

HERITAGE BUILDING INVENTORY OF THE HISTORIC INNER
CITY OF PARAMARIBO

FINAL REPORT OF DATA
COLLECTION FOR THE
PARAMARIBO HERITAGE
BUILDINGS INVENTORY (PHBI)

OBRA STUDIO

AUGUST 2019

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Abbreviations

HICP: Historic Inner City of Paramaribo
HUL: Historic Urban Landscape
ICOMOS: International Council on Monuments and Sites
IDB: Inter-American Development Bank
OUV: Outstanding Universal Values
PHBI: Paramaribo Heritage Building Inventory
WHC: World Heritage Committee
WHL: World Heritage List
WHS: World Heritage Site

1. Objective and Scope of the Study

The objective of this consultancy is to characterize and evaluate the condition of the buildings which are registered in the Paramaribo Heritage Building Inventory (PHBI) which make up the main content within the Paramaribo World Heritage Site (WHS) and its buffer zone. The methodology used in this study has been clearly documented in the “Built Heritage Registry Training Manual” for future replication and as a tool for the PIU (Project Implementation Unit) staff.

The products of this study will make up the majority of the information in the official PHBI inventory of architectural and historic buildings and will be the baseline record for maintaining known historic buildings, structures, and sites for the Historic Inner City of Paramaribo. The Inventory consists of individual property records, property documentation of both the current physical and functional features, as well as a detailed evaluation of the state of conservation and architectural quality as of August 2019.

2. Introduction

This Final Report of Data Collection for the Paramaribo Heritage Buildings Inventory covers results of the data gathering process during the field activities –including the schedule, the training session, the methodology, the use of mobile applications, the revised survey design, the data quality and validity of the results, the fieldwork social notes, recommendations regarding privacy concerns and reviews all products for this consultancy –and a descriptive analysis of all the resulting data from the PHBI Dataset, which employs the use of graphics, tables and maps to analyze the current condition of all mapped buildings. This report concludes with a section dedicated to final recommendations for local policy decision making that stem from the results of this study.

This consultancy is part of an ongoing initiative from the Inter-American Development Bank to use open data tools for urban environments, which required to rethink –from the baseline –the methodology for a “heritage building registry”. The idea is that data should be gathered using digital open source tools and that the majority of the information should be available to the public. This entailed that the method for the data collection should be as intuitive as possible –more about this on the Built Heritage Registry Training Manual –so the local staff and citizens could continue to collect data periodically. Four case studies were analyzed to define the contents of each building’s survey (Quito, Panama, USA and Amsterdam) and the result was discussed and revised with the local PIU at PURP. Finally, two forms were produced, a general one that collected information from each building’s façade and a complete one that is able to incorporate additional content from the building’s interiors, and has more accurate results.

This content was then incorporated to the open source platforms “Open Map Kit”, which uses Open Street Map data to project and add geo-referenced points, and “ODK Collect”, which allows for questionnaires to be uploaded and filled out¹. In total **649 buildings** were surveyed, of which **20 buildings** correspond to the complete survey that contains information from the building’s interiors. A final tabular file –part of this consultancy’s products –was produced as a result and from there automation was used to extract **649 Individual Building Reports**, which contain information and photographs specific to each building. Aerial photographs, produced by a recent local contract, were also incorporated to the dataset

¹ The android phones used during the data collection were delivered to the PURP office for future replicas.

to describe the building's urban context. Each building was given a specific "**Registry Code**", which was linked to the **Parcel ID** number part of the dataset by the same data geo-referencing local contract.

All of these surveys were divided into 6 chapters: Registry Identification, Property Identification, Description and Characteristics, State of Conservation, Valuation Criteria and Total State of Conservation. The results are described and analyzed in section 4 of this report and they demonstrate the powerful potential that this PHBI Dataset has towards future local decision making and policies. In general, the results about current and past functions point out how the residential use has moved to other areas of Paramaribo, since most of the buildings show that they were originally used for housing. Also, some of this results point out the need to focalize attention towards certain building typologies –which were discussed with the local PURP office –as they compose the main heritage structures that justify Paramaribo's Outstanding Universal Values (OUV) as a UNESCO World Heritage Site, in total **183 buildings**. When looking at the building's elements separately, there are some that appear to remain constant – cladding, windows and doors –and thus highlighting the main components of Paramaribo's Historic Urban Landscape. A key resulting component is the **total state of conservation** of each building, for which a methodology was determined to relate the average state of the building's constructive elements and the existing material pathologies. The spatial result of the total state of conservation points out to certain areas within the WHS and the Buffer Zones that require specific attention, like the case of the commercial area of Maagdenstraat and the southern sections of Watermolenstraat, Jessurunstraat and Henk Arronstraat.

In the case of the **valuation criteria**, attention should be given for the need of a thorough revision of the legal framework, since one of the main objectives of a building registry is to inform the users on how to intervene the building, and a valuation criteria helps to establish those parameters. For the PHBI, two elements were used to determine a 10 point system: location within heritage boundaries and additional heritage values. The results help establish different priorities for public and private investment. Therefore, the final component is a financial analysis that uses a local firm's study on intervention cost to correlate the total floor area of each building and its total state of conservation. The result gives USD values for intervention on each building within the PHBI, which should be used as a reference for these costs mostly consider the façade analysis. Therefore, a referential value to intervene heritage typologies at the WHS would be **USD 46,858,602.90**, of which 64% are private buildings.

The final component of this report is destined for recommendations on future decision and policy making efforts by the local government. Also, there are still more possibilities to communicate and visualize the PHBI data, which should be considered to communicate key ideas and concepts to the general public. The intention is that this study should serve as a basis for a sustainable and consistent process to revitalize and re-inhabit the Historic Inner City of Paramaribo.

3. Paramaribo Heritage Building Inventory Components

The PHBI is a collection of different tools with the aim to institutionalize the constant update of the heritage inventory for the HICP. These documents are designed to define all the requirements to communicate the general methodology and prepare stakeholders to be a part of future data gathering and analysis processes:

- a) Work Plan: Establishes the methodology and components for the data gathering process.
- b) Built Heritage Registry Training Manual: The purpose of this document is to provide all technical and methodological information necessary for future data gathering processes².
- c) Final Report of Data Collection for the Paramaribo Heritage Buildings Inventory: The present document, which explains the results from the Work Plan methodology, the results from the field activities, and provides a descriptive analysis of the results.
- d) PHBI Dataset: Includes all data included for the Paramaribo Heritage Building Inventory (PHBI).
 - a. CSV file: A simplified tabular dataset with all resulting fields
 - b. Excel file: Contains the same information as the CSV file, but with links to the image folders and individual building reports.
 - c. Data dictionary: Explains each field on the tabular information for further analysis.
 - d. Geotadabase: Contains tabular and features to be projected on any geographic information system.
 - e. Photographs: Folders containing all the photographs resulting from the analysis as “ODK Collect” organizes them.
 - f. Aerial photographs/ Orthophotos: Where available the existing drone imagery was used to extrapolate each building’s immediate context for all 649 buildings.
 - g. Individual Building Reports: This is an additional component that this consultancy deemed necessary to communicate the results with government officials and citizen. It contains Excel information on all 649 mapped buildings with images, as a result from extrapolating the data from the tabular information.
 - h. Scripts: These are encodings to deploy the server using ODK Collect and to generate the individual reports.

4. Summary of field activities

The consultancy team was made up by 2 international architectural heritage experts, 4 research assistants, and 1 social scientist who dedicated 2 weeks fulltime to train local experts and map the necessary information; two of the team members were Suriname nationals.

The field research was deployed to assess the conditions of each building based on assessment that was made from public roads. The buildings that were determined to be analyzed in this study were all of those within the WHS area and a sample of buildings from each buffer zone along one road on each. A total of

² Mobile phones were also delivered to the PURP-PIU office to facilitate the PHBI replication (Annex 2).

649 points were mapped, of which 329 were from the WHS, 177 from the Buffer Zones and 143 from the Proposed Buffer Zone expansions.

All the points mapped during the field activities are depicted in Map 1, which evidences the completion of the predetermined target. As planned, the buildings that were considered were the ones that were able to be viewed from the street, which included all the ones within the WHS, 2 axis from the Buffer Zones along Cornelis Jongbawstraat and Henk Arronstraat, and 2 axis from the Proposed Buffer Zone Expansion along Prins Hendrikstraat and Maagden Straat. Also, the field researchers decided map the entire Heerenstraat to offer additional data for the ongoing projects along this street, which required surveying an additional 27 buildings.

Map 1. Mapped points per registry type



4.1. Schedule

Field activities were carried out as established by the Work Plan between August 19th and August 30th. Monday, August 19th began as the Training Session, at the office building where PURP operates. From then on, every day was carried out as planned and shown on Map 2, from August 20th to Thursday 28th, having also enough time to include the northern section of Heerenstraat. Finally, on Friday, August 30th there was a final session at PURP to explain the results and next steps.

Map 2. Team distribution per day for the site visit



4.2. Training session

The first day consisted of an 8 hour training session designed to instruct the government personnel who will be responsible on managing the PHBI in the long-term. The Paramaribo Heritage Building Inventory (PHBI) was designed to be consistently updated with additional information regarding the current state of preservation so that it can be used across a number of institutions and can eventually be made a public tool for many purposes, like encouraging private investment. In total 13 staff members were trained, to include staff from the Monuments Commission, several ministerial department heads, and of course, PURP personnel. The first part of the session was an explanation of the methodology and conceptual approach that the consultancy proposed for the PHBI, for which there were valuable comments that were taken into account to adjust the original Work Plan. Some of these comments referred to the adjustment of the official UNESCO property site and buffer zones boundaries –with the explanation of the “Proposed Buffer Zones” as not yet part of the official designation, - a review of the typologies present on the site according to bibliographic references, and adjustments to the phone application to include more than one example of elements of value –for instance different types of windows. These comments were incorporated and adjusted for this Final Report and additional changes were made to the phone

application in order for it to include additional elements. The following images show examples of the different activities that were carried out during the training session.³

Figure 1. Images from the training session



Methodology revision and general concepts



On site app usage review



Training session certificates



Quito case study presentation

³ Annex 1 demonstrates the list of attendees with institutions and signatures.

4.3. Direct observation methodology

Two surveys types were designed for the PHBI, a “partial” one that analyzes the building’s façade and a “complete” one that incorporates additional data from the interiors. The general method was to collect data via observation, from the street for the “partial” survey, and from the street and interiors for the “complete” survey. In total 629 points were mapped using the “partial” survey, and due to the time restraints and permit requirements, 20 buildings were selected for the “complete” survey. The selection for these 20 buildings were meant to objectively represent a sample of different building typologies, materials, degradations, uses, and owners, among others, to extrapolate additional considerations to determine a more accurate state of conservation, and were chosen based on the fact that they covered at least one of the sample criteria:

- Within the PWHS and at the buffer zones
- Monument
- Commercial building
- Residential building
- Mixed use building
- Governmental building
- Unique buildings
- New interventions

4.4. Use of mobile applications

As required by the Terms of Reference, the open-source mobile applications “Open Map Kit” and “ODK Collect” were implemented as the main data collection tools. “Open Map Kit” focuses on adding and visualizing geo-referenced data using the “Open Street Map” database; and “ODK Collect” focuses on creating and uploading survey forms to a predetermined database. Therefore, the PHBI survey information was uploaded to “ODK Collect” and the mapping points were added to “Open Map Kit”, in order to use these platforms for the PHBI data collection process. All data was stored locally on the researcher’s phone and uploaded to the server at the end of each fieldwork day, at which point the OBRA STUDIO’s programmer confirmed the data reception and proceeded to organize the information. Although, since the servers at PURP were not operational at the time, a temporary hosting service was acquired by the consultancy.

These digital platforms had already been used for other IDB projects in the region and, since the intention was to produce feedback on their operation on the field, it is possible to report that they fulfill the main objectives and are functional. Nevertheless, there were some limitations that should be addressed for future projects. For instance, there should be further investment to eliminate the need of two applications and instead just have one, with more flexibility for the survey design. Another key component that is missing is an interactive dashboard to visualize and intuitively explore the collected information. The dashboard could have different types of users with different clearance levels to allow

access for different governmental institutions, administrator access for editing, and public access to promote private investment and academic research with this database.

4.5. Survey design with modifications to the original work plan

In order to define which components should be included in the PHBI survey, four case studies were selected and analyzed: Quito (Ecuador), Panama City (Panama), Amsterdam (Netherlands) and the United States of America (they have a general system for all sites). These case studies were chosen with the premise that they are relevant for the Historic Inner City of Paramaribo's conditions as:

- a) A World Heritage Site in the LAC region;
- b) A Historic Urban Landscape; and
- c) A site where Dutch heritage had been found and preserved.

All case studies were analyzed using the following methodology in order to understand not only the potential and the benefits of using each registry instrument, but also the flaws in their components in relation to the local legislation and their use within the local management system. This methodology included the review and analysis of each site's:

- a) Registry instrument;
- b) Heritage classification system;
- c) Valuation criteria and valuation scale; and
- d) Heritage legislation and management system.

The results of this comparison determined the main components that the PHBI should have, which were discussed and adjusted with local experts during the training session and with the Work Plan revision by the PURP office. The following table explains the final contents of the PHBI survey –the “partial” versus the “complete” survey is determined by additional fields to include data from the building's interiors –and is organized by different chapters that represent different components that make up general and specific heritage data for each building. The “field notes” column is used to explain the final results from each variable after the data gathering process.

Table 1. Survey design description with field notes

Chapter 1: Registry Identification		Field Notes
Registry Number	Unique number (1, 2, 3...)	Linked to the OBJECTID for geo-referencing purposes.
Registry Code	Unique registry code used to identify each form in relation to the general work plan and site map. Example [BL1_B1]	Explained further on the Manual, but key to identify relationships between buildings.
Type of Registry	Partial: Façade	No comment.
	Complete: Façade and interiors	

Registry Status	Inscribed area	No buildings were mapped under “other urban areas”
	Inscribed Buffer zones	
	Proposed Buffer zones	
	Other urban areas	
Registry Classification	National Monument	PURP was not able to provide a complete geo-referenced dataset of current National Monuments, therefore the mapped “National Monument” buildings were the ones that were evident from the street, the rest need to be added to the dataset once the information is available.
	No designation	
Date of Survey	Date in which the information was registered, used to monitor the built heritage inventory update	No comment.
Chapter 2: Property Identification		
Identification and location	Building name (if any)	Was added to the list in case the information was displayed outside.
	Author: <i>(if any)</i>	There were very few buildings that had visible information about the original building’s author, if not the dataset remained blank.
	Address (could include neighborhood, intersection, or other location components)	Some buildings have house numbers marked, others do not and therefore only the street name was incorporated.
	Construction date: <i>(if any)</i>	No buildings displayed this information, so the field was left blank, in case further documentation demonstrate a construction date.
	Parcel ID number	This information was linked to the Parcel ID number from the previous geo-referencing consultancy (i.e. zee470).
	Location photo / map (aerial imagery/orthophoto)	This consultancy extrapolated the building’s surroundings with the drone imagery delivered by the previous consultancy.
	Geographic Coordinates	Correspond to the building’s location in latitude and longitude values.

