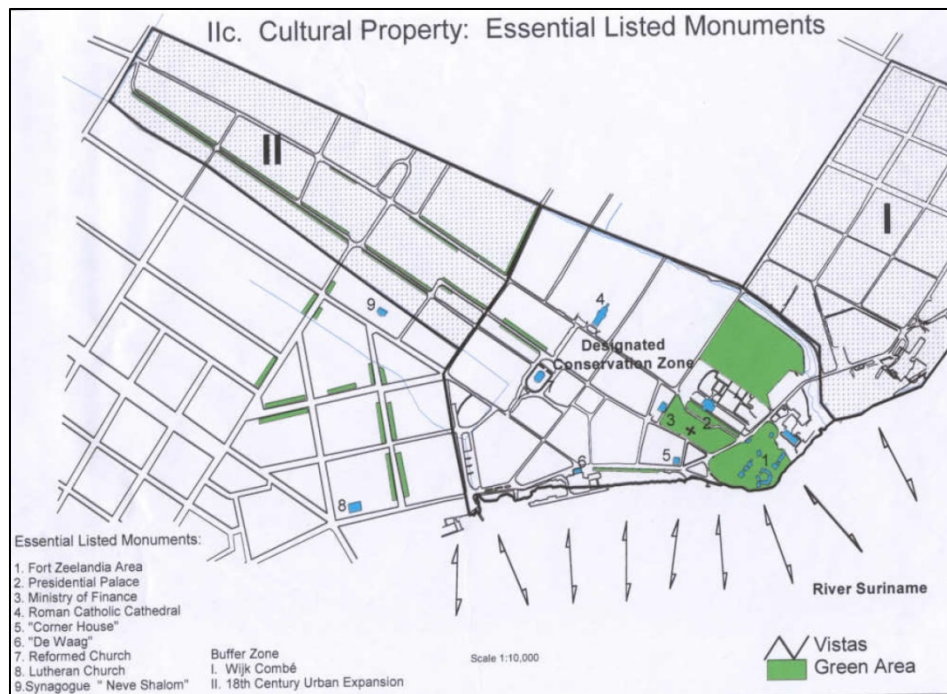


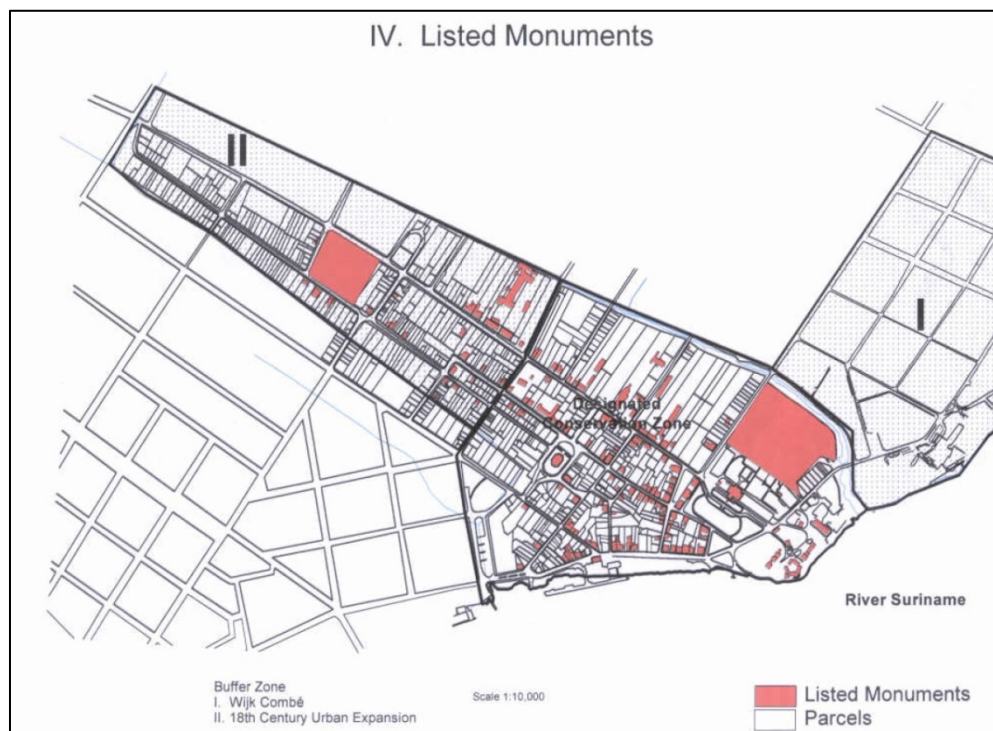
Figure 4-40: Essential Listed Monuments.



At the time of nomination, the World Heritage Site consisted of 244 formally protected monuments. Approximately 50% of these monuments are located within the Designated Conservation Zone, and approximately 15% are located in the two Buffer Zones. The Designated Conservation Zone and Buffer Zones comprise an area of approximately 90 hectares. Based on a map in the nomination form,

approximately 20 of the listed monuments are located within the Study Area (Figure 4-40).

Figure 4-41: Listed Monuments.



According to UNESCO's webpage on the Historic Inner City of Paramaribo (<http://whc.unesco.org/en/list/940>), there are currently 291 listed monuments in Paramaribo. Protection of approximately 250 of these monuments was initially guaranteed by the 1963 Monuments Act, which was replaced in 2002 by a new Monuments Bill (S.B. 5 September 2002 No. 72). The latter provides for the designation of protected historic quarters with controls over interventions and provision for subsidies to owners for conservation works. Additional monuments were added to the monuments list in 2007 (n=1), 2010 (n=1), and 2011 (n=25). It is unknown how many of these new listed monuments are located within the Study Area.

4.4.2 *Site Protection and Management*

The Historic Inner City of Paramaribo is protected by a State Resolution on the implementation of Article 4, Section 2 of the Building Code of 1956. This resolution was approved by the President of the Republic of Suriname in 2011 (S.B. 31 October 2011 No. 74). The resolution established an Expert Building Committee (Special Advisory Committee) to review new building plans within the site according to aesthetic criteria for modern architecture, which were published in the Gazette (Advertentieblad van de Republiek Suriname, A.R.S. 29 April 2003 No. 34).

A "Paramaribo World Heritage Site Management Plan (PWHSMP) 2011-2015" was officially endorsed by the UNESCO Council of Ministers on January 28, 2014. The Suriname Built Heritage Foundation (Stichting Gebouwd Erfgoed Suriname, or SGES) was formed to implement the PWHSMP. According to UNESCO's webpage, however, the SGES "has not been properly empowered with adequate staffing, the definition of precise actions, timelines and budgets. The authority of SGES as the

Site Manager needs to be reinforced through adequate regulatory and legislative measures and communicated to all government levels as well as to all stakeholders and the community.”

