

La Babilla wetland park

Biocentric Landscape desing for Socio-ecological reconciliation in Cali, Colombia.





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Biocentric Landscape desing for Socio-ecological
reconciliation in Cali, Colombia.

Tutor:

Silvia Gron

Co-Ttutor:

Mario Artuso

Candidate:

Valentina Osorio

S307227

Acknowledgement

Es.

Quiero agradecer a la vida por la inmensa bendición de haberme dado la familia que tengo.

Quiero dedicar este trabajo y todos mis logros a mis padres, a ustedes les debo todo lo que soy y son el ejemplo de lo que quiero ser. Gracias por regalarme una vida llena de oportunidades y amor, por su apoyo constante y por su inmensa paciencia. Quiero que sepan que cada éxito en mi vida es también de ustedes, que han movido cielo y tierra por hacerme feliz. Si creo en mí misma y en mis capacidades, es porque sé que llevo una parte de ustedes dentro de mí.

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En.

I want to thank life for the immense blessing of giving me the family I have. I want to dedicate this work and all my achievements to my parents, to you I owe everything I am and you are the example of what I aim to be. Thank you for giving me a life full of opportunities and love, for your constant support and for your immense patience. I want you to know that every success in my life is also yours, as you have moved heaven and earth to make me happy. If I believe in myself and my abilities, it's because I know that I carry a part of you inside me.

Thanks to those teachers who inspire, who transmit their passion and who encourage to keep going, even in the most challenging moments of this profession, which is sometimes difficult to love. Thank you for giving me back the creativity to imagine, for reminding me the value of dreaming and for teaching me that love for what we do is the engine that transforms ideas into realities.

Motivations

The motivations behind this thesis derive from my personal experience as a Caleña and as a student of architecture. I grew up in the foothills of the Farallones, and frequenting the south of Cali, surrounded by nature and forest, environments and landscapes of biodiversity that were part of my daily life.

During my training in architecture, the projects I was most passionate about were always related to ecology: urban forests, river boulevards, landscaping and urbanism integrated with ecosystemic corridors in the city. There were times when I thought maybe I should have studied biology, but today I know that **architecture is the tool that allows me to give value to what inspires me: creating environments that connect people with nature.**

Coming to Italy, I experienced a culture shock when I saw how the city is lived here. For the first time I was living in such built environments, in contrast to what I was used to in my city, where natural richness coexists with urban dynamics. This change made me more aware of the **privilege of having nature integrated into the city.** Yet what struck me most was to see how people here fully enjoy natural spaces: they lie on the grass, play, have picnics and connect with the parks in a way I had never seen in Cali. I thought about our parks, especially in the south of Cali, which are even greener and lush, and I asked myself: **why aren't they enjoyed like this?**

This thesis is born out of a desire to change that reality. **I wish that in Cali we learn to value, live and enjoy these unique characteristics that our territory offers us.** While we look outward and admire the monuments and buildings of other cities, we forget that our greatest monument, our true heritage, is the nature that surrounds us. **I hope that we live in coherence with our environment, that we recognize it as a fundamental part of our identity and that we learn to integrate it into our daily lives with pride and respect.**



Abstract

This thesis investigates how landscape architecture can reconcile the relationship between inhabitants and the natural environment, focusing on La Babilla Park in Cali, Colombia. The study identifies the root causes of disconnection between people and nature, explores solutions, and applies them to design.

Using a multi-scale methodology, encompassing tangible variables such as urban and ecological structure maps, alongside intangible factors derived from surveys and data analysis. A literature review focused on theories related to disconnection dimensions and biocentrism informed the approach. By correlating this information, the study identified issues in the community and developed strategies and principles to guide the design process.

The resulting design addresses both physical and intangible causes of disconnection, implementing strategies to overcome physical barriers that hinder ecological and anthropic connections. Centered on three core objectives—inspire, educate, and foster—the design introduces elements that integrate habitats for local species while making them visible and relatable to visitors. By creating sensory, educational, and interactive experiences, the park becomes a catalyst for a cultural shift, inspiring the community to rediscover, reconnect with, and reimagine its relationship with the natural heritage.