Typology and uses (multiple choice selection)	Typology	Wooden Vernacular Phase 1	These typologies correspond to a required revision by PURP's experts, who pointed out a local technical document "Architectuur en Bouwcultuur van Suriname". More information on each typology can be found on the Manual. Also, Wooden Vernacular, Wooden Formal, and Monument typologies correspond to those that should be preserved as part of the specific OUV for Paramaribo.
		Wooden Vernacular Phase 2	
		Wooden Vernacular Phase 3	
		Wooden Vernacular Phase 4	
		Wooden Formal Phase 1	
		Wooden Formal Phase 2	
		Wooden Formal Phase 3	
		Monument	
		Wooden XXth Century	
		Brick building	
		Modern	
		Other	
	Typology Description		A text is displayed depicting the general characteristics for each typology.
Function	Domestic	"ND" was added when there was no visible data to be included.	
	Commercial		
	Institutional		
	Religious		
	Monumental		
	Other		
Original Use	Residential	"ND" was added when there was no visible data to be included.	
	Commerce		
	Government agency		
	Religious		
	Education and culture		
	Industry		
	Other		
Current Use	Residential	"ND" was added when there was no visible data to be included.	
	Commerce		
	Government agency		
	Religious		
	Education and		

		culture	
		Industry	
		Tourism	
		Health	
		Other	
Ownership and Occupancy	Ownership	Public	No comment.
		Private	
		No visible data	
	Occupancy	Occupied	No comment.
		Empty	
		Partially Occupied	
		No visible data	
Current owner: (if applicable fill in with the owner name)		This consultancy expected to have a dataset with complete parcel information with ownership, but since it was not accessible the field was left blank.	
Chapter 3: Property Description and characterization			
Urban fabric composition	Checkboard		During the training session revision it was mentioned that these components were not necessary, therefore they were not included in the final dataset. In the case of urban fabric composition, Paramaribo's is fairly irregular, and the location within parcel can be perceived from the aerial imagery.
	Radial		
	Linear		
	Disperse		
	other		
Location within a parcel: selection of property characteristics in regards to the general urban context	Isolated		
	Attached to one side		
	Attached on two or more sides		
Property characteristics	Height		No comment.

Elements of value (façade)	Foundation	The dataset has one element of each, but for future data gatherings the programming will allow for more examples (i.e. more than one window).
	Structure	
	Cladding	
	Porch	
	Balcony	
	Galleries	
	Ornaments	
	Craftsmanship	
	Stairs	
	Windows	
	Doors	
	Other	
Elements of value (interior)	Structure	The dataset has one element of each, but for future data gatherings the programming will allow for more examples (i.e. more than one window).
	Wall cladding	
	Ceilings	
	Floors	
	Moldings	
	Ornaments	
	Paintings	
	Stairs and stair-rails	
	Windows	
	Doors	
	Other	
Alterations	Contextual (urban)	No comment.
	Typological	
	Morphological	
	Functional	
	Constructive	
	Material	
	Aesthetic - Ornaments	
Additional structures in lot/parcel	Yes	There was no visible information for this field, so it was deleted.
	No	
Non-contributing elements * includes the option of a photo of the non-contributing elements	Yes	No comment.
	No	

Chapter 4: State of Conservation: Materials, technologies and pathologies		
Façade analysis (Form A)	Foundation	No comment.
	Structure	
	Façade cladding	
	Roof	
	Porch	
	Balconies	
	Galleries	
	Door and window frames	
Complete Analysis (Form B)	Foundation	No comment.
	Structure	
	Walls	
	Roof	
	Ceilings	
	Floors	
	Railings	
	Porch	
	Balconies	
	Galleries	
	Door and window frames	
	Ornaments	
	Patios	
	Yards	
	Terraces	
Stairs		
Materials and Pathologies	Brick	The application of these percentages towards the calculation of “total state of conservation” is explained on the manual.
	Wood	
	Metal	
	Stone	
	Clay	
	Stucco	
	Concrete	
	Cast iron	
Risks and vulnerability	Natural	No comment.
	Human	No comment

Chapter 5: Valuation Criteria and Scale		
Protection Level: <i>Should be considered in relation to the current legal framework. This should determine the requirements and processes necessary to intervene in a registered structure</i>	Inscribed area (3 points)	This information should serve to establish conservation parameters for future heritage legislation.
	Inscribed Buffer zones (2 points)	
	Proposed Buffer zones (1 points)	
	Other urban areas (2 points)	
Additional conservation values	Contributing to architectural language and evolution of building systems: Homogeneity	
	Use of local materials	
	Presence of high-quality craftsmanship	
	Historic and socio-cultural significance	
	Connection to the natural environment	
	Contribution to the urban complex in relation to monuments	
	Other	
Estimate state of conservation	Total m2	This information was added based on the building height and the area from the aerial imagery.
	Total (USD)	Was extrapolated based on KDV's report on renovation costs, explained further on chapter 4.6.
Chapter 6: Annexes		
Space left for any additional information.		

4.6. Data quality and validity of results

Data quality was a consistent concern throughout the whole study. As previously mentioned, an initial revision of PURP's existing geo-referenced datasets was necessary (from a previous consultancy), which included mapped points and some images from all buildings within all heritage areas and aerial photographs; the missing information was all parcel data. This process allowed the team to define 681 unique polygons prior to the site visit. However, once on site, in total 649 points were mapped, since

many of the prior points were sequential polygons that were found to be actually one building. Therefore, the need to revise the data was evident and was done according to the following parameters:

- a) Double mappings: In some cases, the field work team mapped a building that a previous team had already mapped, therefore repetitive “building codes” were analyzed and the duplicates were removed from the main dataset.
- b) Typologies: The categories assigned to typologies were originally set in terms of time periods. Yet, the PURP team recommended to revise these categories according to local bibliographic references for more accurate results. Therefore, all images were revised and the information for typologies was re-categorized.
- c) Coordinate system: The coordinate system from the previous consultancy was maintained for the resulting shapefiles as follows:
 - a. Geographic Coordinate System: GCS_WGS_1984
 - b. Datum: D_WGS_1984
 - c. Prime Meridian: Greenwich
 - d. Angular Unit: Degree
- d) Photographs: The images were, in some cases, edited to adjust for the photograph’s angle, as well as the contrast and brightness.
- e) Connected buildings: Further revisions were done to make sure that the “Building codes” demonstrated interactions between buildings. In some cases an educational institution had physically connected two buildings; in these cases, the “Building code” was represented by a (-) to demonstrate which buildings were linked. For example “BL36_B11-B12” means that building BL36_B11 is connected to building BL36_B12.
- f) Addresses: Many buildings in the HICP do not display their address numbers, therefore it was not possible to add this to all points.
- g) Occupancy: It is important to note that occupancy results are based on a street view analysis, not by entering the building. This means that the accuracy of the data may differ from reality.
- h) State of conservation: The formula established to calculate “Total state of conservation” as it relates the façade information on the individual state of conservation of each constructive element to the existing pathologies. This was extrapolated mostly from façade information, therefore it should be used as an initial reference before doing a thorough constructive and cost analysis.

4.7. Fieldwork social notes

The Paramaribo World Heritage Sites (PWHS) has a series of well documented underlying socioeconomic issues that hinder economic investment and decrease the valuation of these sites despite the precedence of successful interventions such as the Back Lot and Palmentium (UDL, 2018, p. 51-56). A few of the most well documented challenges include: homelessness, street prostitution, desertification after business

hours, lack of pedestrian friendly public spaces, and financial barriers to investment ((UDL, 2018; ERM, 2017; Ho-Bodeutsch, 2018).

During the field mapping of the PHBI, the research team logged all comments made by the residents and also recorded their observations of how the built environment was being used or physical traces of how a space had been used. In addition to this, the team’s social scientist documented 7 separate unstructured interviews with various community leaders, academics, conservationists and urbanists to further understand the dynamics of the PWHS (see Annex 3). Together, these actions allowed the team to geo-reference some of the most pressing challenges as well as the strengths of the community which should be taken into account

Analyzing the social components of the PWHS contributed to the following social analysis which is complementary to the main objective of the PHBI consultancy. Taken together, the interviews and mapping observations were able to extract the main challenges and opportunities regarding the social components of the historic downtown as summarized in the following table.

CHALLENGES	OPPORTUNITIES
1. Residents feel a disconnect with the city’s colonial heritage.	1. History and cultural awareness programs can create new appreciation for PWHS.
2. There is a high number of abandoned buildings and buildings in decay.	2. Heritage preservation can reactivate community engagement.
3. Homelessness generates a perception of abandonment and insecurity.	3. Better management of public space can encourage community engagement
4. PWHS is not pedestrian friendly.	

Challenges

Challenge 1. Residents feel a disconnect with the city’s colonial heritage. There is a general lack of awareness related to historical value of the PWHS and the importance of implementing urban plans to preserve the heritage of the built environment (ERM, 2017, p.56). Some residents voiced that they feel a disconnect between the Dutch architecture and their Suriname’s identity, even though the buildings were frequently designed, built and crafted by Surinamese people. The overall population knows very little about the historic sites, especially the youth. The two students were interviewed, noted that they were interested in knowing more about the history of PWHS but that it is hard to get involved in community projects related to PWHS or find a job in the area.

Challenge 2. There is a high number of abandoned buildings and buildings in decay. Leaders from the private sector voiced their interest in preserving heritage sites and their vision for creating business related to tourism, but said that it was financially impossible due to the high property values and maintenance costs. Given the current economic situation, people are not willing to invest without incentives to maintain the buildings. Some businesses such as hotels, find a way to maintain their buildings without any incentives but consistently complain about the public sector.

Challenge 3. Homelessness generates a perception of abandonment and insecurity. There is an important problem related to homelessness in PWHS since they occupy much of the public spaces and abandoned homes. Consequently, there is a perception of abandonment and insecurity in the city center especially after work hours, which was witnessed by the research team during the field work. Unfortunately, there are no efficient reinsertion programs for homeless people and government social programs such as giving food away does not solve this problematic in this community.

Figure 2. Homelessness at Hereenstraat



Challenge 4. PWHS is not pedestrian friendly.

Despite the existence of sidewalks throughout PWHS, cars often park on sidewalks intervening with the pedestrians and the absence of trees means that there is no shade adding an additional factor that makes it an uncomfortable place to walk.

Figure 3. Cars on sidewalks



Opportunities

Opportunity 1. History and cultural awareness programs can create new appreciation for PWHS. Heritage preservation programs must be accompanied by education programs that share this information and passion in a format that engages with the community and particularly the youth.

Opportunity 2. Heritage preservation can reactivate community engagement. Programs such as Palmentium, The Back Lot (Heerenstraat) and other mixed-use developments are great examples successful projects that have helped revitalize sections of the HICP. Palmentium is highly valued by the community for being a lively place filled with nature; where one can easily feel a cultural ambiance. The Back Lot is another successful project and Heerenstraat is the proof that cultural efforts are worth it. Finally, it is important to properly apply this initiative in heritage buildings at other places in downtown.

Figure 4. Palmentium



Figure 5. Activities at Heerenstraat



Opportunity 3. Better management of public space can encourage community engagement. The existing public spaces in Paramaribo must be managed to limit activities that deter community activities such as family outings, recreation or cultural festivals. Waterkant for instance, has a great design, but many residents feel it is insecure because it has become a space to drink (UDL, 2018, p. 32).

Opportunity 4. Historic preservation can generate jobs and quality housing. Historic preservation can create new economic opportunities related to reviving historical craftsman trades, encouraging investment which creates construction jobs, and creating new quality housing and public spaces. By raising the value of restoring and maintaining the PWHS, the community can create new jobs and

economic opportunities for citizens, especially the youth. The money can also be allocated towards affordable housing as part of reinsertion programs, and building adequate public spaces will also engage the community to celebrate their diversity and creativity.

4.8. Recommendations regarding privacy concerns

Usually heritage building information gathered by government institutions contains personal individuals' data. In the case of the PBHI, no personal information was given to this consultancy, and no personal information was collected during the site visits, therefore all of the data can be shared publicly. Nevertheless, we recommend that before doing so, there should be a complete revision of the legal framework for heritage management. The main public usage for a heritage inventory should be to clarify mechanisms for intervention (public and private), which should be connected with public incentives for preservation. For example, each building's value, as displayed on the PHBI, should have a correlation with the amount of public aid towards maintenance or rehabilitation. Without that component most of the data gathered on the PBHI could be merely informative, as opposed to a powerful tool for development.

The only component that was included in the general dataset, but was not included on the "Individual Building Report", was the "Renovation cost" information, since the values are referential and cost fluctuates in time, therefore that component should be reserved towards development of public policies.

5. Descriptive analysis

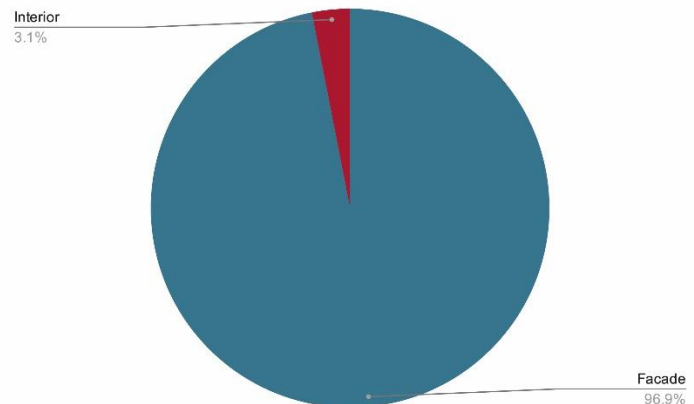
This chapter explores the results the PHBI dataset using a geo-spatial and statistical analysis. In the following sections each section of the PHBI survey will be discussed and explored, highlighting important observations that should guide the next steps towards the revitalization of the HICP. It should be noted that the data was analyzed using the ArcGIS and Excel software packages and that the data was submitted in these two formats to replicate the analysis. The intention is that this content will serve several purposes including: further urban planning and design, guide the prioritization of financial instruments, clarify the intervention guidelines for the private sector, increase interest towards the importance of the Paramaribo Historic Center, and encourage future academic studies, among many others.