A Paramaribo Conservation Foundation (Stichting Stadsherstel Paramaribo) was established on October 25, 2011, which became the Paramaribo Conservation Ltd. (Stadsherstel Suriname N.V.) on May 25, 2013. This foundation purchases dilapidated historical monuments and restores them for reuse in order to preserve the historic character of the World Heritage Site. The foundation acquired their first property in January 2012, which has already been restored and re-let. Additional properties have since been purchased.

Heritage Site Status of Paramaribo has been under review by the International Council on Monuments and Sites (ICOMOS, on behalf of UNESCO) since 2012, when Suriname reportedly awarded a concession to a private sector firm for rehabilitation the waterfront without following UNESCO guidelines. Further, in June 2014, the World Heritage Committee (WHC) made a series of recommendations to the Government of Suriname to improve the management of the WHS, and to report back to UNESCO on the state of conservation and the implementation of measures to address its recommendations. The Government submitted an updated report to UNESCO December 2015. While it demonstrated advances in many areas, it also showed a number of critical actions that were pending including rehabilitation of state-owned monuments in urgent need of conservation; inexistence of a law that secures the role and position of the Management Authority; no advances in terms of legal instruments on heritage conservation and urban development; lack of budget for the implementation of the Paramaribo Management Plan; and traffic and parking control.

Regarding the Program proposal for the redevelopment of part of the Waterfront, the Ministry of Public Works underscored that no building permit had been granted to the private company that has the concession. At its 40th session, held in July 2016, the WHC once again examined the state of conservation of the property and recommended a series of actions to preserve the city’s historical site status. Specifically the WHC (i) commended the adoption of the PWHS Management Plan 2011-2015 and the Emergency Action Plan 2014; (ii) urged the strengthening of the Management Authority and the provision of funding for urgently needed conservation and restoration works at government-owned monumental buildings; (iii) expressed very serious concerns about the potential real-estate development at the waterfront and strongly urged the withdrawal of the licenses granted to a private company; (iv) requested an update on the state of conservation by the end of 2017 and (v) welcomed the initiative promoted by the IDB urban rehabilitation program, since this operation supports part of these measures and invites the government to seek the advice of the WHC and the Advisory Boards in its further design and implementation.

The concerns cited in the ICOMOS report should be evaluated independently in order to respond to appropriate UNESCO officials. Rehabilitation of the areas should take into account but should also balance them with the practical concerns that must also be addressed to create an economically viable site that supports modern uses.

4.4.3 *Potential Impacts*

According to the nomination form, factors currently affecting the Historic Inner City of Paramaribo include the following:

- Development pressures (i.e., urban renewal, especially the replacement of wooden buildings by concrete ones);
- Environmental pressures (e.g., building and sewer maintenance);
- Natural disasters (especially fires) and preparedness;
- Visitor/tourism pressures; and
- Number of inhabitants within the site.

Potential negative impacts from the Program include the following:

- Alteration of historic buildings that diminishes their historic characteristics and value to stakeholders;
- Reconstruction and/or construction of structures that may diminish the authenticity of the site, without due consultation with UNESCO and its advisory bodies;
- Construction of structures that diminish the view of or from historic buildings (i.e., visual impacts), and therefore their value to stakeholders; and
- Changes to the historic landscape that affect the context of individual historic buildings and/or the World Heritage Site as a whole, and thus their value to stakeholders.

While the Program has the potential to adversely affect the historic character or authenticity of individual listed monuments and/or the historic landscape as a whole, it is intended to mitigate many of the factors listed above that are already negatively impacting the site. It is also intended to positively impact the physical integrity of individual monuments. While completion of the Program without any negative impacts is an unrealistic goal as individual monuments and/or the historic landscapes will likely be affected (e.g., alteration of historic buildings in a way that adversely affects their historic character or authenticity, and changes to the urban landscape that affect the view of or from individual historic buildings), potential negative impacts could be minimized by the implementation of mitigation measures developed in consultation with cultural heritage stakeholders. These measures should include instituting measures to protect historic buildings from inadvertent damage, following standards for the restoration and/or rehabilitation of historic buildings that maintain their historic character or authenticity, and limiting visual impacts to individual historic buildings. Residual impacts could then be offset by implementing management measures that result in the positive impacts described above.

4.4.4 *Recommendations*

ERM recommends that the Borrower and the IDB undertake the following as part of the Program's development:

- Consult with the UNESCO World Heritage Committee and its Advisory Bodies (specifically ICOMOS), Expert Building Committee, Suriname Conservation Ltd., and other cultural heritage stakeholders to develop specific mitigation and management measures for Program activities that will involve the alteration, restoration, or rehabilitation of listed monuments,

including those located within the Designated Conservation Zone and Buffer Zones of the World Heritage Site. The final designs for restoration or new construction should be shared with UNESCO.

- Utilize national standards or internationally recognized standards, specifically the ICOMOS “International Charters for Conservation and Restoration” (www.icomos.org/charters/charters.pdf), for the restoration and/or rehabilitation of listed monuments. These standards include maintaining the historic character of buildings, maintaining the design, color, texture, visual qualities, and materials (when possible) of historic buildings, and avoiding physical treatments (e.g., sandblasting) that cause damage to historic materials.
- Avoid changes to the historic landscape of the World Heritage Site, such as building in spaces that have been historically open and/or green, or constructing structures that will visually impact listed monuments.
- Update the Paramaribo World Heritage Site Management Plan (PWH SMP) 2011-2015 and ensure adequate budget and personnel for its implementation.

4.5 OTHER POTENTIAL RISKS AND IMPACTS

In addition of the risks described in aforementioned sections, potential environmental and social impacts that may arise from Program-related activities are described below.

4.5.1 Traffic and Transportation

The centre of Paramaribo, including the Program area already suffers from heavy traffic conditions during peak hours and car parking issues. Traffic in the Program area is likely to increase during its activities, as materials for construction are transported in, construction vehicles mobilize, and as construction activities temporarily close road segment changing traffic patterns and concentrating vehicular traffic on alternative routes. This would increase the potential for traffic congestion and disruption.

These impacts could be minimized through the development and implementation of a Traffic Management Plan, which would include early notification of road closures, detour signage, and safety programs/ measures for pedestrians and bicyclists especially for the most vulnerable populations. Review parking and traffic management in an integrated manner to discourage car and motorcycle parking on sidewalks, as well as review public transportation systems and suggest accommodations/ improvement to bus routes, stops, and terminals.

4.5.2 Public and Pedestrian Spaces

Social tension and safety concerns exist in the downtown area due to pedestrian insecurity created by heavy traffic which can limit pedestrian movements across busy thoroughfares. The Program activities may further exasperate these issues, which in turn could hinder access to public and community facilities.

These impacts could be avoided or minimized by developing and implementing an Access Management Plan, which would maintain continuous access for critical community facilities for pedestrians and even vehicles if necessary through careful staging and sequencing of construction activities.