Research question

1. Colombia is home to approximately 10% of global biodiversity. Cali is considered one of the most biodiverse cities in the country and was recently recognized in the field of urban biodiversity worldwide. According to the Singapore or Urban Biodiversity Index (UBI), the city scored 83 out of 108 points. (Alcaldía de Cali, 2024)

2. Comuna 22, where the park is located, is the only commune in the city that meets the World Health Organization (WHO) standard for public space availability, exceeding 9 m² per inhabitant (Secretaría de Planeación Municipal, 2023).

3. The concept of biocentrism, as used in this thesis, refers to a worldview that sees humans as an equal part of nature, not separate or superior to it, emphasizing coexistence and mutual respect.

Colombia, as the fourth most biodiverse country globally, and Cali, as one of its most biodiverse cities, hold immense ecological potential¹. La Babilla Park, situated in Comuna 22 is an example of this richness. Yet, despite being emblematic representation of biodiversity within Cali's urban context (DAGMA, 2024) and meeting WHO² standards for public space availability, the park remains underutilized, **reflecting a broader issue of cultural and practical disconnection between residents and their natural heritage**. Within this framework, the research in "El Lago de la Babilla" seeks to address a specific problem: to reconcile the interactions between a local community that transits in disconnection with an environment of ecological significance.

The thesis identifies this disconnection as a multifaceted issue, influenced by historical, cultural, social, and urban dynamics. The goal, therefore, is to reimagine the role of landscape architecture in bridging this gap. Addressing this disconnection by adopting a **biocentric**³ perspective, seeking to integrate ecological and cultural values into the design.

La Babilla Park, as part of Cali's ecological network, represents an opportunity for this transformation. A chance to enhance biodiversity while fostering cultural and ecological integration. This thesis envisions the park as a catalyst for change, creating a space that reflects the principles of a biocentric culture—interdependence, mutual respect, and ecological harmony.

The central question of this thesis arises from the contradiction between the dynamics of Cali's biodiversity and the disconnection of its community with its natural environment:

“How can landscape architecture design in ‘El Lago de la Babilla’ park reconcile the relationship between inhabitants and the natural environment, promoting a biocentric culture in Cali, Colombia?”

Objectives

Valuing and Recognizing Natural Heritage

Recognize the natural and ecological value of La Babilla Park within the city and region by identifying its key elements, including biodiversity, ecological connectivity, and its role as part of Cali's broader environmental network.

Analyzing Urban Structure

Study and understand the urban and physical configuration of the sector surrounding La Babilla Park, including its spatial characteristics, infrastructure, and ecological elements. Examine the dynamics of urban life, such as accessibility, connectivity, and land use, to identify how these aspects influence the interaction between the community and the natural environment.

Exploring Human-Nature Relationships

Investigate literature that explore the relationship between humans and nature, focusing on the intangible factors such as cultural perceptions, emotional connections, and historical influences that shape how people interact with their environment.

Learning from Alternative Ideologies and Perspectives

Explore ideologies and worldviews in line with biocentrism, gaining new insights and perspectives to establish a framework and principles that guide the design

Developing a Design Proposal

Based on the findings, create a landscape architecture design for La Babilla Park that addresses both tangible and intangible issues, incorporating the learned concepts to reflect and act as a catalyst for change, with the purpose of reconciling the community with the natural environment.

Structure and Metodology

This thesis is developed from a multi-scale view, as lenses to create a whole picture of the context of the babilla wetland park, combining ecological, urban, social and theoretical analyses to address both tangible and intangible issues. In this way, it integrates physical and social evaluations of the site and its surroundings with an exploration of the dimensions of environmental disconnection and theoretical frameworks for reconnection. This path and collection of elements culminate in a design proposal that considers all scales and seeks to address the identified challenges.