5.1. Registry identification

The first survey component corresponds to general and organizational information for the buildings. Of the 649 surveyed buildings, all of them contain a “Registry Number” from 1 to 649, and a unique registry code. Of these, 20 buildings (3.1%) contain “Complete: Façade-Interiors” information and 629 buildings (96.9%) contain “Partial: Façade” information, as shown in figure 6.

The distribution of these mapped buildings is also shown on Map 3, where all visible buildings within the WHS are contemplated, as well as the axis from the Buffer Zones along Cornelis Jongbawstraat and Henk Arronstraat, and the axis from the Proposed Buffer Zone Expansion along Prins Hendrikstraat and Maagden Straat.

Figure 6. Registry Type

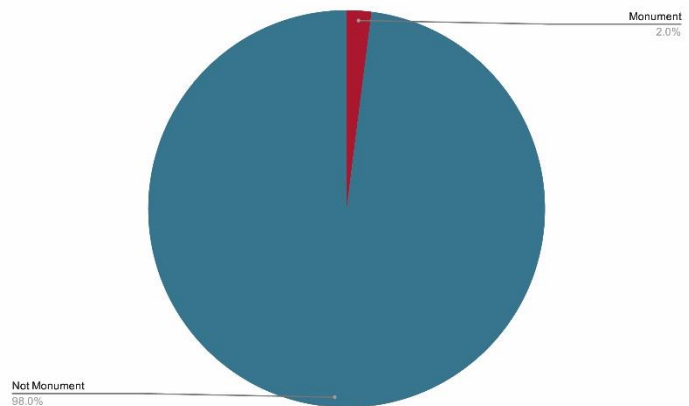


Map 3. Registry Type



The next variable demonstrates the “Registry Classification” for the buildings with a formal designation from the Monuments. There are currently over 200 properties on this list in all of Paramaribo, yet this data was not available as georeferenced information. Therefore, during the fieldwork the few added points in that category (2%) correspond to the ones that display markings on the façade as “Monuments”.

Figure 7. Registry Status



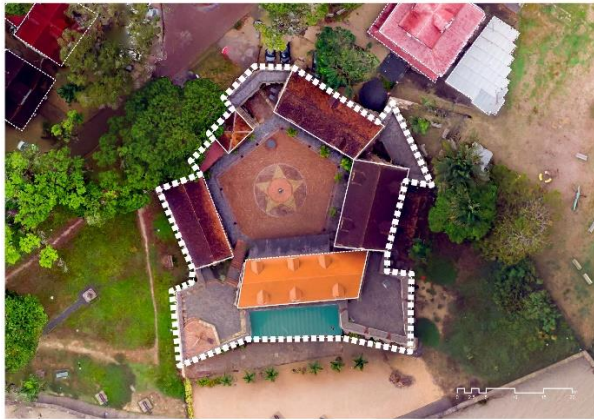
The “Registry Status” determines the location of the building within the different heritage perimeters that correspond to the HICP. Within the World Heritage Site –or “inscribed area” according to UNESCO’s parameters –there were 329 mapped buildings (50.7%), within the official Buffer Zones there were 177 mapped points (27.3%), and within the Proposed Buffer Zones there were 143 mapped buildings (22.0%), as shown in Map 4.

Map 4. Registry Status and Location



5.2. Property identification

Figure 8. Aerial views of individual buildings



Monument typology



Other typology



Wooden Vernacular typology

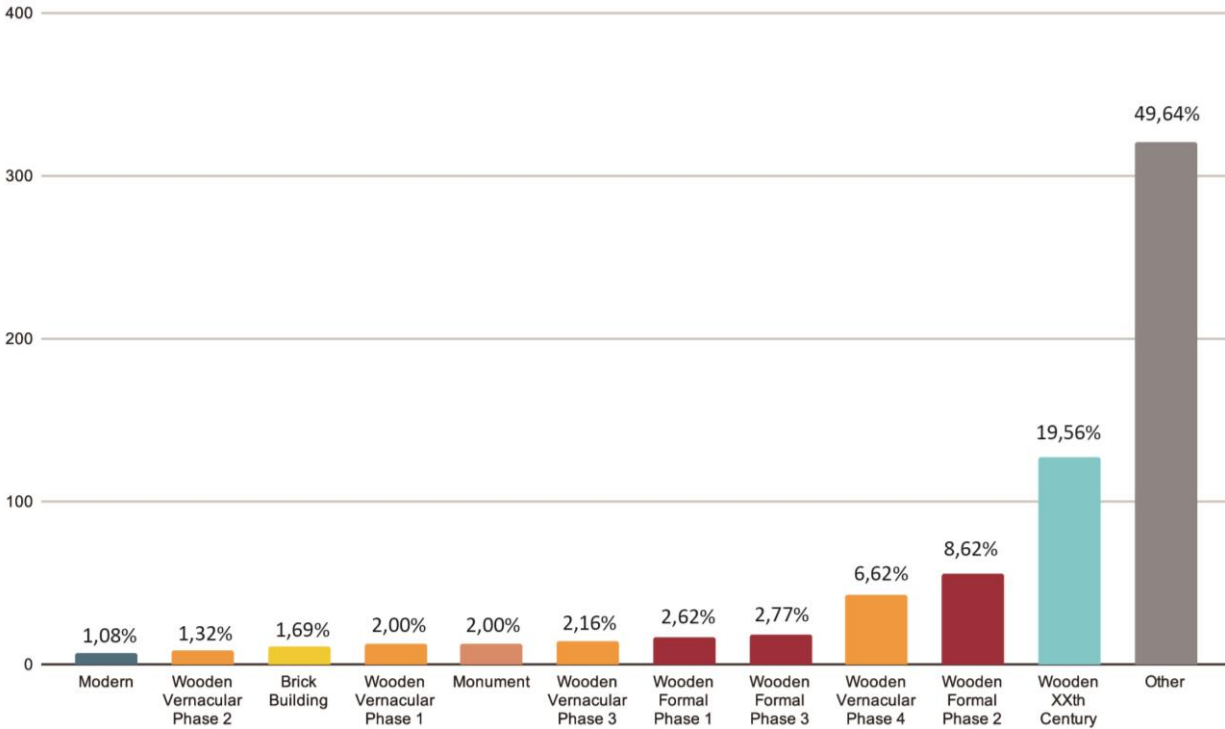


Wooden Formal typology

The individual registry reports contain information on the façade image, the building name, the author, the construction date, the parcel ID, and an aerial view of the context (figure 4). This content is valuable when analyzing each building individually, but it is of great importance to evaluate the results from the typology analysis, since it outlines the buildings that have historic importance and should have a different priority for renovation. Figure 8 and map 5 show how these different typologies are distributed on the territory. The categories could also be divided in those with historic value tied to Paramaribo's OUV (Wooden Vernacular Phase 1, Wooden Vernacular Phase 2, Wooden Vernacular Phase 3, Wooden Vernacular Phase 4, Wooden Formal Phase 1, Wooden Formal Phase 2, Wooden Formal Phase 3, and Monument), and those that have been added after as of the XXth century (Wooden XXth Century, Brick building, Modern, and Other). Map 6 demonstrates how out of the 329 buildings within the WHS, 41% correspond to original heritage typologies and 59% to recent building typologies. At the buffer zones this relationship is even more disparate, where 86% correspond to recent building typologies and only 14%

correspond to heritage typologies. When isolating the points that correspond to the heritage typologies and displaying the information on a heat map, certain areas appear to have a higher concentration at certain intersections: Mirandastraat and Lim A Po Straat, Watermolen Straat and Lim A Po Straat, Henrik Arronstraat and Jessurunstraat, the northern area of Heerenstraat, and within the Zeelangiaweg complex.

Figure 9. Images from the training session



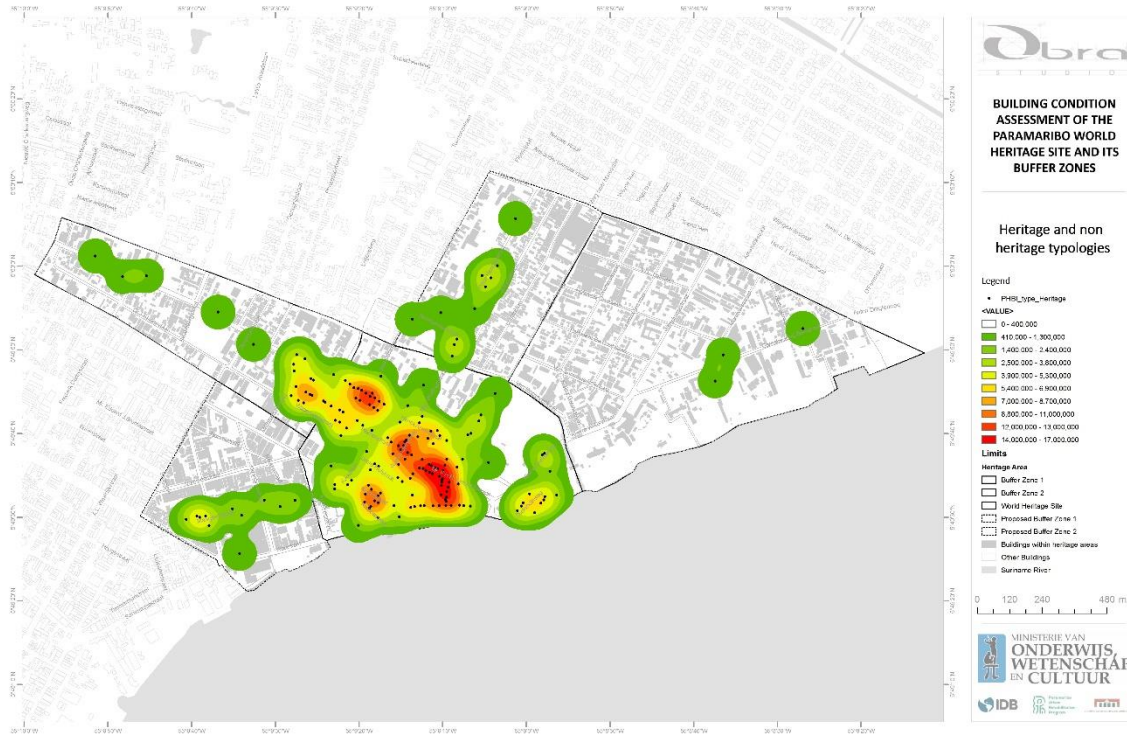
Map 5. Registry Status and Location



Map 6. Heritage and Non Heritage Typologies

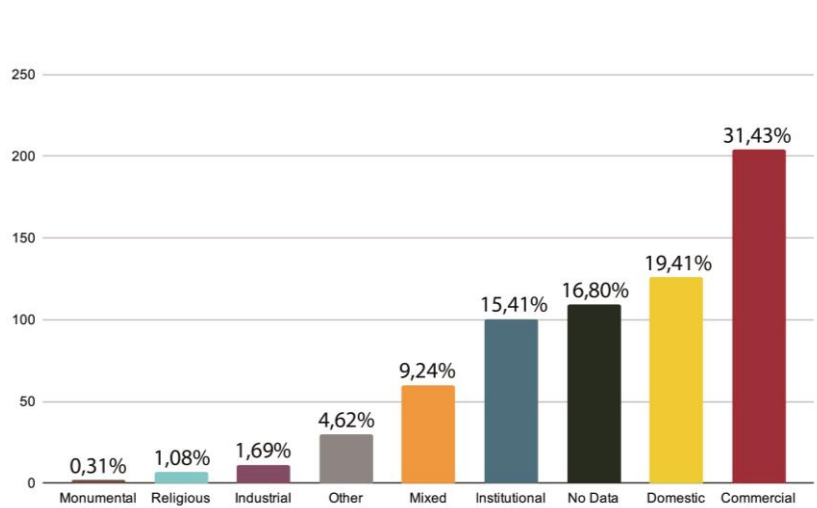


Map 7. Heritage Typologies Heat Map



In terms of the building's function, 31.4% of the buildings have commercial usage, which is directly related to the site of the chosen sample, since all of the axis that were analyzed have a primarily commercial function; domestic use is the second most prevalent typology, with institutional in third and mixed-use in fifth. Also, there is a 16.8% of buildings that contain no visible data, which means that the building's function was not evident from the street. The spatial data on map 8 illustrates the distribution of these functions in the area, where there is a clear concentration of commercial activities to the western sector of the WHS and the proposed buffer zone expansion 2.

Figure 10. Function



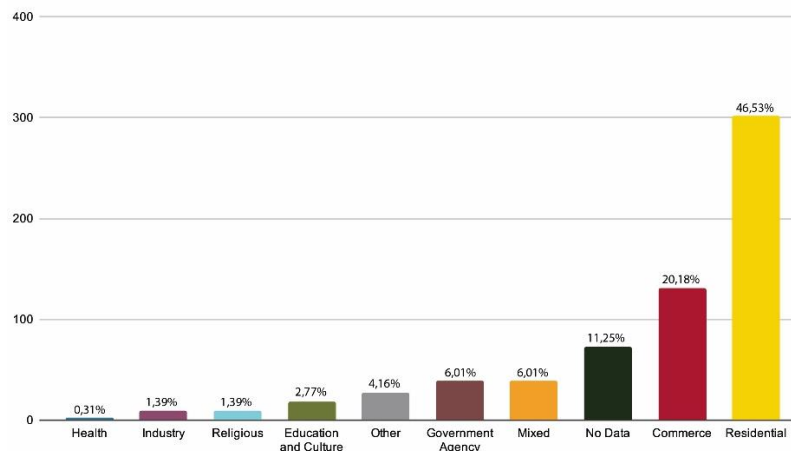
The institutional functions are distributed around the territory, but appear to be concentrated towards the eastern sector of the WHS, surrounding the presidential palace. It is also evident that domestic and mixed use functions are located towards the northern streets of the WHS along Jessurungstraat, and around the central area of the WHS, with the most consolidated cluster towards Buffer Zone 2 and the proposed expansion of buffer zone 1.