4.5.3 *Air Quality*

Air pollution concerns have been raised by stakeholders, especially in the center of Paramaribo at peak hours, due to traffic congestion, the poor conditions of cars, trucks and buses and inadequate waste collection (which leads to burning and dumping of solid waste). There is no current air quality monitoring program for Paramaribo, so the exact status of air pollution is not known. The Program, especially during construction, could further degrade local air quality through emissions from construction equipment, such as plant, equipment and vehicles. These impacts would be short term and minor relative to other vehicular emissions in the Program area.

These impacts cannot be avoided, but can be minimized by ensuring construction vehicles are properly maintained and imposing limits on idling. Ground disturbing construction activities would generate fugitive dust during dry periods. Fugitive dust can typically be mitigated to minor or negligible levels through dust suppression with water spray trucks.

4.5.4 *Noise*

Construction area noise and vibration is dominated by heavy equipment use. Noise generated by the Program may have a large impact on receptors (people) near the active areas.

Noise impacts are likely to be unavoidable, but can be minimized by limiting the hours of construction (e.g., not working near any noise-sensitive receptors at night) and limiting construction vehicle idling (which, as noted above, will also reduce air emissions). Implementation of these measures, especially avoiding any construction at night (e.g., 10 p.m. to 6 a.m.), should minimize noise impacts on people.

4.5.5 *Biodiversity*

ERM has not performed an assessment of potential biodiversity impacts given the current urban focus of the Program. If however the evolving plans involve the potential for biodiversity impacts, such as the felling of trees or dredging/construction within the Paramaribo River, appropriate levels of assessment will be required to be undertaken.

Based on information and analysis provided by the IDB, the historical center urban management falls under the responsibility of several agencies. Municipal affairs are handled by the National government, through the action of the different ministries. The most important ministry for the purposes of spatial, land use, and other affairs of the built setting is Public Works. The protection of this historical center is responsibility of the Ministry of Education, Science and Culture (MEC), particularly through the Suriname Built Heritage Foundation (SBHF). The Ministry of Transports, Communication and Tourism is responsible for the regulation and management of the public transport sector and for the policy development and monitoring of tourism. The Ministry of Regional Planning, in charge of overall national planning, appoints the 2 District Commissioners of Paramaribo. There are also local stakeholders involved, including diverse array of Community Based Organizations and Non-Governmental Organization.

This current institutional structure in Suriname seems to be broadly disconnected, hinders the agreement on a common vision for the historic center, affects the quality of public services and implies conflicting operational goals for these agencies.

The establishment and strengthening of a committee/institution in charge of the development, management, implementation and monitoring of the Program “Management Plan for the Preservation of the Area” is a key instrument to guide the historic center’s revitalization process in a sustainable manner. The involvement of this main committee/institution will include technical training, consulting services and a project management system, as well as the update of the Paramaribo World Heritage Site Management Plan, raising public awareness about the historic center’s cultural heritage. Additionally, an Environmental and Social Impact Assessment and mitigation plans for construction works and urban interventions, ought to be implemented.

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

6.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

The Borrower will develop an Environmental and Social Management System (ESMS) to supplement the Program's other management plans. This system will identify potential impacts of the Program and, in turn, describe steps for the mitigation, management, monitoring and assessment measures (Table 6-1) for the potential impacts identified in Chapter 4 and 5.

Table 6-1 Proposed ESHS management measures and monitoring programs

Topic	Potential Impact	Phase	Mitigation and management measures	Execution responsibility	Verification (as necessary)	Monitoring and Reporting
Climate	Air Quality	Construction	Ensure construction vehicles and equipment are properly maintained. Limit idling for construction vehicles. Use water spray trucks for dust suppression.	Construction Contractor	Site Inspection by a third party	Daily inspection reports and corrective action directives
	Bank Erosion	Construction	Use water spray trucks for dust suppression. Limit idling for construction vehicles and equipment	Construction Contractor	Site Inspection by a third party	Daily inspection reports and corrective action directives
Noise	Noise vibration	Construction	Identify if any noise sensitive receptors in the Program area (i.e. bird species, etc.) and develop an action plan if identified near site. Limit idling of construction vehicles and equipment	Construction Contractor	Site Inspection by a third party	Daily inspection reports and corrective action directives
Land Use and Urban Planning	Land development	Construction/ Operation	Develop a revitalization and urbanization plan that fits the urban fabric and enhances the value of the city.	SGES	Building Committee/SGES	Annual Inspection and corrective actions
Transportation	Traffic Circulation, parking	Construction/ Operation	Develop a Traffic Management Plan for the Program Area. The plan may include methods for notification due to road closure, measures to limit congestion and parking. Review public transportation systems and provide recommendations /improvement for us routes, stops and terminals.	Construction Contractor/ Ministry of Transport		Monthly inspection and corrective active directives
Public Spaces	Social and Safety	Construction/ Operation	Implement an access management plan that maintains spaces for critical community, facilities for pedestrians and vehicles through careful construction activities.	Construction Contractor		Monthly inspection reports and corrective action directives
Solid Waste	Waste Generation	Construction	Recover waste material from the Program site and dispose appropriately.	Construction Contractor	Site Inspection by a third party	Daily inspection reports and corrective action directives

Cultural Heritage	Built Heritage	Construction/Operation	Consult with UNESCO, SGES, and Expert Building Committee to develop management and mitigation measures for Program activities that may involve demolition, alteration, restoration. Utilize national and international recognized standards for restoration/rehabilitation of listed monuments.	Construction Contractor	SGES, Building Committee	Develop monitoring plan specific to Program activities.
-------------------	----------------	------------------------	---	-------------------------	--------------------------	---

6.2 **PRELIMINARY PLAN FOR LIVELIHOOD RESTORATION**

6.2.1 *Overview*

Based on ERM's assessment of the loss of livelihoods in Section 4.1, a Livelihood Restoration Plan (LRP) has been developed in accordance with international best practice, including the IDB's Involuntary Resettlement Policy (OP-710).

The Plan identifies two types of livelihoods that will be affected: wage-based and enterprise-based livelihoods. Construction and infrastructure Programs tend to create conditions which change these livelihoods, either directly or indirectly, permanently or temporarily. In some cases change can be beneficial (e.g., creating new employment opportunities for wage-based livelihoods or new access to markets for enterprise-based livelihoods), but in some cases the change can be adverse (e.g. relocation of businesses or temporary closure affecting access to customer base). The subsets and individuals within the Historical Center of Paramaribo who might be adversely impacted by the Program include, but is not limited to:

- Well-established businesses with store fronts;
- Street vendors – most of which are indigenous;
- The bus station;
- Commuter boat owners and employees;
- Tourists; and
- Area residents.

These entities and individuals will likely only be affected temporarily by the Program as a result of construction. The LRP will interact directly with the Stakeholder Engagement Plan.

6.2.2 *Objective*

The LRP describes the measures that have been established and will be used by the Program in order to avoid, and when avoidance is not possible, minimize, adverse social and economic impacts from Program by (i) providing compensation for loss of assets and (ii) ensuring that activities are implemented with the appropriate disclosure of information, consultation and informed participation of those affected.