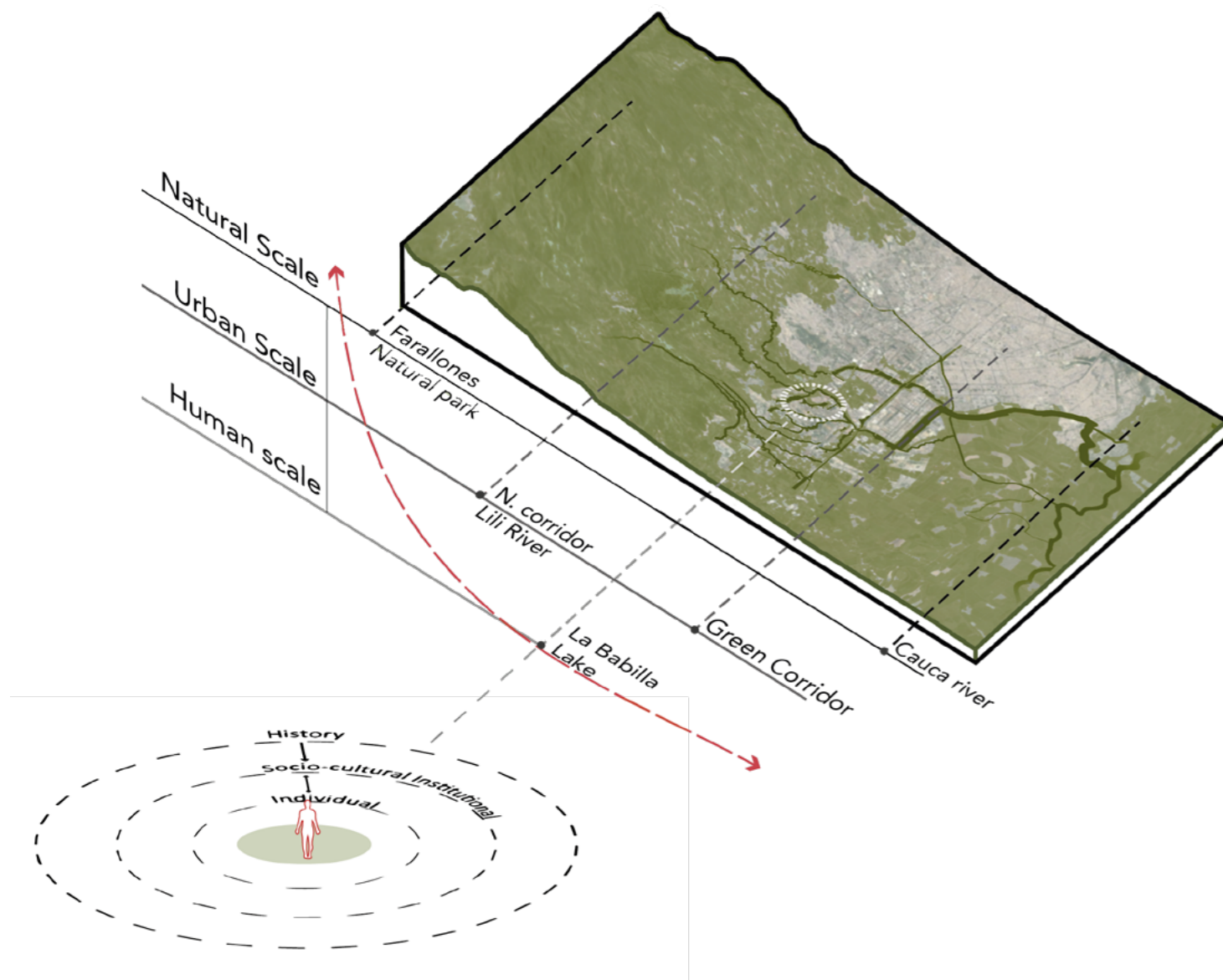


Figure 1:structure and methodology diagram, by the author

Chapter 1: A biodiverse context
Chapter 2: Legal and Management Framework

I began with a Macro Scale: Regional Ecological Context, to understand the ecological context in which the La Babilla wetland park is inserted, analyzing the main ecological structures of the region to which it is linked. This included identifying the main ecological structures of the Valle del Cauca, focusing on networks of ecological corridors that link the Farallones de Cali with urban water systems such as the Pance and Cauca rivers. This level provided an understanding of how the La Babilla wetland contributes to regional ecological continuity and biodiversity within the city.