Map 8. Function



When analyzing the general data for the building's original use, the top use was by far residential (46.5%). These results clearly demonstrate that the original purpose for this territory was residential, and therefore urban strategies could propose re-densification strategies for the WHS. In contrast, the buffer zones contain new building typologies, which leads us to believe that the original use was either commercial, mixed or could not be registered (no data).

Figure 11. Original Use

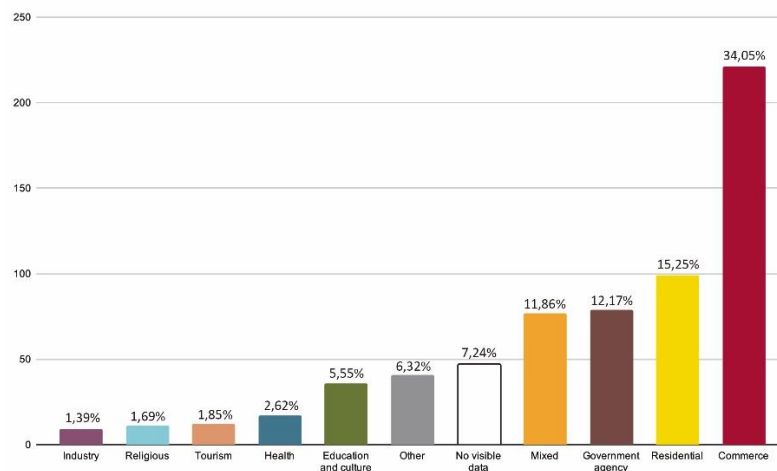


Map 9. Function



The Current Use category provided a broader array of activities, yet the predominance of the commercial use remains present, followed by residential. In this study “mixed use” is referred to both residential plus another use, so this would represent a total of 27.11% in residential use. Governmental uses also represent an important percentage, with education also being relevant. Interestingly, tourism represents only a 1.85% of the total current uses, yet there is a clear opportunity to provide incentives for this sector to thrive alongside the redevelopment of the historic city.

Figure 12. Current Use

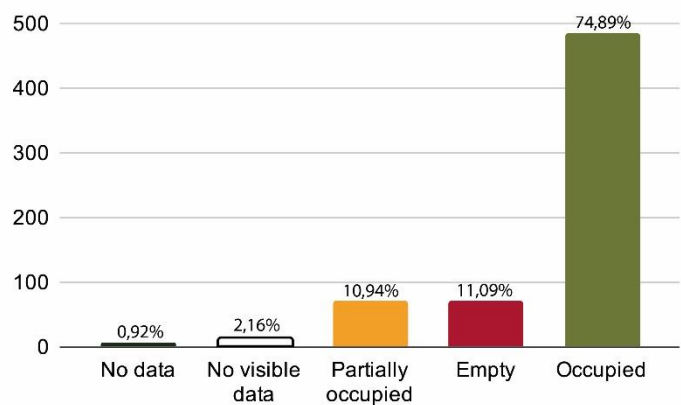


Map 10. Current Use



The data demonstrates almost a 75% occupancy rate, where 22% of the buildings are either empty or partially occupied. This lack of occupancy appears focalized on certain street blocks (map 11), including: the southern section of Watermolenstraat and Dr. J.C. Mirandastraat, the northern section of Heerenstraat, and along certain sections of the buffer zones' axis.

Figure 13. Occupancy

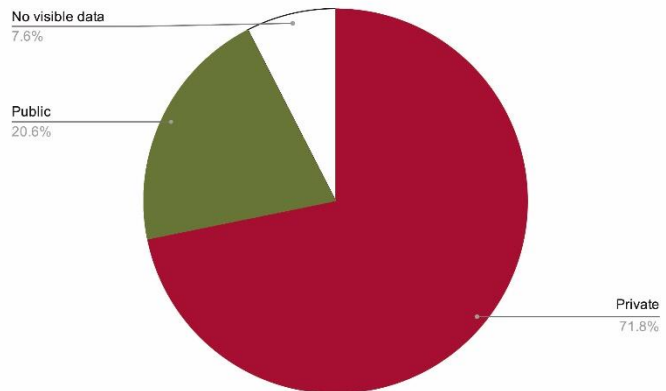


Map 11. Occupancy



In general, ownership could be perceived from the street, since all governmental and other public institution have clear signs detailing their name and purpose. As a result, 71.8% of ownership was found to be private and 20.6% public. Different intervention strategies should be prepared for this reality, considering incentives for private investment, but also the need to prioritize intervention on public buildings that have historic value.

Figure 14. Ownership

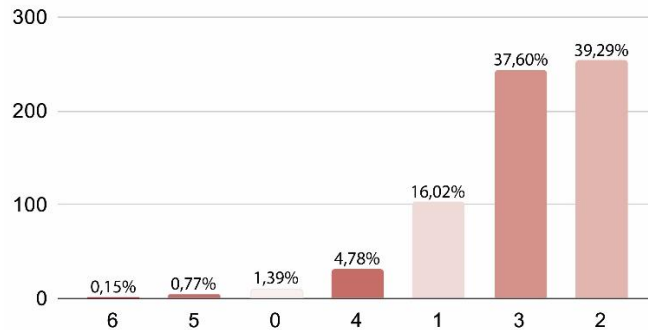


Map 12. Ownership



The urban morphology has remained constant at the HICP, where most buildings have an average of 2-3 floors. There are very few examples of buildings over 4 floors (4.78%), most of which are located outside the WHS. This result is positive in terms of maintaining the historic urban landscape and Paramaribo's OUV.

Figure 15. Building Height

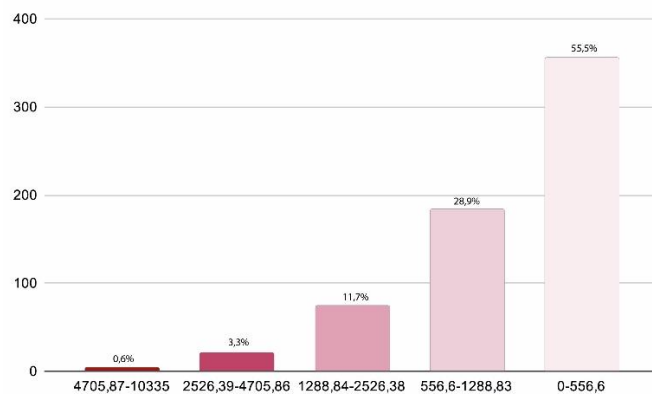


Map 13. Building height

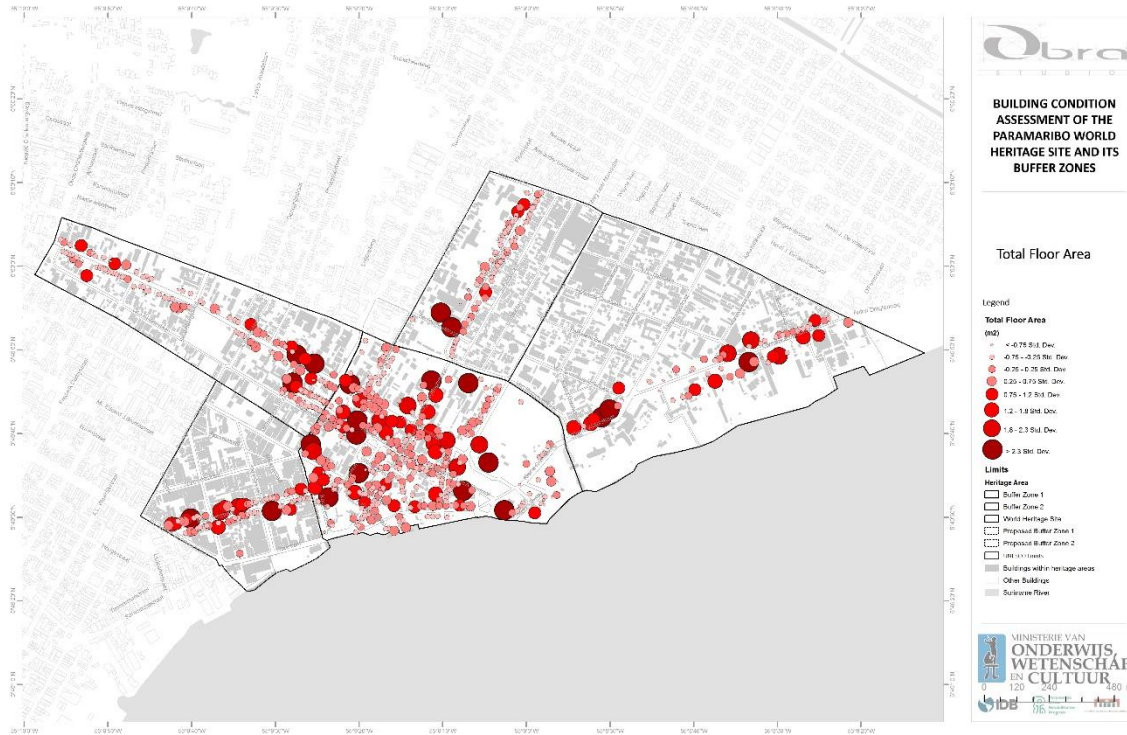


The geo-referenced polygon data for the buildings can be multiplied by the above building height information, to determine a total floor area for each building. The figure to the right shows the distribution of these values, demonstrating that most buildings correspond to less than 500 square meters, but over 10% of the buildings have a floor area of over 2500 square meters. The map below uses the total floor area information to demonstrate, the distribution of these points in the area (showing how they appear close to main roads).

Figure 16. Floor Area



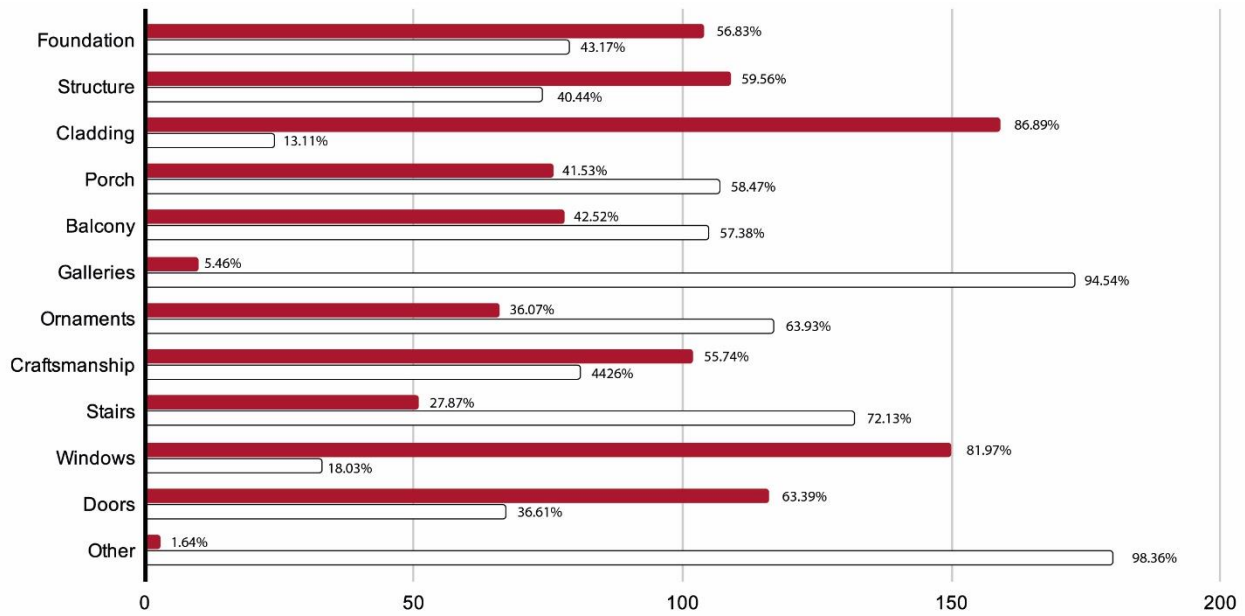
Map 14. Total Floor Area



5.3. Description and characterization

This chapter contains the information on the elements of value found on each building and the presence of alterations. As explained in the Use Manual, these alterations can contribute to the OUV of the site or they could act in detriment of the Historic Urban Landscape, thus the differentiation between “contributing” versus “non-contributing” alterations. To analyze this information adequately, each of the façade elements from the “Heritage Typologies” was extrapolated and analyzed separately to comprehend their distribution, including: foundation, structure, cladding, porch, balcony, galleries, ornaments, craftsmanship, stairs, windows, doors, and other (a category for additional elements not included on the list). The chart shown in figure 17 shows how cladding, windows, doors, structure, foundation and craftsmanship are the six main elements that have remained widely unaltered as the prevalent components of the Paramaribo Historic Urban Landscape. In contrast, galleries, stairs and ornaments are present on specific buildings, but do not correspond to the general norm. If all these elements are given a value of 1 point each, the added value per building can be used to create a heat map (map 15), highlighting the concentration of buildings with a higher value number. The maps that follow illustrate the spatial organization of each element.

Figure 17. Elements of value



Map 15. Elements of value density heat map



Map 16. Elements of value: foundation



Map 17. Elements of value: structure



Map 18. Elements of value: cladding



Map 19. Elements of value: porch



Map 20. Elements of value: balcony



Map 21. Elements of value: galleries



Map 22. Elements of value: ornaments



Map 23. Elements of value: craftsmanship



Map 24. Elements of value: stairs



Map 25. Elements of value: windows



Map 26. Elements of value: doors



Following the elements of value analysis, the survey also contemplated an evaluation of any contextual (urban), typological, morphological, functional, constructive, material, or aesthetic (ornaments) alterations made to the buildings. In particular, when considering alterations to “Heritage Typologies”, figure 18 shows that there is a 74.3% of alterations. This means that the majority of these buildings have some type of alteration due to new adapted uses, which can either contribute to the building’s value or diminish the building’s value. Figures 19 and 20 demonstrate the relevance of these alterations, and how there should be policies enforced to avoid non-contributing alterations.