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

- **Involuntary resettlement** - refers to both physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood as a result of Program-related land acquisition and/or restrictions on land use.)
- **Livelihood** - the full range of means that individuals, families and communities utilize to make a living, including wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods; and
- **Land acquisition** - includes both outright purchases of property and acquisition of access rights such as easements or rights of way.

- **Affected parties** – the land holder or user of affected land parcels, business or services and residents that may be affected by the Program.

6.2.3 *Identification Process*

ERM undertook specific actions to identify the degree and extent of the Program’s economic displacement on subsets and individuals. These actions include:

- Identifying persons to be economically displaced and those eligible for compensation and assistance;
- Identifying the status of economically displaced persons according to their legal rights or claim to land; and
- Engaging with affected persons and determining adequate compensation.

The results of the survey indicate that the Program area is very diverse. The economic activities are also varied in terms of business volume and income generation.

Poor women working on the waterfront, such as the indigenous women working in the craft stand are most vulnerable, they have limited resources to address or mitigate the Program’s impacts.. The number of enterprises with low turnover and low income levels is quite high, hence during Program planning, consideration should be given to their ability to commercially survive..

6.2.4 *Plan Principles*

The principles underlying the Livelihood Restoration Plan will be to ensure measures such as the following are integrated:

- 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 displaced with the equivalent of lost income;
- Immediately restoring capacity for existing livelihoods; and
- Introducing those displaced to alternative livelihoods (if impacts are permanent).

Note that a critical component of any livelihood restoration plan is the stakeholder engagement and grievance processes, which are outlined below.

6.2.5 *Eligibility and Entitlements*

In the context of the LRP, ‘entitlement’ is a term introduced as an organizing concept for how compensation is assigned to individuals, and what type of compensation they receive. The process begins by linking an array of affected assets and economic activities to an affected interest or legal right, then to a potentially affected party who is deemed ‘eligible’ or not according to specific conditions. If qualified, the affected party is then a candidate and considered ‘entitled’ to an appropriate compensation package.

All Program-affected persons will be entitled to a combination of compensation measures and livelihood assistance, depending on the nature of ownership rights of lost assets and scope of the impact, including social and economic vulnerability of the affected persons. In general terms, the affected persons in the Program will be entitled to one or more of the following types of compensation and assistance:

- Assistance for loss of business/wage income;
- Development assistance such as training and business development support services, especially for vulnerable groups.

Table 4.2 has provided a summary of the assessment of those that may be eligible for compensation. Based on this, the following preliminary Entitlement Matrix has been prepared (Table 4.3).

Table 6-2 Entitlement Matrix

Entitled Party	Name & Address	Description	Eligibility Criteria	Socio-economic vulnerability to Program	Proposed compensation structure and mechanism
<i>Area I Waterkant North</i>					
Business owner with title rights		Mineral sector - corporate office	Operate a business / trade in the Program-affected area	Low - is not reliant upon passing trade and local activities	None - not expected to be adversely affected
Business owner with title rights		Hotel	Operate a business / trade in the Program-affected area	Low - the hotel is already suffering very low occupancy. The Program may actually benefit the hotel	None - not expected to be adversely affected
N/A		Vacant	N/A based on vacant status	N/A based on vacant status	N/A
Business owner with title rights		Cambio	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
Business owner operating in public land		Parking		Low	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
Business owner operating in public land		River transport	Operate a business / trade in the Program-affected area	Low	None - not expected to be adversely affected, although this will need to be revisited once although this will need to be revisited once construction schedule is known
Business owner with title rights		Casino	Operate a business / trade in the Program-affected area	Low	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
Business owner with title rights		Parking free	Operate a business / trade in the Program-affected area	Low	None - not expected to be adversely affected, although this will need to be revisited once construction and potential road closure schedules are known
Business owner with title rights		Store jewelry	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Medical doctor	Operate a business / trade in the Program-affected area	Low-is not reliant upon passing trade and local activities	None
<i>Area II Waterkant South</i>					

Business owner (rental)		Craft stands (20) - those stands that were operating regularly	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	This assessment applies to the 20 stands that were operating on a regular basis during the survey (see line item below). Most vendors are one-person enterprises (eenmanszaak) and are owner operated. Some stand owners work together with their spouse or with an immediate relative (sister, niece), however the precise arrangements for each stand could not be established. The number of affected people could be between 20 to 35. Compensation should comprise: <ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Potential business owner (rental)		Craft stands (22) - the stands that were not operating during the survey	Potentially operate a business / trade in the Program-affected area	Potentially high - very reliant on passing trade which could be affected by the Program works	Approximately 22 of the 42 craft stalls/stands were vacant and not in use at the time of the survey. As the Program details and dates are finalized, these craft stalls/stands will need to be revisited in case additional businesses are present.
Business owner (rental)		Bar	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Business owner (rental)		Bar	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.

Business owner (rental)		Restaurants (8)	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	Number of employees vary across stands from 1-2 persons. Main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Relocate and/or provide temporary location – main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Business owner (rental)		Sanitation		High -reliant on pedestrians into the area	<ul style="list-style-type: none"> - Relocate and/or provide temporary location – main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Business owner (rental)		Store (5)	Operate a business / trade in the Program-affected area	High	Number of employees not disclosed as family run business with relatives assisting as needed. Compensation should comprise: <ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities.
Business owner (rental)		Restaurant	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Relocate and/or provide temporary location – main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Business owner (rental)		Tour agent	Operate a business / trade in the Program-affected area	High - tours may be temporarily interrupted during Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities.

Business owner with use right		Bar & Restaurant	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Business owner with use right		Bar & Restaurant	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Public -Private service		Bus service (55)	Operate a business / trade in the Program-affected area	High - reliant on people gaining access to them, which could be affected by the Program works	Typically two employees per bus (driver and fare collector). <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Business owner operating in public land		Canoe service (34)	Operate a business / trade in the Program-affected area	High - reliant on people gaining access to them, which could be affected by the Program works	Principally sole-owner operators. <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition.
Area III Heiligenweg					
Business owner with title rights		Gold shop	Operate a business / trade in the Program-affected area	Low - is reliant on passing trade, but not as vulnerable as other traders	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities

Business owner (rental)		Snack bar	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Snack bar	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise: <ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Jewelry	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Clothing	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Clothing	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Clothing	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store clothing	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities

Business owner (rental)		Snack bar	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Jewelry	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store General merchandise	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Music clothing	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Jewelry	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Snack bar	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<p>Did not disclose number of employees as it varies based on season and business, but main priority was to protect existing customer base. Compensation should comprise:</p> <ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Jewelry	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities

Business owner (rental)		Store General Merchandise	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Jewelry	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store Clothing	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Store General merchandise	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Public -Private service		Bank	Operate a business / trade in the Program-affected area	Low	None
Public -Private service		Bus services (173)	Operate a business / trade in the Program-affected area	High - reliant on people gaining access to them, which could be affected by the Program works	<p>Typically two employees per bus (driver and fare collector).</p> <ul style="list-style-type: none"> - Relocate and/or provide temporary location - main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition
Business owner (private)		Parking private	Operate a business / trade in the Program-affected area	Low	None
Business owner (rental)		Salon hair & nails	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities

Business owner (rental)		Snack bar	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner (rental)		Snack bar	Operate a business / trade in the Program-affected area	High - very reliant on passing trade which could be affected by the Program works	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Area IV Watermolenstraat					
Business owner with title rights		Bar & snack; residence	Operate a business / trade in the Program-affected area	Medium	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner with title rights		Medical pharm.	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Business owner with title rights		Medical doctor	Operate a business / trade in the Program-affected area	Low -is not reliant upon passing trade and local activities	None
Business owner with title rights		Medical lab	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Business owner with title rights		Bar (upper level vacant)		High - reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Relocate and/or provide temporary location – main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition
Business owner with title rights		Bar (upper level vacant)	Operate a business / trade in the Program-affected area	High - reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Relocate and/or provide temporary location – main concern is to protect customer base - Cost of reestablishing commercial activities elsewhere. - Cash compensation of temporary loss of net income during the period of transition
Business owner with title rights		Hotel residence 6 persons	Operate a business / trade in the Program-affected area	High -reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities

Business owner with title rights		Hotel sex (no utilities)	Operate a business / trade in the Program-affected area	High -reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner with title rights		Parking		Low	None
Business owner with title rights		Store General Merchandise	Operate a business / trade in the Program-affected area	Medium -reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner with title rights		Store clothing	Operate a business / trade in the Program-affected area	Low	None
Area V & VII Keizerstraat South and North					
Business owner with title rights		Store General merchandise	Operate a business / trade in the Program-affected area	Medium- reliant on existing customer base and passing trade	<ul style="list-style-type: none"> - Financial compensation of any loss of income incurred as a direct result of the Program until business is restored or alternative income is secured - Development opportunities
Business owner with title rights		Legal services	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Business owner with title rights		Architect	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Business owner with title rights		Salon Hair	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store home furnishing	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store clothing		Low	None
Business owner with title rights		Store General merchandise		Low	None
Business owner with title rights		Office	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None

Business owner with title rights		Store clothing textiles	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store electronics	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store clothing	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Media newspaper	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Business owner with title rights		Store music	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Snack bar	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Legal notary	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Business owner with title rights		Warehouse	Operate a business / trade in the Program-affected area	Low- is not reliant upon passing trade and local activities	None
Public -Private service		Lottery	Operate a business / trade in the Program-affected area	N/A	N/A
Public -Private service		Lottery	Operate a business / trade in the Program-affected area	N/A	N/A
Business owner with title rights		Store rental of units	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store clothing	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store shoes	Operate a business / trade in the Program-affected area	Low	None
<i>Area VI - Valliantsplein</i>					

Business owner with title rights		Store party supplies	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store clothing	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store clothing	Operate a business / trade in the Program-affected area	Low	None
Business owner with title rights		Store jewelry	Operate a business / trade in the Program-affected area	Low	None

The following have been preliminary identified:

- Approximately 56 individual business and traders who may be eligible for compensation, including the trader stalls;
- Approximately 15 bars and restaurants who are highly reliant on their existing customer base and passing trade, where their requirement is to be relocated and/or be provided with temporary locations so that they can continue to trade and protect their customer base;
- Approximately 228 bus services, the majority of which are driver-owned, who need to be supported so that they can still have access to locations to allow them to collect passengers; and
- Approximately 34 individual canoe owner-operators, who will also need to be supported so that they can still have access to locations to allow them to collect passengers/users of the canoes.

Once the specifics of the Program are known, including type of works to be performed, road closures, need for temporary relocation etc., the above livelihoods assessment should be revisited to assess specific details and potential impacts so this plan can then be built out in detail. Table 4.4 below provides examples of the application of the entitlement matrix to some Program situations.

Table 6-3 Application of the entitlement matrix to some example situations

Example	Situation	Entitlement
Business in the Program footprint	Moveable items used for business, located within the Program area e.g. canoes/buses used for business affected by the construction activities. The owner is also the operator of the business	<u>Item/equipment:</u> <ul style="list-style-type: none"> • Cost of transfer and reinstallation of equipment; • Cost of reestablishing commercial activities elsewhere. <u>Livelihood:</u> <ul style="list-style-type: none"> • Cash compensation of temporary loss of net income during the period of transition; • Development opportunities; • Monitoring of livelihood restoration after pre-Program conditions.
	The operator is not the owner	<u>Item/equipment:</u> <ul style="list-style-type: none"> • Cost of reestablishing commercial activities elsewhere. <u>Livelihood</u> <ul style="list-style-type: none"> • Cash compensation of temporary loss of net income during the period of transition; • Development opportunities ; • Monitoring of livelihood restoration after pre-Program conditions.

6.2.6 Eligibility cut-off dates

In functional terms, a cut-off date establishes a calendar limit on the Program'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. Cut-off dates should harmonize with the program schedule. Steps should be taken to ensure that

the cut-off date is suitably publicized in all the seven Program zones in Paramaribo and other relevant institutions.

6.2.7 *Valuation and Compensation*

The basis of the valuation takes into account the following legislation and international standards

- Suriname Planning Act (1973);
- IDB's Policy on Involuntary Resettlement OP-710;
- IDB's Environment and Safeguards Compliance Policy, B.6; and
- IFC Performance Standard 5 (2012).

The 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 and cross checked by the Program. This may be complemented with provisions for compensation to private parties from the Suriname Planning Act.

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. Affected business owners will be compensated for the cost of reestablishing commercial activities elsewhere, for lost net income during the period of transition and for the costs of the transfer and reinstallation of their equipment. In addition, especially vulnerable parties will be also provided opportunities to improve, or at least restore their means of income earning capacity and standards of living. This may be done through provision of alternative income earning opportunities such as credit facilities, training or employment opportunities (refer to Section 6.3. Livelihood Restoration Program).

6.2.8 *Compensation Payment Procedure*

Each eligible affected person will sign a compensation certificate together with the authorized Program representative. The compensation certificate will clarify mutual commitments as follows:

- On Program side: commitment to pay the agreed compensation in kind (e.g. the provision of alternate business locations) or financial; and allow business owners to continue to work on their property as long as is safe;
- On the affected person(s): commitment to discuss potential needs for temporarily 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 format of payment certificates will be developed in order to be easily understandable to affected people. Compensation will be paid or provided (in the case of in kind compensation) prior to the economic displacement.