Chapter 3: The urban context

Then, I took the analysis to a mid scale, focused on Comuna 22, where La Babilla park is situated, to examine the dynamics of urbanization . This allowed me to identify how this sector functions as a piece within the larger urban fabric. Accessibility, urban infrastructure, and land use patterns were studied to illustrate this area's role within the urban "gears". Identifying the tensions between rapid urban expansion, how it shaped the ecological structure and the social dynamics of residents and visitors. This approach helped to understand the root causes of the disconnection and the socio-cultural relationship with nature.

Chapter 4: La babilla lake park

Finally, the analysis focused on the immediate surroundings, the physical characteristics of the site and the elements that make up its landscape, including ecological evaluation and the intercation with built elements, such as pedestrian connections, land uses and vehicular mobility. To understand the site's current conditions and allowed for the identification of physical and infrastructural disconnections within the city.

Chapter 5: Reconciling Disconnection

Beyond physical factors, to uncover the deeper, less visible reasons behind this disconnection, the thesis complements with an exploration on the intangible dimensions of environmental disconnection, examining the cognitive, emotional and socio-cultural aspects that influence the way people perceive nature and relate to it. Then through literature review, the document explore new perspectives rooted in biocentric ideologies as alternative approaches to addressing disconnection, proposing principles that can guide the reconnection between people and their natural surroundings.

Chapter 6: Case Studie
Chapter 7: The project

Before developing the design proposal, the thesis included the study of relevant case studies. Building on the findings from all scales of analysis and informed by the theoretical exploration, The design phase began with the development of a master plan aimed at addressing the physical and infrastructural connections between La Babilla park and its surrounding urban fabric. the design then focused on the park itself, incorporating concepts inspired by the theoretical frameworks and addressing both tangible and intangible disconnection issues.

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01

A biodiverse context

First Scale The territory

1.1 Valle del Cauca

1.2 Cali, rivers and wetland

1.3 Introduction to the site

The first chapter of this thesis establishes the territorial context from a territorial scale approach, functioning as a “broad lens” that allows understanding the general context in which the La Babilla wetland is inserted and its relationship with the larger ecological systems.

The main objectives of the chapter are to identify the structuring elements of Valle del Cauca, to recognize the biodiversity potential of the region, and build complete image of the territory in terms of geographic location, natural characteristics, and the ecological network that connects the major systems with urban spaces.

Within this framework, Valle del Cauca is described as a region of great biodiversity, structured by the central mountain range, the western mountain range and the geographic valley of the Cauca River. The Farallones de Cali emerge as a main element for conservation, while in the urban setting, Santiago de Cali stands out for its water system and wetlands, such as La Babilla, which perform fundamental ecological and social functions.

The La Babilla wetland, located in Comuna 22, represents a green lung and critical ecological corridor. Despite its artificial transformation, it remains essential for connecting the community to its natural environment and strengthening the city’s ecological network.