Figure 18. Alterations to Heritage Typologies

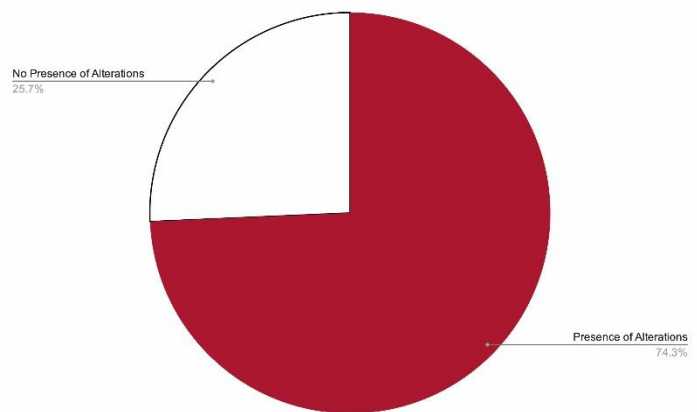


Figure 19. Contributing Alteration



Vegetation is added using the same chromatic spectrum of the building's foundation, adding value to the quality of the public space.

Figure 20. Non-contributing Alteration



A visor-type green structure made of metal was added to the façade, possibly for weather protection, yet it decreases the building's original value.

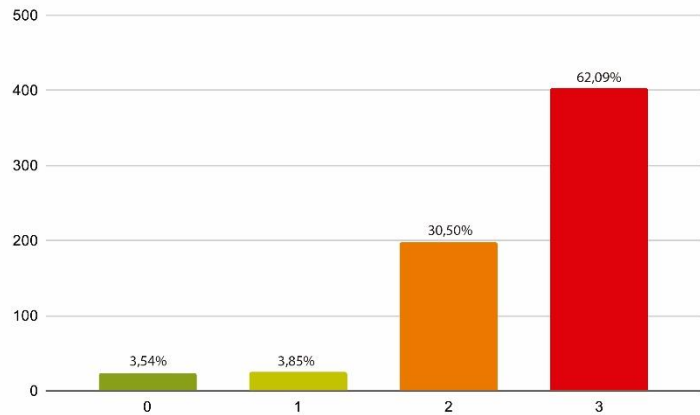
Map 27. Alterations to heritage typologies



5.4. Components for the state of conservation

The state of conservation analysis begins with an evaluation of natural and human risks. The natural risks considered are: winds, rain, flooding, mug and slide, and other. In general, due to the type of materials and construction techniques, almost all the buildings had at least 2 marked categories. As shown in the following map, it is evident how these natural risks are evenly distributed in the territory, with the exception of Maagden Straat, which is situated around a highly commercial area with large concrete buildings.

Figure 21. Natural Risks for all buildings

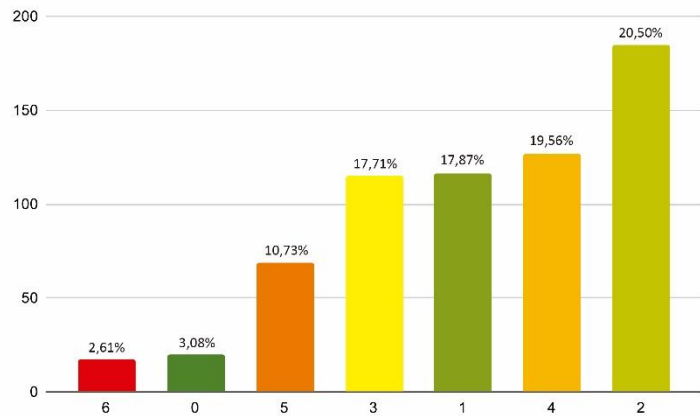


Map 28. Location of Natural Risks



The selected categories for human risks are: fire- electrical source, explosion, pollution, lack of maintenance, non-compatible interventions, lack of control, abandonment, and other. The results demonstrate that most buildings have at least 2 human risk factors, but almost 20% of the analyzed buildings have at least 4 risk factors. The distribution of human risk on the territory is shown in the following map, where certain concentrations appear towards the central and northern areas of the WHS.

Figure 22. Human Risks for all buildings



It is important to note that management mechanisms can be used to reduce and eliminate many of the Human Risks, such as incorporating fire mitigation infrastructure at public spaces. In the case of fire due to electrical sources (map 30), 76% of all buildings were found to be vulnerable, since most buildings in the HICP are close to exposed cables and have insecure connections to the buildings. Furthermore, there is a high limitation of public water installations for fire stations to connect. Another relevant vulnerability is “abandonment”, which is focalized on certain streets, and should be addressed with public incentives. Finally, the risk of “explosions” has a low percentage, but needs to be contemplated into planning; gas stations and gas plants should have strict legal restrictions.

Map 29. Location of Human Risks



Map 30. Human Risk: Fire due to electrical sources



Map 31. Human Risk: Abandonment

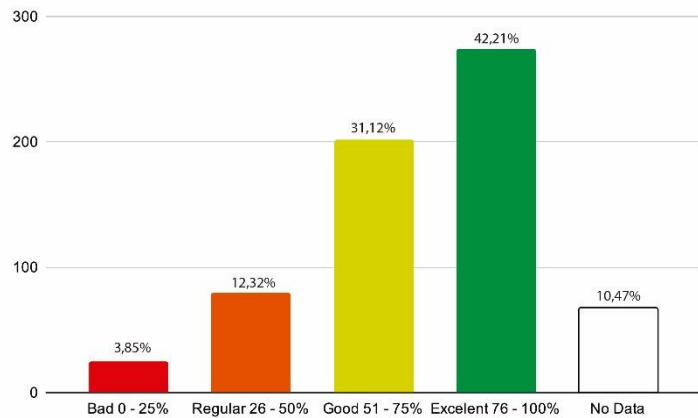


Map 32. Human Risk: Explosions



The first component for the “Total State of Conservation” is the “Average state of conservation” of every visible element, which was defined in quarters (i.e. 75-100%).⁴ In the case of “Average state of conservation”, it can be seen that most of the buildings are in a “good” to “excellent” scale, and the “regular” and “bad” scales are defined by buildings that are concentrated on certain recurrent areas: the commercial area of Maagdenstraat and the southern sections of Watermolenstraat, Jessurunstraat and Henk Arronstraat as shown on Map 33.

Figure 23. Average State of Conservation



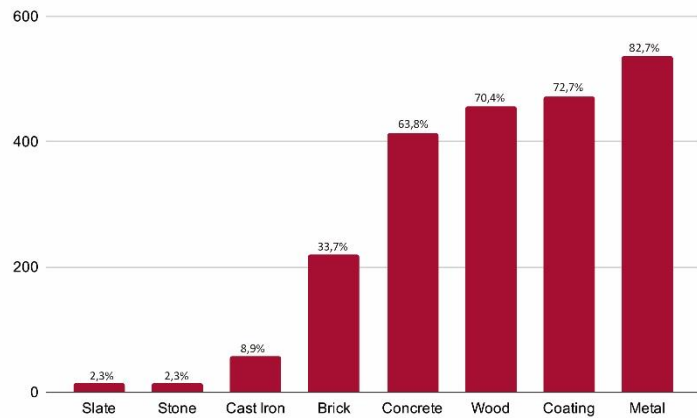
⁴ A more detailed explanation of this methodology can be found in the User Manual.

Map 33. Average State of Conservation



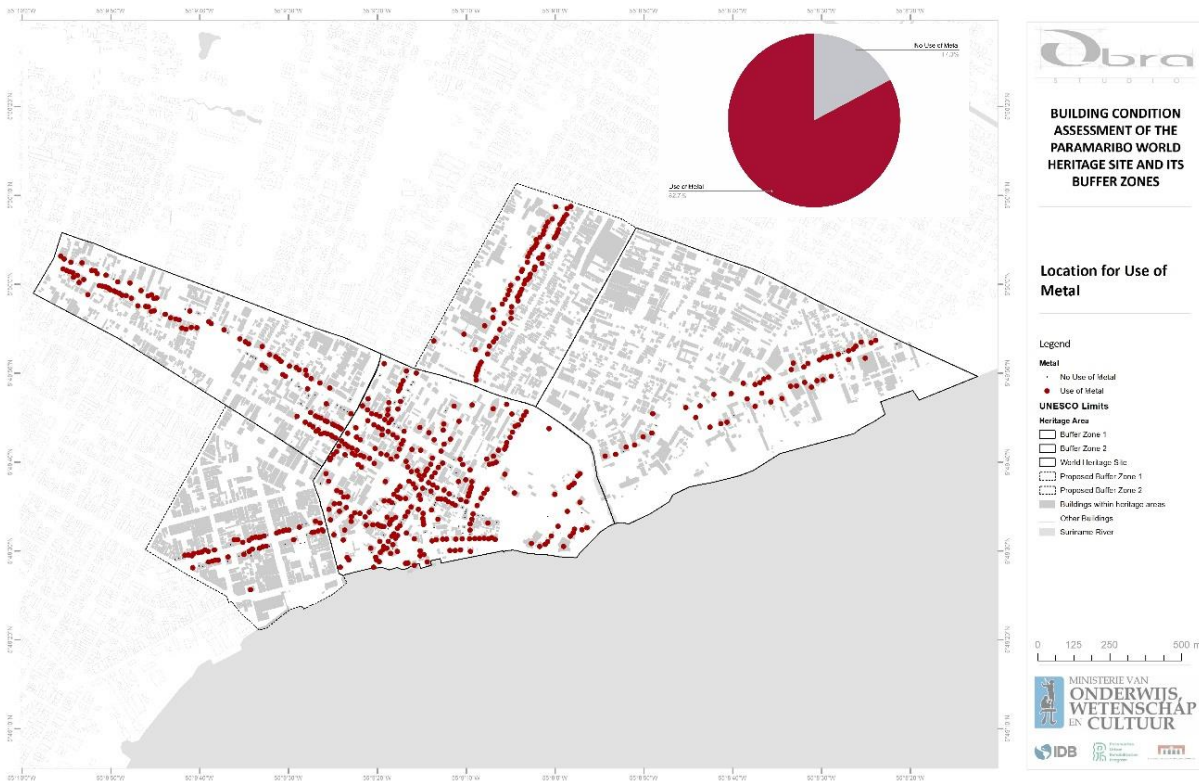
Figure 24. Presence of materials in all buildings

The second component for the “Total State of Conservation” is the pathologies analysis, which establishes a value of “0-25%”, which is then subtracted for the “Average State of Conservation”. This component first requires to evaluate the different materials that are present in HICP, which included: brick, wood, metal, slate, coating, stone, concrete and cast iron. The figure to the right shows the presence of all these materials in all analyzed buildings. Metal appears as the most prevalent one since it is generally used for detailing or security purposes on all typologies. Coating and wood are also elements that are generally present; even contemporary typologies continue to use these materials. In contrast, it is possible to see 63.8% presence of concrete, which correspond to recent typologies with low heritage value.



Brick appears as a material that was associated to the Monuments and Wooden Formal Typologies, therefore it found only at 33.7% of the sites and cast iron appears within certain buildings within those typologies as examples of local craftsmanship. Finally, stone and slate, which is typically used as roofing shingles, are the least common typology of materials. The following maps illustrate the location of each of these materials in the area.

Map 34. Presence of metal on all buildings



Map 35. Presence of coating on all buildings



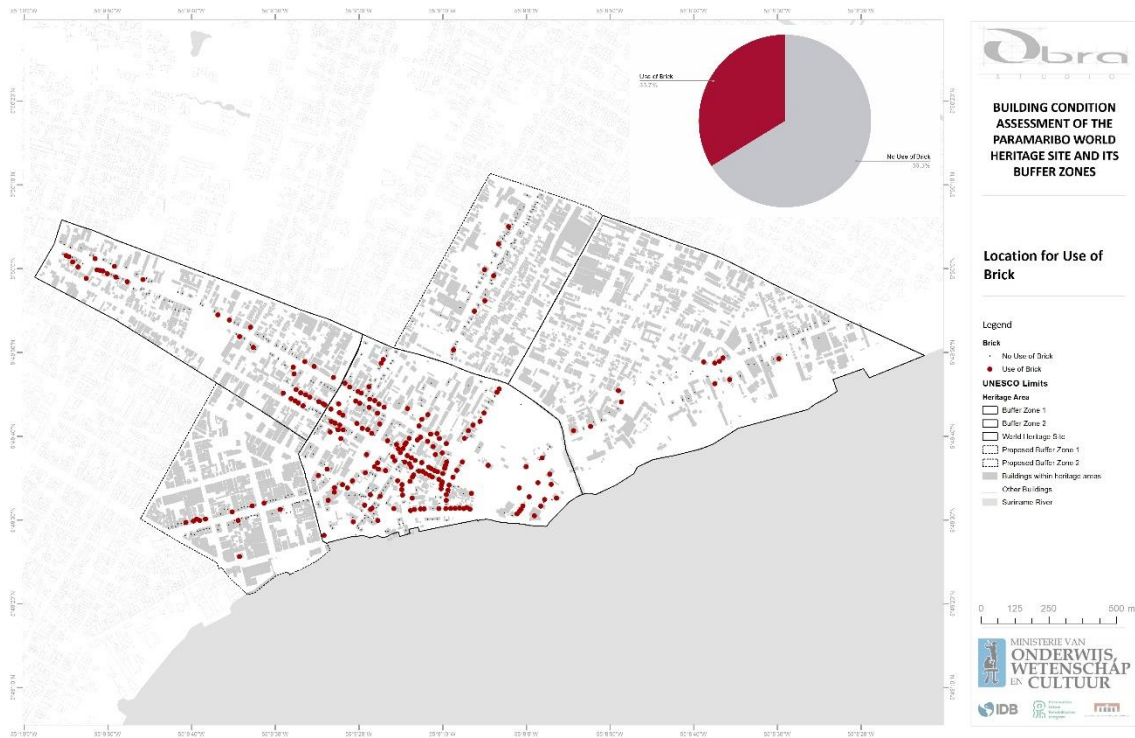
Map 36. Presence of wood on all buildings