6.2.9 *Strategy for public consultation and participation*

To date the stakeholder engagement strategy has focused on complete inclusion of all key stakeholders. Even of the recent Chinese arrivals that are marginally integrated into Suriname society. The first public consultation has been held, and it was attended by about seventy persons. Detailed minutes of this meeting have been

prepared. However, this process of stakeholder engagement needs to be continued unabated in the months to come and for the duration of the entire Program, and even during the post-Program phase. Engagement with the stakeholders has to become an ongoing process and the SGES needs to have the facilities and resources to undertake this important and critical strategic task.

6.2.10 *Settlement of complaints and claims mechanisms*

A special desk should be considered, such as at the office of the SGES in Fort Zeelandia, to receive and process complaints. 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 claim mechanism should follow the following steps:

- Receiving and registration of complaint;
- Screening and assessment of complaint;
- Formulating a response;
- Selecting a resolution approach;
- Implementing the approach;
- Monitoring and evaluation of results;
- Planning and implementing change in the mechanism; and
- Reporting back to the community.

Each of these components should be detailed in a stand-alone claim or grievance mechanism that needs to be timely publicized to Program affected parties in the area.

6.2.11 *Budget*

The budget for the Livelihoods Restoration Plan will be based on finalized plans which make up the overall Paramaribo Urban Revitalization Program.

6.2.12 *Execution calendar*

The execution calendar of the Livelihoods Restoration Plan will be based on the Program schedule. As stated in section 6.2.8, compensation will be paid or provided (in the case of in kind compensation) prior the commencement of the works.

Livelihood restoration activities should be harmonized with stakeholder engagement activities and local government programs in order to maximize Program benefits (refer to section 6.3.5).

6.2.13 *Monitoring and Evaluation*

Monitoring, evaluation and reporting are key components of the LRP. Activities should be subject to both internal and external monitoring. Internal monitoring is conducted by the Program, assisted as necessary by its supervision consultant, as well as by affected parties as appropriate. External monitoring should be assigned to an independent organization with expertise in social aspects, resettlement and compensation issues and with national regulation knowledge as well as experience with best international practices. An external completion audit by a third party will

also be conducted. The completion audit should be undertaken once all mitigation measures have been substantially completed and once displaced persons are deemed to have been provided adequate opportunity and assistance to sustainably restore their livelihoods. The completion audit should be undertaken once the monitoring period is concluded, and will involve a more in-depth assessment than regular resettlement monitoring activities, “ including at a minimum a review of all mitigation measures with respect to the economic displacement implemented by the Program, a comparison of implementation outcomes against agreed objectives, a conclusion as to whether the monitoring process can be ended and, where necessary, a Corrective Action Plan listing outstanding actions necessary to meet the objectives”.

6.3 *LIVELIHOOD RESTORATION PROGRAM*

A series of livelihood enhancement initiatives should be outlined to help Program-affected parties to re-establish their livelihoods or create new ones. These programs should be designed based on a development approach that addresses issues and livelihood needs of affected parties. A participatory approach should be used for the needs assessment.

Preliminary and based on the surveys conducted we suggest consideration of the following programs:

- Business Development Support Program;
- Capacity Building Program; and
- Financial Management Training Program.

6.3.1 *Business Development Support Program*

The Program will facilitate the provision of business development support services to local business and associations aiming to grow them into viable and sustainable business/enterprises.

This program will have a training component that will need to be further refined with through a participatory approach with affected parties and local government institutions. The program will be appropriate for the different groups affected, reflecting their skills, aspirations and the availability of labor. Micro-credit opportunities should be included.

6.3.2 *Capacity Building Program*

A capacity building program geared to empower and equip local business associations will be developed. Special considerations for this program will be given to craft stall traders, canoe owner-operators and bus drivers.

6.3.3 *Financial Management Program*

The course will be designed to help impacted persons utilize compensation payments appropriately in support of sustainable livelihoods. Strategic cash management training and advisory support services will be provided to all affected parties.

As part of the training program people who have received and properly invested cash compensations from other Programs may be will invited to share both positive and negative experience and advice on prudent cash management. Assistance will also be provided to all parties in the post-payment period to secure the compensation money and reduce risks of misuse/robbery.

6.3.4 *Gender Considerations*

Women in the Program area play a very active role in trade (craft stalls), which will be impacted by the Program For this reason, the livelihood needs of women have been factored into the design of the Livelihood Restoration Programs outlined.

Positive impacts for women are expected mainly from the Business Development Support program and Capacity Building Program.

6.3.5 *Timeline for Implementation*

Capacity building and livelihood restoration assistance services will focus on the first two years of the Program with the objective of restoring livelihoods of vulnerable affected parties to at least national minimum standards of living. All activities will be offered on a voluntary basis for a limited amount of time or until the affected target to restore the status to at least national minimum living standards is met.

6.4 *DISASTER RISK MANAGEMENT AND ADAPTATION PLAN*

The Disaster Risk Management and Adaptation Plan (DRMAP) recommends measures to prevent and/or mitigate the identified impacts and risks (see section 4.1), and provides guidance relative to emergency preparedness and response.

6.4.1 *Management Measures*

This section discusses measures that could be implemented to help reduce the Program risk to natural disasters. Since the Program design is still at conceptual level and management plan is not complete, we expect these measures to be incorporated into the design, construction and final management plans for the Program. This section is not a substitute for actual designs, construction management and operational management, but serves as a guide for those Program elements.

Careful attention to the waterfront design must be taken to mainly ensure the Program is resilient to floods and other natural disasters such as floods, river bank erosion and salt intrusion. Some potential measures to prevent, adapt or mitigate the risks associated with these natural disasters are discussed below and listed in Table 6-2.

- Coordinate monitoring of salinity concentrations and flows at Suriname River with the National Institute for Environment and Development (NIMOS);
- Keep monitoring sea levels and river water levels;

- Conduct geotechnical studies to evaluate soils conditions at the Project Site. This study will allow defining appropriate types of material to be used in the Project;
- Conduct a sediment transport study for the Suriname River;
- 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;
- Design and implement measures that entail the infrastructural capacity to occasionally endure water excess from periodic flood events. For instance, levees, floodwalls (permanent or deployable) or tidal barriers considering total surge (storm surge, waves and SLR). These structures must be designed to sustain at least a 1% annual change water elevation event. Through this type of structures, people may be able more closely enjoy and learn from natural process even during a flood event;
- Reinforce existing and new flood control infrastructure with green infrastructure measures. For instance, reinforcement of the existing riprap streambank protection located along the left bank of the Suriname River should be considered using options such as vegetation and woody material for bank stabilization; pole plantings (or live stakes) and coir rolls;
- Evaluate the alternative of using adaptation measures such as dry and/or wet flood proofing. These adaptations are aimed to inhibit the infiltration of water by designing the exterior of a building with waterproof coatings, impermeable membranes, aquarium glass, flood vents or additional layer of exterior concrete or masonry. These flood proofing are best suited for commercial, mixed use, or community facility buildings;
- Use appropriate building codes for new buildings that will be built or renewed as part of the Program's area;
- Implement stormwater management activities for the Program. These activities must be synchronized with urban development and existing stormwater management plans for Paramaribo (e.g., MOGP);
- Implement a river restoration program that incorporates the Program's design to maintain a sustainable balance among economic, environmental and social benefits;
- Conduct regular inspections and provide routine maintenance of all existing river defenses;
- Coordinate with Ministry of Public Works, Department of Hydraulic on the requirements to convey stormwater generated from the Program's site to the Suriname River and/or to the drainage canal located near the Kleine Water Street next to the Hotel Royal Torarica;
- Consider strategies for protecting building systems such as mechanical, electrical, fuel, HVAC systems, plumbing, elevator, and fire protection systems which are highly vulnerable to flood waters. Strategies for protecting these systems are usually aimed to relocate vulnerable equipment or conduits, secure specific components, or adapt their functioning to minimize damage. Example of these systems include relocating or sealing external utilities, anchoring, elevating, or constructing a flood proof enclosure around equipment, elevating mechanical equipment and electrical wiring, among others;
- Verify with local authorities for further human developments along vulnerable sections of the Suriname River neighboring the Program to prevent impacts due to new projects; and

- Examine and verify that the proposed measures do not present implications for drainage and impacts on adjacent sites.

Implementation of these measures should adequately manage the overall risk to the Program from main natural disasters at the Program site. 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 multi-layered 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.

6.4.2 *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.

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 SRC and NCCR actions regarding the Emergency Response to be implemented in the event of forecasted and unanticipated natural disasters.

Table 6-4: Disaster Risk Management Framework

Event	Specific cause	Effect	Plan	Prepare	Response	Recovery
Storms	Excessive precipitation	High water levels and overland flow exposes or damages	Design protective structures that consider high flow events and add climate change factor. Combine Green infrastructure with existing and/or new flood protection structures. Perform a localized drainage study and survey for the catchment and network serving the Program area, and develop maintenance and upgrade plan for the drainage canal located near the Kleine Water Street next to the Hotel Royal Torarica.	Complete regular integrity and condition inspections. Designate and retain an on-call engineering inspector Obtain on-call repair services contract	Isolate affected segment. Contact engineer for assessment Evaluate damages on homes and businesses Coordinate response activities with SRC and NCCR.	Complete repairs Identify and implement activities that will reduce or eliminate risk of repeat failure Test repaired systems Conduct an assessment of the causes and effects of the flood to make recommendations that would improve preparedness for the next event and reduce losses associated with future flood events.

Event	Specific cause	Effect	Plan	Prepare	Response	Recovery
	Excessive precipitation	Erosion with exposure or damage to river's banks and/or facilities	Determine and install banks and slope protection or anchors if possible in most vulnerable areas. Combine Green infrastructure with existing and/or new erosion protection structures (e.g., riprap)	Complete regular integrity and condition inspections. Designate and retain an on-call engineering inspector. Obtain on-call repair services contract. Conduct erosion monitoring along the banks of the Suriname River	Isolate affected segment. Contact engineer for assessment. Evaluate damages on homes and businesses. Coordinate response activities with Public Works, NIMOS, SRC and NCCR.	Complete repairs. Identify and implement activities that will reduce or eliminate risk of repeat failure. Test repaired systems. Conduct an assessment of the causes and effects of floods/erosion to make recommendations that would improve preparedness for the next event and reduce losses associated to future flood events.
Increase water levels	Storm Surge and/or Sea Level Rise	High water levels and overland flow exposes or damages	Design protective structures that consider high flow events and add climate change factor. Combine Green infrastructure with existing and/or new flood protection structures. Perform a localized drainage study and survey for the catchment and network serving the Program area, and develop a maintenance and upgrade plan for the drainage canal located near the Kleine Water Street next to the Hotel Royal Torarica.	Complete regular integrity and condition inspections. Designate and retain an on-call engineering inspector. Obtain on-call repair services contract	Isolate affected segment. Contact engineer for assessment. Evaluate damages on homes and businesses. Coordinate response activities with SRC and NCCR.	Complete repairs. Identify and implement activities that will reduce or eliminate risk of repeat failure. Test repaired systems. Conduct an assessment of the causes and effects of the flood to make recommendations that would improve preparedness for the next event and reduce future flood losses.

6.5 ***STAKEHOLDER ENGAGEMENT AND CONSULTATION***

6.5.1 ***Overview***

The Stakeholder Engagement Plan (SEP) sets out the approach that the Borrower should follow to implement an engagement program with stakeholders over the life of the Program. A stakeholder is defined by the International Finance Corporation (IFC) as “any individual or group who is affected by a project or may have an interest in, or influence over it. This may include individuals, businesses, communities, local government authorities, local nongovernmental and other institutions, and other interested or affected parties.” The SEP focuses on both engagement with external stakeholders and consultation with Affected Persons.

6.5.2 ***Objective***

As defined by the IDB’s Environment and Safeguards Compliance Policy, B.6, engagement is considered appropriate when interacting with the Program’s exhaustive group of stakeholders, while consultation is required in order to interact and incorporate the viewpoints of directly Affected Parties. The objectives of stakeholder engagement, outlined in this SEP, are to:

- Promote the development of respectful and open relationships between stakeholders and the Program;
- Identify Program stakeholders and Affected Parties, and understand their interests, concerns and influence in relation to Program activities;
- Provide stakeholders with timely information about the Program, in ways that are appropriate to their interests and needs, and also appropriate to the level of potential adverse impacts; and
- Record and resolve any grievances that may arise from Program.

6.5.3 ***Stakeholder Analysis***

Stakeholders and Affected Parties for the Program should be fully identified and include:

- Government ministries;
- Local businesses and vendors;
- Indigenous vendors; and
- Area residents.

Stakeholders should be mapped denoting their interest in and influence on the Program, so the Program can then better understand the type of engagement is best suited for each.

6.5.4 ***Stakeholder Engagement Methods***

The IDB will engage stakeholders in a variety of ways, such as:

- Focus Groups/Mission Trips – Used to further develop the Program’s design.

- Local Newspaper Articles, Radio, Television Pieces, or Digital Media – Used to convey information to local audiences about proposed Program activities and progress.
- Community Grievance Mechanism – Used by the public to lodge any grievances.

6.5.5 *Consultation Methods*

Consistent with the IDB's *Environment and Safeguards Compliance Policy, B.6*, Affected Parties as identified by the IDB will require additional engagement. Affected Persons in Category B Programs will be consulted at least once, preferably during the preparation or review of the ESMP.

Consultation includes:

- One-on-one discussions with Affected Parties;
- Facilitated Focus Groups/Mission Trips; and
- Targeted Open Houses.

Affected Parties shall be kept informed throughout all Program activities—especially when considering potential environmental and social impacts.