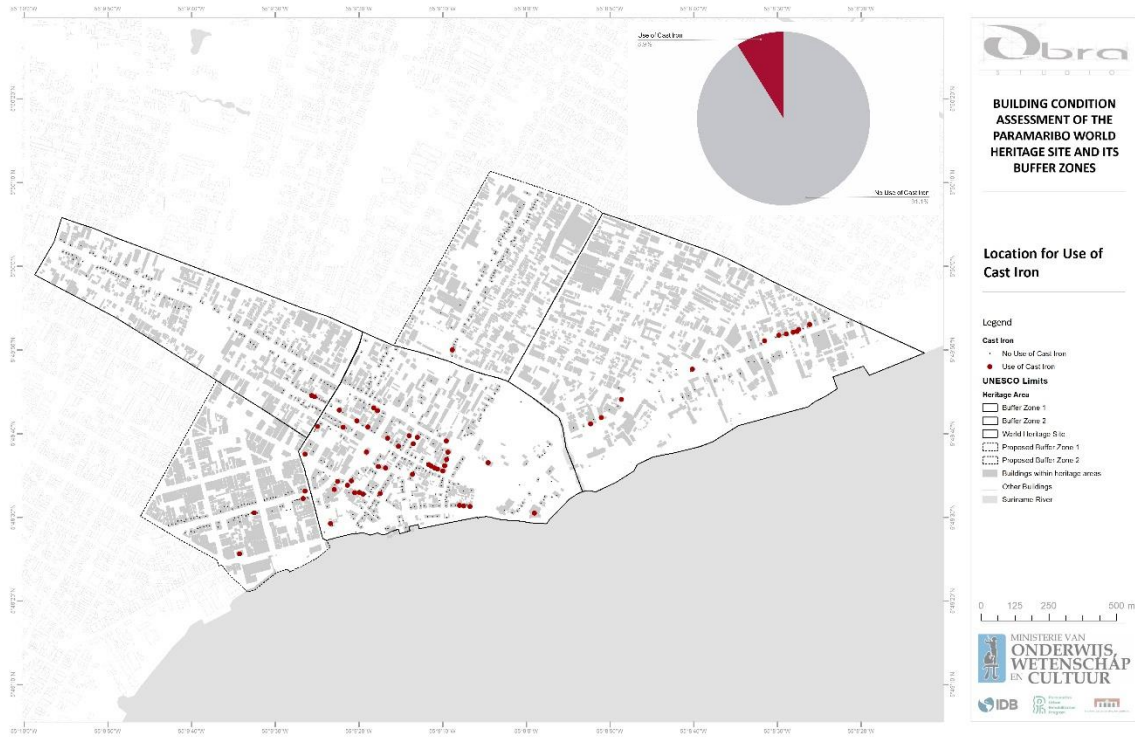
Map 37. Presence of concrete on all buildings



Map 38. Presence of brick on all buildings



Map 39. Presence of cast iron on all buildings



Map 40. Presence of stone on all buildings



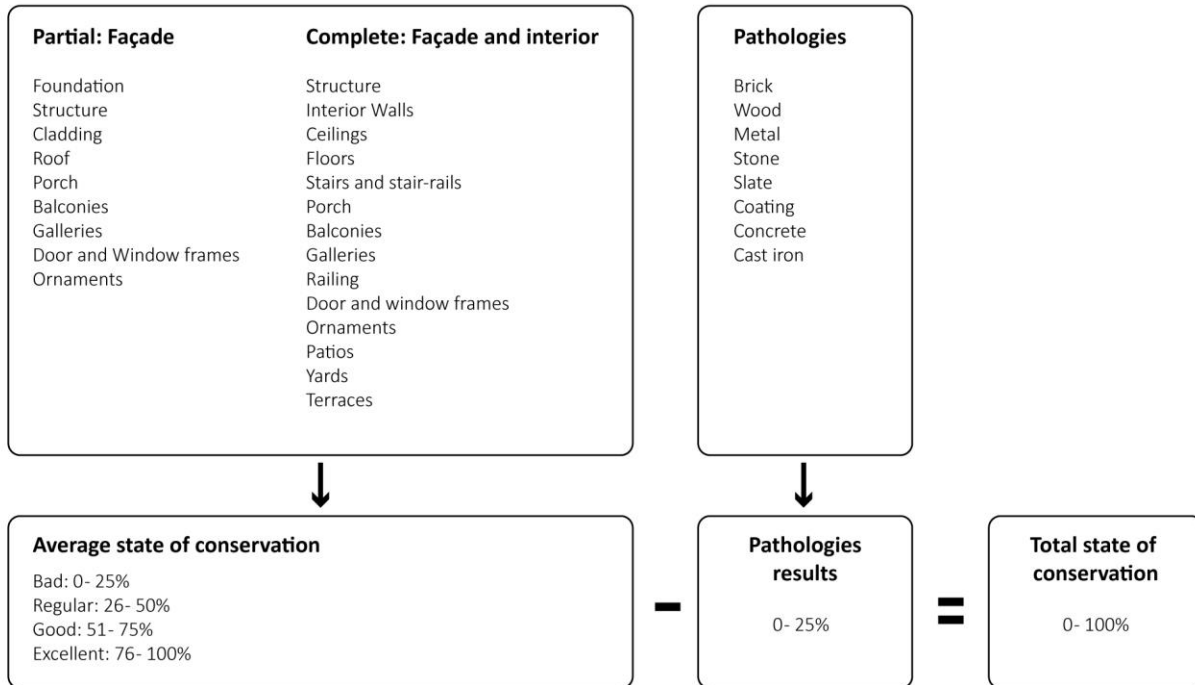
Map 41. Presence of slate on all buildings



5.5. Total State of Conservation

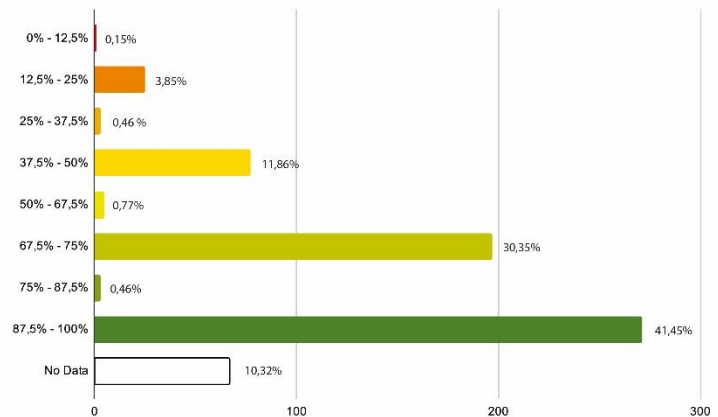
The methodology to calculate “Total State of Conservation” is based on the two components explained in the last section. Figure 25 shows a diagram of how the two components are calculated to determine a final percentage. This value should be taken as a reference, since most of the analyzed points correspond to the façade analysis and not the complete building. Yet, the results are extremely useful to compare every point and to establish parameters for future interventions.

Figure 25. Methodology to calculate “Total State of Conservation”



The figure to the right shows the results of the “Total state of conservation”. In general, the collected data demonstrates a positive result, where almost three quarters buildings are in the excellent/good ranges. In comparison, the much larger Historic Centre of Quito, also a UNESCO site, has 51% of buildings in excellent/good condition; although, there are over 5,000 properties, so conservation is a larger challenge for that city (IMP, 2019). These values should encourage further renovations, but also the completion of the PHBI, since a high percentage of buildings within the buffer zones were not mapped during this field activities, and those are the areas where degradation is most evidenced.

Figure 26. Total State of conservation

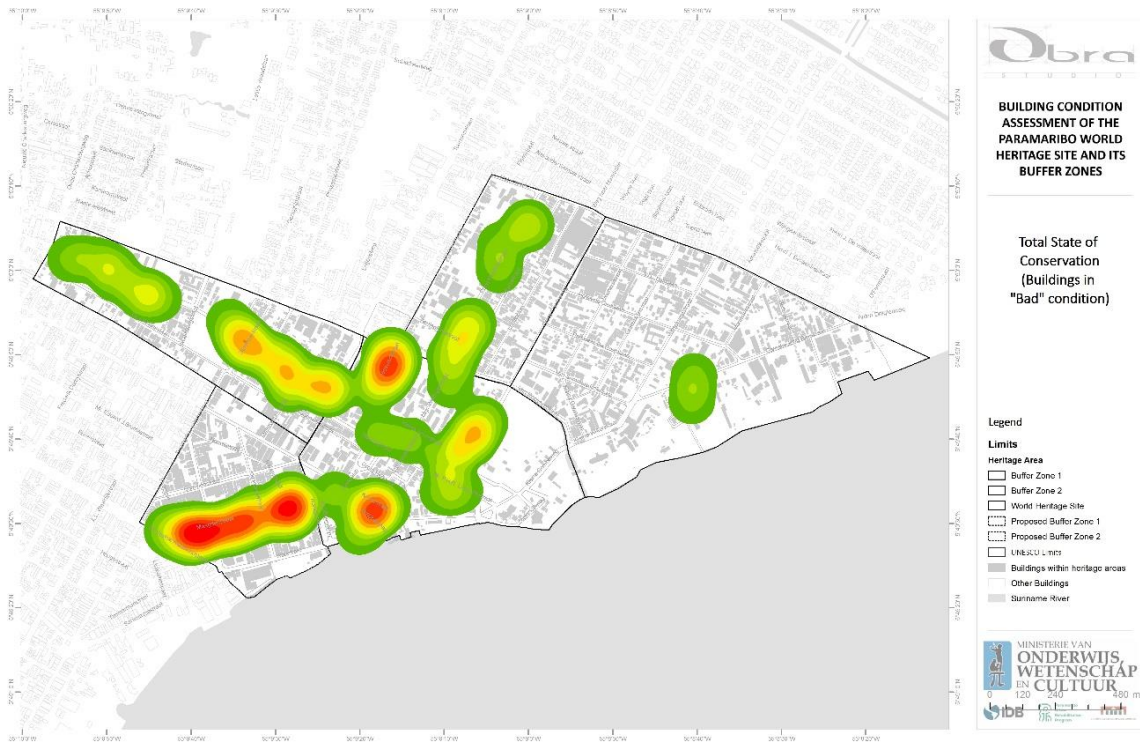


As illustrated in the following maps, the priority areas are the southern sections of Watermolenstraat, Jessurunstraat and Henk Arronstraat, and Grote Combeweg. Also, particular attention should be given to the “Proposed Buffer Expansion 2”, since there is a generalized degradation along the commercial Maagdenstraat. The southern section of Henk Arronstraat also shows a considerable concentration of degraded buildings.

Map 42. Total State of Conservation



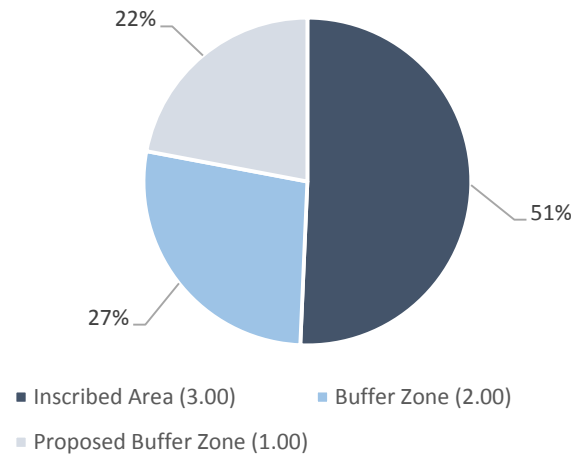
Map 43. Total State of Conservation: "Bad Condition"



5.6. Valuation criteria and scale

A critical component in heritage studies is the valuation criteria are used to determine conservation priorities. Attention should be paid here to the need for an updated legal framework (laws or ordinances) in Paramaribo, which should make explicit how the building's value determines limitations and permissions for intervention. For example, buildings with high valuation should only allow restoration interventions. Yet, buildings with moderate value should have limitations for intervention on certain elements of value like windows, doors, stairs, among others. These individual elements are included in the PHBI Survey and should aid the government and the owner to realize which elements should have an obligation to be preserved and which could be renovated to incorporate new functions.

Figure 27. Value Based on Location



In order to establish a scale for the valuation criteria, this consultancy determined 4 parameters of the PHBI to be taken into consideration:

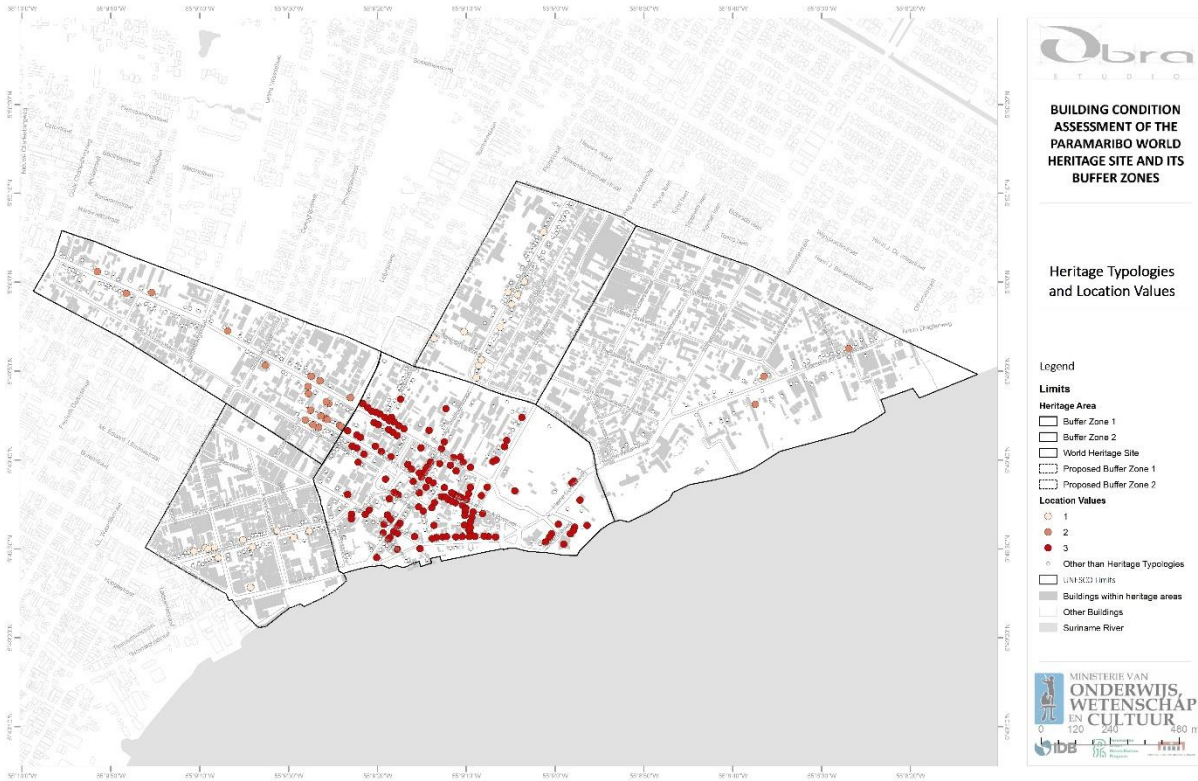
- (1) The existing “Monument Designation” by Paramaribo’s Monument Commission;
- (2) The location of each building with relation to UNESCO’s limits, inscribed area, WHS, or buffer zones, where more value is given to the inscribed area;
- (3) Typologies that correspond to Paramaribo’s OUV;
- (4) Additional values that have been recollected by the PHBI.