6.5.6 *Stakeholder Engagement*

To date, the IDB has engaged exclusively with the relevant government ministries and architectural firms, including:

- Ministry of Education and Culture
 - Mr. Stanley Sidoel, Director of Culture,
 - Mr. Stephan Fokké, Site Manager, Suriname Built Heritage Foundation,
 - Mr. Johan Roozer, Chair of the Monuments Commission,
 - Mrs. Malva Tooy;
- Ministry of Public Works
 - Mr. Anwar Hassankhan, Acting Permanent Secretary Building Constructions and Services,
 - Mrs. Lilian Krishnadath, Deputy Permanent Secretary of Planning Department,
 - Mr. Satish Mohan, Deputy Permanent Secretary of Civil Water Works,
 - Mr. Henk Wip, Head of traffic Department,
 - Mrs. Anushka Dewansingh,
 - Mrs. Rashni Soerdjial,
 - Ms. Charissa Muntslag;
- Ministry of Transport, Telecommunication and Tourism
 - Mr. Bradley Fraser, Policy Officer at the Directorate of Tourism;
- Ministry of Finance
 - Mrs. Priscilla Setrowidjojo-Karijodono;
- Ministry of Regional Development – Mrs. Thanya Soke-Fonkel; (vi)
- Suriname Tourism Foundation
 - Mr. Jerry Akum, Managing Director;
- National Development Bank of Suriname
 - Ms. Wonnice Boedhe, Director of NOB;

- KDV Architects
 - Mr. Phillip Dikland, Architect;
- National Institute for Environment and Development in Suriname (NIMOS)
 - Mr. Cedric Nelom, Acting General Director;
- The Back Lot
 - Mrs. Hennah Draaibaar,
 - Mr. Eddy Wijngaarde

6.5.7 *Community Grievance Mechanism*

It is critical that the Program has a procedure to receive, address, and respond to community grievances – especially during construction.

In this case, the Borrower shall hire a community liaison officer in order to directly receive and respond to community complaints. In addition, the borrower should open a dedicated email address and telephone number for the Program – especially for individuals who are unwilling, unable or afraid of interacting directly with the community liaison officer. The Borrower shall disseminate information of these mechanisms and how to access them within the Program’s area of influence via numerous modes (i.e., television, radio, news media outlets including newspapers and radios, etc.). Dissemination of information should be done in Dutch and English.

The grievance process should be well-defined internally. Upon receiving complaints, the borrower shall record appropriate information (if the respective stakeholder is comfortable), including:

- Name,
- Contact information, and
- Grievance.

Upon receiving each grievance, the Borrower’s representative will communicate the subsequent process – specifically that the Borrower will make contact with the affected party within 30 business days with an update and potentially mitigation measures.

6.5.8 *Monitoring*

It is important to monitor stakeholder engagement to ensure that consultation and disclosure efforts are effective, in particular that stakeholders have been meaningfully consulted throughout the process. Monitoring should include:

- Consultation activities conducted with government authorities and non-governmental stakeholders;
- Consultation with affected parties.
- The effectiveness of the engagement processes by tracking feedback received from engagement activities; and
- Any grievances received.

- Amatali, M.A., and Naipal, S. 1999. *Country Study Climate Change Suriname. Water Resources Profile. Technical Report No. 4a.* December, 1999.
- Amatali, M.A. 2007. *Promotion of Sustainable Livelihood within the Coastal Zone of Suriname, with Emphasis on Greater Paramaribo and the Immediate Region. Sector: Water Resources and Infrastructure (Current Profile).* Netherlands Country Assistance Program, Phase 2 (NCAP-2). Ministry of Labour, Technological Development and Environment. Paramaribo, October, 2007.
- Amatali, M.A. 2012. *Technical Paper Present Profile. Second National Communication. Sector Water Resources.* Report prepared for the Ministry of Labor, Technological Development and Environment. March 2012.
- ARS Progetti. *Sustainable Management of the Built Heritage of the Inner City of Paramaribo.* Suriname, 2014.
- FLO-2D Reference Manual, 2004. FLO-2D Software, Inc. © Copyright 1989, 1993, 2004. FLO-2D is copyrighted by J. S. O'Brien. <http://www.FLO-2D.com/>
- Government of the Republic of Suriname. *Historic Inner City of Paramaribo – for the World Heritage List of UNESCO.* Suriname. November 2001.
- Hokstam, M.A. 2012. *Extreme Weather Shocks Suriname's Leaders into Climate Action.* Thomson Reuters Foundation. Accessed October, 13, 2016 from: <http://news.trust.org//item/20120628111500-n1ta0/>
- Karijokromo, C.A. 2011. *Disaster Management in Suriname: The Level of Preparedness and Mitigation.* Master of Public Administration in Governance 2009-2011. International Institute of Social Studies, Erasmus University Rotterdam.
- Masterplan Ontwatering Groot-Paramaribo [MOGP]. 2001. *Materplan Onwatering Groot-Paramaribo.* Ministry of Public Works. DHV Consultants Nederland, WL Delfhydraulics Nederland, Adviesbureau Milieu en Infrastructuur Nederland, and Sunecon Raadgevend Ingenieursbureau Suriname. Paramaribo, June 15, 2001.
- Ministry of Education and Community Development. *State of Conservation of the Historic Inner City of Paramaribo World Heritage Site.* Suriname, January 2014.
- Ministry of Labour, Technology Development and Environment [MLTDE]. 2013. *Suriname. Second National Communication to the United Nations Framework Convention on Climate Change.* Paramaribo, February 2013.
- Noordam, D. 2007. *Promotion of Sustainable Livelihood within the Coastal Zone of Suriname, with Emphasis on Greater Paramaribo and the Immediate Region. Sector: Geomorphology and Soils.* Netherlands Country Assistance Program, Phase 2 (NCAP-2). Ministry of Labour, Technological Development and Environment. Paramaribo, January 31, 2007.

Prevention Web. 2014. *Suriname Disaster & Risk Profile. Basic Country Statistics and Indicators (2014)*. Accessed September 27, 2016 from:
<http://www.preventionweb.net/countries/sur/data/>

Sijlbing, H. *Paramaribo World Heritage Site Management Plan 2011-2015*. Coordinated and compiled by Harrold A. Sijlbing on behalf of Stichting Gebouwd Erfgoed Suriname, May 2011.

UNESCO. *Historic Inner City of Paramaribo*. Accessed September 28, 2016 from
<http://whc.unesco.org/en/list/940> .

United Nations Educational, Scientific and Cultural Organization. *Convention Concerning the Protection of the World Cultural and Natural Heritage - World Heritage Committee - Fourth Session*. Istanbul, Turkey. July 2016.

United Nations University [UN]. 2014. *WorldRiskReport 2014. Focus: The City as a Risk Area. Alliance Development Works*. United Nations University, Institute for Environment and Human Security. Accessed on September 28, 2016 from:
<https://i.unu.edu/media/ehs.unu.edu/news/4070/11895.pdf>

Appendix A - Livelihoods Survey by Culturecom