The first parameter requires a revision of the geo-referenced version of the official Monuments List by the Paramaribo’s Monuments Commission, which as previously mentioned was not available for this consultancy, but should be included in the future. The second factor is related to the areas that are defined by UNESCO as World Heritage. Figure 18 shows the distribution of mapped buildings for this PBHI on each of the areas. It is possible to propose a valuation criteria for each of the areas, where the highest value should be given to the official designated WHS (3.00), followed by the official UNESCO Buffer Zones (2.00), and at last the proposed buffer zones, which are still not formalized by UNESCO (1.00), as shown in map 4 above.

The third parameter is the revision of each building based on their specific typologies. It was already established in section 4.2 that those typologies that directly correlate to the site’s OUV are “Wooden Vernacular”, “Wooden Formal”, and “Monuments”, which can be referred as “Heritage Typologies”. Map

42 extracts these specific typologies and relates them to their “Location Values”, as a mechanism to narrow the priority for intervention.

Map 44. Heritage Typologies and Location Values

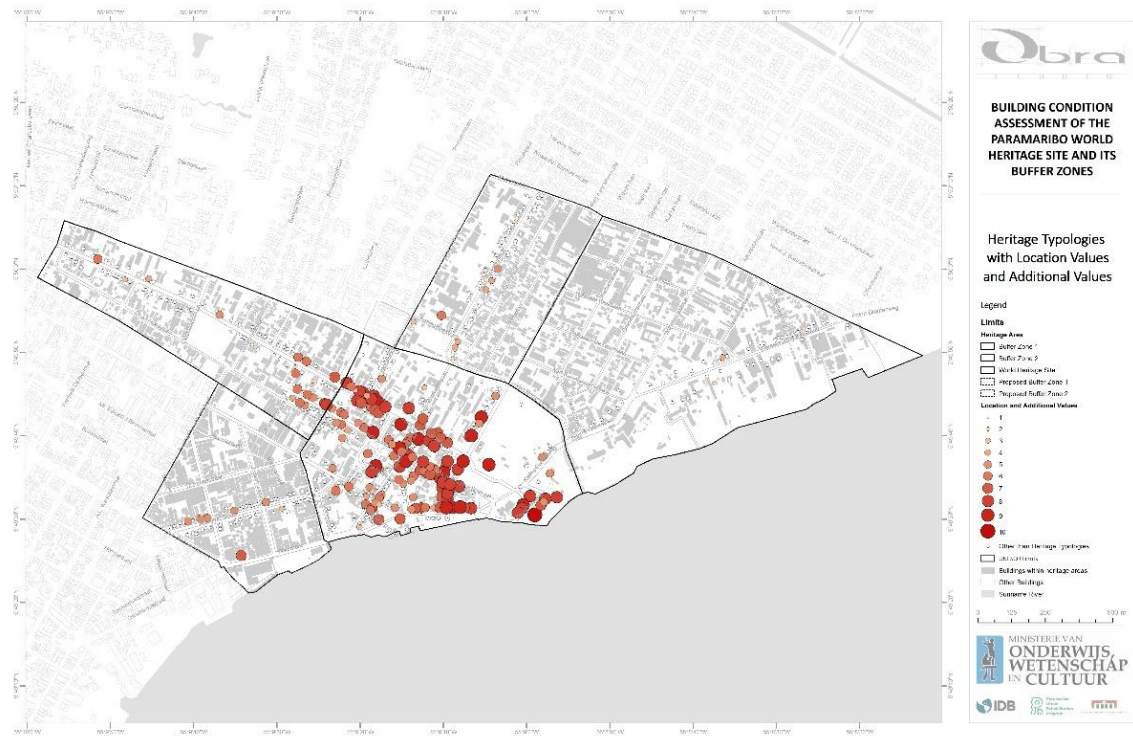


The final parameter to consider is a set of additional values that were assessed as part of the registry form, which include: (1) Contributing to architectural language and evolution of building systems (homogeneity); (2) Use of local materials; (3) Presence of high-quality craftsmanship; (4) Historic and socio-cultural significance; (5) Connection to the natural environment; (6) Contribution to the urban complex in relation to monuments; and (7) Other. Map 43 shows how the distribution of these buildings is focalized at the WHS around the Zeelandia compound, along Dr. J.C. Mirandastraat, Lim A Po Straat, and the northern sections of Watermolenstraat and Henck Arronstraat. Finally, map 44 shows the sum of location and additional values, to establish a priority for intervention over a value of 10.

Map 45. Heritage Typologies and Additional Values

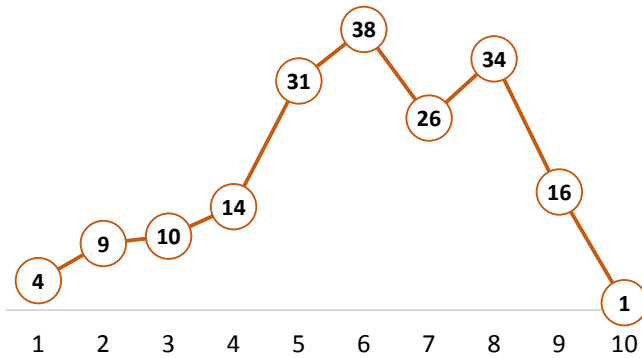


Map 46. Heritage Typologies and Location Values



This valuation scale, organizes the buildings in groups according to their total value. The figure to the right shows the amount of buildings that correspond to each value, where the only building that has a value of 10 is Fort Zeelandia; other valuable and relevant buildings are in the next category, like Saint Peter’s Cathedral, yet they lack one of the additional values, like connection to the natural environment. The financial analysis retakes this information to establish costs and priorities for interventions.

Figure 28. Sum of location and additional values



5.7. Financial analysis

The “Restoration Costs 2010-2016” by the local Surinamese firm KDV Architects (table 2) establishes that “project cost ranges from 600 USD / m2 up to 1580 USD / m2” (KDV Architects, 2016). This variation in value depends on the state of each building and could be related to the **Total State of Conservation** analysis presented by this consultancy. Values for **Total State of Conservation** have been arranged by a percentage factor, and therefore can be related to the KDV table, as shown on table 3. For the buildings in “Excellent” state of conservation, the same source determines that yearly costs could range from USD 5 to USD 10 per square meter, so those values are included as maintenance.

Table 2. Restoration Budgeting

Type	condition	Cost / m2 floor area (USD)
Restauracion with limited installations	Reasonable good condition, no more than 30 % replacement	650
Restauracion with extensive installations	Reasonable good condition, no more than 30 % replacement	1000
Restauracion with limited installations	Bad condition, approx. 70 % replacement	900
Restauracion with extensive installations	Bad condition, approx. 70 % replacement	1250
Restauracion with limited installations	Very bad condition, approx. 90 % replacement, or total reconstruction	1150
Restauracion with extensive installations	Very bad condition, approx. 90 % replacement, or total reconstruction	1500

The cost per m2 floor area includes consultancy, and a 5 % extra for terrain cost.

Source: KDV Architects, 2016.

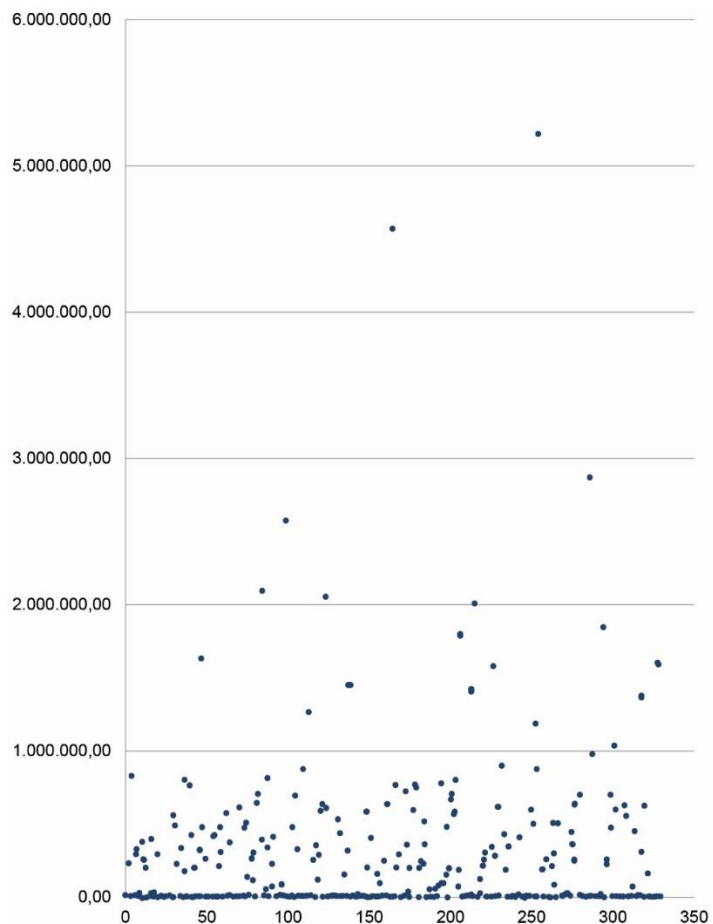
Table 3. Restoration Budgeting with Total State of Conservation

TYPE	CONDITION	COST PER FLOOR AREA (USD)	TOTAL STATE OF CONSERVATION (%)
Maintenance	Minimum	\$5.00	100.00 %
Maintenance	Maximum	\$10.00	87.50 %
Restauration with limited installations	Reasonable good condition no more than 30% replacement	\$650.00	75.00 %
Restauration with limited installations	Bad condition, approx. 70% replacement	\$900.00	62.50 %
Restauration with extensive installations	Reasonable good condition no more than 30% replacement	\$1,000.00	50.00 %
Restauration with limited installations	Very bad condition, approx. 90% replacement, or total reconstruction	\$1,150.00	37.50 %
Restauration with extensive installations	Bad condition, approx. 70% replacement	\$1,250.00	25.0 %
Restauration with extensive installations	Very bad condition, approx. 90% replacement, or total reconstruction	\$1,500.00	12.50 %

Source: This consultancy.

The results for all the buildings in the PBHI are displayed in figure 29. The values at the bottom represent the buildings that require maintenance only, and the ones above require different degrees of intervention based on their **total state of conservation** and their **total floor area**. Map 47 shows the distribution of the cost of intervention, where it is evident that the areas around the Zeelandia Complex require minimum interventions, but the rest of the WHS has some spaces that could be expensive to renovate, so there should be a plan to determine priorities for those interventions.

Figure 29. Cost of intervention per building



Map 47. Total Cost of Intervention



If we continue this analysis and extract from the PBHI the “Heritage Typologies”, the resulting map shows that the 183 buildings in that category establish a first layer of priority. The total renovation value for these buildings is **USD 60,456,559.30**, which represents a value that should be further narrowed to direct funds by the local administration (map 48). Yet, it does set a general parameter for the larger ambition to have a fully renovated historic center. From this selection of buildings, if only the WHS would be considered, the total cost of intervention would be **USD 46,858,602.90**, as shown on map 49.

Map 48. Total Cost of Intervention for Heritage Typologies



Map 49. Total Cost of Intervention (WHS)

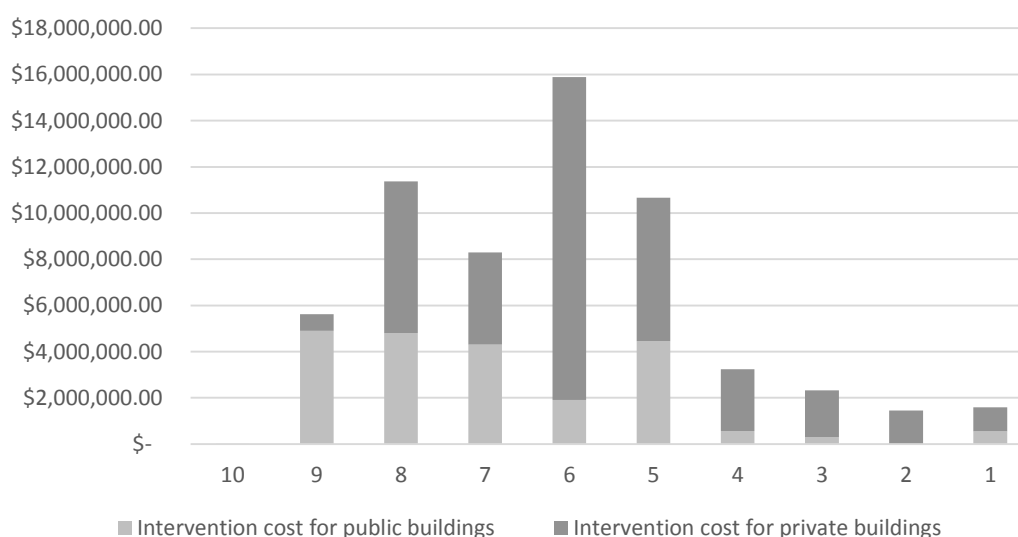


The information in map 48 could be further specified with the valuation scale. Table 4 shows the number of buildings and total cost of intervention for each of them with an additional differentiation between public and private buildings, and figure 23 evidences the public-private ratio. In general, the cost of intervention is higher in the private sector where it represents 64% of the total intervention cost. When isolating total heritage values 9-10 the ratio for the public investment increases due to the fact that most of these buildings are monuments or governmental institutions, and for values 7-8 there is a higher relevance for privately owned buildings, therefore subsidies should be addressed according to the value of each building to establish intervention priorities.

Table 4. Cost of Intervention for Heritage Typologies

Valuation scale	Number of buildings (units)	Intervention cost total (USD)	Intervention cost for public buildings (USD)	Intervention cost for private buildings (USD)
10	1	\$ 17,860.80	\$ 17,860.80	\$ -
9	16	\$ 5,627,815.45	\$ 4,908,800.50	\$ 719,014.95
8	34	\$ 11,365,612.00	\$ 4,810,393.60	\$ 6,555,218.40
7	26	\$ 8,293,607.05	\$ 4,312,043.75	\$ 3,981,563.30
6	38	\$ 15,882,416.60	\$ 1,905,356.35	\$ 13,977,060.25
5	31	\$ 10,663,649.05	\$ 4,452,652.50	\$ 6,210,996.55
4	14	\$ 3,234,955.65	\$ 571,733.90	\$ 2,663,221.75
3	10	\$ 2,325,061.35	\$ 296,910.00	\$ 2,028,151.35
2	9	\$ 1,457,740.05	\$ 4,656.40	\$ 1,453,083.65
1	4	\$ 1,596,676.50	\$ 550,621.50	\$ 1,046,055.00
TOTAL		\$ 60,465,394.50	\$ 21,831,029.30	\$ 38,634,365.20

Figure 30. Intervention Based on Total Heritage Values



6. Final recommendations and communicating results

Paramaribo is a unique World Heritage Site with a multiplicity of cultures and diversity and the PHBI is the first step towards consolidating a highly important tool to guarantee the conservation of the site's Outstanding Universal Values and its Historic Urban Landscape. Based on the resulting products, this consultancy proposes recommendations for historic preservation based on the baseline data collected and for the future implementation of the tool.

6.1. Recommendations for future implementation of the tool

- As mentioned in section 4.1 there are two types of surveys: “partial” (façade only) and “complete” (façade and interiors). The contents of the current PHBI are based mostly on partial building surveys, with the exception of a sample of 20 buildings. The intention of this consultancy to develop a “complete” survey was to propose a more accurate way to assess the building, knowing that one of the main objectives was to institutionalize and establish protocols for the further expansion of the PHBI. Therefore, the first recommendation is to continue this process and periodically update the data –historic data in the future will be useful to track advances in the city’s revitalization efforts.
- During the field activities, many people displayed discomfort in seeing that people are assessing their buildings, which included security personnel for government buildings as well. This is why data gathering schedules should be adequately planned so that the community knows that there will be people surveying the buildings. This will be particularly important for the “complete” surveys, since an interior inspection will be required.
- Once local technicians begin to expand the PHBI, they will be able to continue to train other stakeholders. An innovative strategy in the future would be to explain the process to the building’s owners or building managers so that they will be able to update the information regularly, technicians would then be necessary to do occasional audits to make sure that the uploaded information is accurate.
- The “Historic Urban Landscape” approach and UNESCO’s designation for Paramaribo establish that the Outstanding Universal Values of the city correspond to the site as a whole. Therefore, as discussed in section 4.5, there is an imperative need to correlate the contents of the PHBI with a new legal framework to establish intervention parameters for all buildings within the HICP.
- Cadaster information should be added to the database once gathered by the PIU-PURP office. This will serve to directly interact with owners within the areas of interest for planning purposes.
- This consultancy has made an effort to propose a highly visual final report so that it may be shared with diverse stakeholders and work towards a shared vision for the site’s conservation. However, this information could expand on the Inter-American Development Bank’s open data initiative to incorporate additional tools for visualization and management. The open data tools could be merged into a system that could incorporate a dashboard with the capacity to produce diverse real-time visualizations. In the future this system could serve other historic cities in the Americas to compare all the common variables and eventually share strategies towards conservation, which will strengthen ties amongst stakeholders in at a regional scale.

6.2. Recommendations for historic preservation based on the baseline data collected

- The data presented in this report shows that most buildings used to be used for residences, so they could be renovated to accommodate this function. Therefore, housing strategies should be enforced, since it was underscored on several diagnosis documents for Paramaribo that the residential use of the area has been decreasing due to interest in other sectors of the city.
- There are areas to the north of the WHS that are currently residential, alongside others towards Buffer Zone 1 and Proposed Buffer Zone Expansion 1. These sectors should be considered of priority towards improving the quality of public space and other amenities to consolidate residential neighborhoods.
- The southwest area of the WHS and Buffer Zone Expansion 1, on the other hand, have a higher tendency towards mixed use; this should also be taken into account for incentives and financial sustainable mechanisms for conservation.
- Natural risks such as winds, rain, and flooding apply to most areas, but are relatively easy to reduce the risk level. In particular, flooding is caused due to an inefficient sewage system, and is a common problem throughout the Buffer Zones. During the data collection it was possible to see how the canals, which are original components of Paramaribo's Historic Urban Landscape, are contaminated and clogged. These canals should be reactivated as functional components of the city's drainage system, and also as potential high quality public spaces.
- The human risks are also important to mitigate, especially the case of "fire due to electrical sources". Most buildings have external connections that don't have the necessary provisions in case of electrical malfunctions. Furthermore, there are rarely public connections for firetrucks in case there are emergencies. This and the previous point reflect on the need to address a plan for a general water network for the HICP.
- The need for high quality public space was a recurrent topic mentioned during the interviews and among the fieldwork team. The local climate requires the inclusion of shade and green areas with a wider variety of vegetation. New activities should be incorporated to improve the necessary quality of life to consider the area as a place for residence again, for users like children, elders, athletes, among others.
- Close to three quarters of all heritage buildings have some sort of constructive alterations. Some of these alterations contribute to the value of the building, but most do not. The abovementioned legal framework should have a section on the elements and materials that are allowed and that contribute to the general city image.
- The study shows that the commercial area of Maagdenstraat and the southern sections of Watermolenstraat, Jessurunstraat and Henk Arronstraat are problematic areas that have low state of conservation, social conflicts and high rates of abandonment. As an example, map 50 shows the southern section of Watermolenstraat, where there are buildings with low state of conservation and risk of abandonment. Future urban planning strategies should have socioeconomic strategies to improve the conditions in these, for they currently interrupt the flow of transients due to a high perception of insecurity.

Map 50. Risk and State of Conservation at Watermolen Straat



- There are two areas that have been labeled as “Proposed Buffer Zones”, which have not yet been approved by UNESCO. It is important to use the PHBI content to justify the pertinence and cost to include them and the way in which conservation planning should be addressed for them.
- This study categorizes the Cost of Intervention based on each building’s Total Heritage Value. This can be a powerful tool to justify a priority for intervention and public investment.

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Annexes

Annex 1: PHBI Training by OBRA STUDIO

Paramaribo Heritage Building Inventory (PHBI) Training by Obra

Paramaribo Urban Rehabilitation Program

Date: Monday 19 August 2019

Time: 8:30 - 14:00

Location: SBHF

	Name	Organization	E-mail	Phone
1	Tooy M.	Dir. Cultuur / Minor	malva.tooy.cult@gmail.com	8779270
2	Atmya P.	B.W.O / Min. O&TC	priscilla-atma@live.com	0950564
3	Nikka K.	"	"	"
4	Sampi D.	B.K.P. Min. R.O.	Sampidonrenato@hotmail.com	87753511
5	Doelakassij R.	min. H&T	rdr-93@hotmail.com	85891371
6	Dewansingh, A.	PIU - PURP	pratimga01@hotmail.com	8634207
7	Woei A. Sice Jeraak	Woei A. Sice Architects	psicawoei@woei-architects.se	8240789
8	Fokke, Stephen	SGES Partners nv	sges@sr.net	8553014
9	MOREDJO, ARIAND	PIU - PURP	amoredjo@hotmail.com	8781235
10	Samantha Panta	Obra Studio	samanthapantakafarida@gmail.com	"
11	Isaac-Charles Geddeman	Obra Studio	leoyseccwlinnaily@gmail.com	7470232
12	Diana Aroup	Obra Studio	daarou14@hotmail.com	1593 998426464
13	ARIEA ORBEA	Obra Studio	ARIEAORBEA@gmail.com	1593 999241036
14	Rachel Weikman	SGES	bheritagesur@gmail.com	8718281
15	Bradley Travers	Ministry of Trade, Industry and Tourism	bradley.travers@minti.gov.sr	8554211
16				
17				
18				
19				
20				

Annex 2: Receipt of Android phones for future data gathering

RECEIPT



EIBARKITUR (Commercial name: Obra Studio)
ROCA E10-75 y 12 de OCTUBRE. ED GAYAL.
OF 303
+593 2 252 1101
santiago.orbea@gmail.com /
info@obra-studio.com

30-08-2019

RECEIPT NO.001

<Contract No. PURP-13-CD-CF-PURP 1046-028>

ENTITY RECEIVING

PROJECT DETAILS

PARAMARIBO URBAN REHABILITATION
PROGRAM

CONTRACT FOR CONSULTANT'S SERVICES
TO CONDUCT A BUILDING CONDITION
ASSESSMENT OF THE PARAMARIBO WORLD
HERITAGE SITE AND ITS BUFFER ZONES

THE MINISTRY OF EDUCATION, SCIENCE
AND CULTURE

(Page 5 of the Terms of Reference) "Prepare data collection
tools and define strategy. The firm is expected to use
cellphones (to remain in the possession of the PIU after the
consultancy, facilitating replication of the exercise in the
future) and the open-source data collection app
OpenDataKit..."

Zeelandiaweg 7 at Fort-Zeelandia, Suriname

+597 421975

purp.idb@gmail.com
natasjadeul@hotmail.com

DATE	DESCRIPTION	UNITS
30-08-2019	Samsung Galaxy A10 32GB (A105M) 6.2" HD+ Infinity-V 4G LTE Factory Unlocked GSM Smartphone – Black Includes the phone in perfect condition, manual, charger and headphones.	3.00

Anushka Dewansingh

Procurement Specialist

PARAMARIBO URBAN REHABILITATION PROGRAM

TOTAL
PACKAGES **3.00**

Annex 3: Interview Summaries

Method

This study used a mixed method of unstructured interviews and observations in order to document Paramaribo's heritage preservation, social issues and community engagement. Interviews were held by a psychologist during the second week of the consultancy or were contacted via email after the fieldwork. The format of the interview was conversational and the interviewer proposed topics concerning main issues and strengths of PWHS to initiate a conversation, thus the main goal was to summarize the participant's opinions about these matters.

The participants were selected during the team's stay in Paramaribo and were part of organizations related to heritage preservation that met with the consultancy team during the month of August 2019. They all had different areas of expertise, but their opinions were equally significant since they provided different perspectives. There were seven participants in total, five were Surinamese and two were Dutch. Representatives from The Suriname Built Heritage Foundation, The Back Lot and IDB were interviewed. An owner of a hotel at downtown, a principal architect of a known architecture firm and two students who interned at the same office were also interviewed.

A group of passionate experts is not enough to preserve the PWHS

The Suriname Built Heritage Foundation Representative

There is a lack of public awareness related to the value of historic properties and this could change with education about the matter at primary levels. There is also an absence of interest in heritage buildings, as people don't see economic opportunities that come along with heritage preservation such as earning a living, reusing the buildings and creating jobs. Unfortunately there are no incentives for people who own heritage buildings and they have to use their own money, but since they do not see gains they are not willing to invest. The consequence is that since heritage buildings are not allowed to be demolished people just leave them to decay.

Heritage preservation is often seen as a hobby and despite the fact that there are a lot of passionate experts, it is not enough to preserve the historic center. The historic sites of Paramaribo are important because they contribute to the country's identity since they were built by Surinamese people while most people associate them only with the Dutch.

Tolerance, openness to various religions, creativity and social skills can raise awareness

The Back Lot Representative

Surinamese people have no reference for the relevance of culture and its development. Due to the weak economy and growing poverty, cultural property is not a priority and heritage buildings are poorly maintained. The main social issue of downtown Paramaribo is the lack of awareness about the added value of built heritage for socio-economic development, considering what tourism and nature have to offer.

Tolerance and openness to various religions as a prominent characteristic of Surinamese people. Additionally, creativity and social skills as protective factors of the community. There is a need for institutions and organizations that develop policies and carry out assignments, for which national funds need to be created.

Closing the financial gap, raising awareness and stimulating renewed interests is the priority

IDB Representative

The overall state and condition of the PWHS buildings shows that maintaining the buildings is a not priority in general. There are specific areas where there is increased interest of private/cultural sector to improve the area. Lack of awareness is not necessarily what causes the building's lack of maintenance, but also the financial gap previously proved by HR&A's consultancy. A combination of: limited budget, high cost for purchase of buildings, lending of money and renovation are the causes of the deterioration of buildings and the loss of value of heritage sites.

Safety is the most problematic social issue in downtown Paramaribo. However, Surinamese Community have a common love for food, dance and social events that could catalyze a change in the historic center. If people could be convinced to use the city center for these purposes, PWHS could have great cultural potential. Adaptive reuse in the city center has a great potential to sustainably preserve the building and is an excellent way to involve the community, like Herenstraat.

The ownership of a business downtown with no government incentives

Downtown hotel owner

Owning a hotel at downtown requires a lot of effort since historic buildings are not allowed to change on the outside and it is expensive to maintain wood houses. However, along with partners it is possible to accomplish the preservation of the hotel without any additional monetary incentives. Hotel owners encounter daily social problems such as the use of the hotel's porch by homeless people as a protection from the rain and sun. There is no effort from the government to solve with these problems since they give away food to homeless people but do not offer jobs for them, so the situation remains the same.

It is unfortunate how people are losing interest in the value of heritage buildings, especially young people. Additionally, Surinamese tend to complain instead of having a proactive behavior. However, there is still opportunity to enhance better practices to preserve heritage buildings in the future.

There is a general public appreciation of old buildings only when they are aesthetic

Architect

The lack of interest in heritage preservation is due to a general public appreciation of old buildings only when they are well-maintained and beautifully painted and if they are deteriorated, most people think that they should be replaced. It is common to work with individual owners who want to restore their buildings, but this hardly ever involves community projects.

The consequences of having a limited budget and investment results in the center deterioration. The main social issues are that downtown Paramaribo is unclean, there are too much cars parked on the street, lack of green spaces and after 16.00h the center is deserted. Public spaces should be improved and spaces for pedestrians should be enhanced.

Suriname is unique due to its architecture and materials compared to South America

Student

It is rare to be a young person interested in heritage preservation. Field experts and people who are passionate about history are the only ones interested in historic buildings and their preservation. Historic

sites important for the Surinamese's identity, since their architecture and materials are so unique compared to the rest of South America.

Surinamese people coexist amongst various ethnicities and have attached neighborhoods that will most likely help each other in times of trouble. People should come up with management plans to preserve the buildings and follow the plan involving the community to produce change.

One of the few opportunities to get involved in heritage preservation is to work with passionate experts

Student

When interested in heritage preservation, there are few opportunities to get involved in the subject and the only way to learn about it is to work with passionate experts who work in the field. Architecture education should be updated, because curriculums tend to be out of date related to historic buildings and heritage preservation.

Surinamese have a lack of proactive behavior, however there are protective factors to the community such as inclusion.

Annex 4: Maps, delivered in digital format.