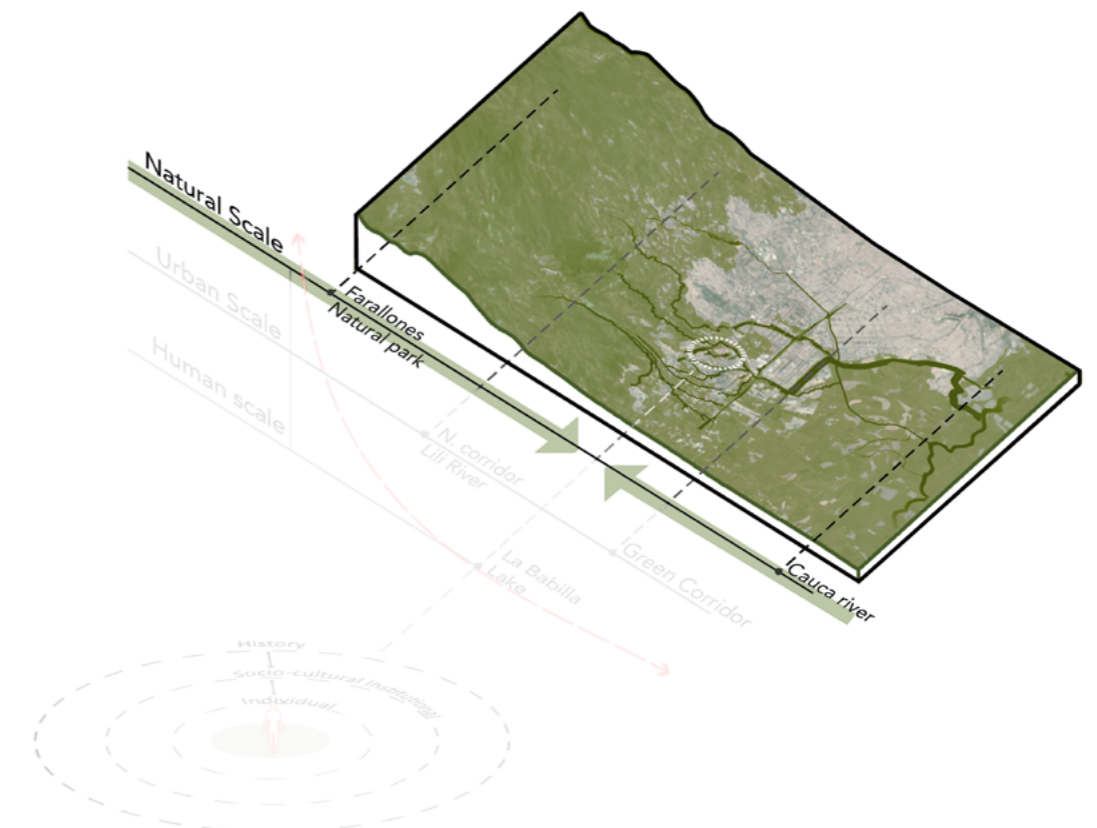


Figure I:1st scale diagram, by the author

Colombia

Country
Area: 1,141,748 km².
Population: 52,700,000 (estimate 2024).
Capital: Bogotá. Population: 7,930,000 inhab.
Language: Spanish (official) and numerous indigenous languages, co-official in their respective territories.



Valle Del Cauca

Departamento
Area: 21,195 km².
Population: 4,475,886 inhab (2018).
Capital: Cali
Altitude: 995 m a.s.l.
Climate: 23 °C



Cali

Area: 619 km².
Population: 2,227,642 inhab (2018).
Capital: Cali
Altitude: 995 m a.s.l.
Climate: 23 °C



1.1

The territory: Valle del Cauca

Located in southwestern Colombia, **Valle del Cauca** region has coastlines along the Pacific Ocean and shares borders with the departments of Chocó and Risaralda to the north, the Department of Cauca to the south, and Quindío and Tolima to the east. It has a key position in Colombia and the continent, **representing one of the global areas with the highest biodiversity.** (CVC, 2014).

The eastern boundary of Valle del Cauca is demarcated by the **Central Mountain Range**, acting as a dividing line between this department and Cauca, Tolima, Caldas, and Risaralda. This range is characterized by its elevations and the presence of páramos, essential for biodiversity and the region's water resources. In the Western Mountain Range, directly facing the city of Cali, lies another important natural landmark, the **Los Farallones National Natural Park**. This park is a vital element of Colombia's national parks system and holds a fundamental role in conserving local flora and fauna, as well as regulating the climate and providing water for the region. These areas are important for the ecology and natural environment of Valle del Cauca and contribute to the **department's identity and heritage.** (CVC, 2014).

Valle del Cauca is distinguished by its physiographic configuration, divided into **three natural regions** that differ in elevation, climate, and ecology. **The mountainous region** of the two ranges, including the Central and Western Mountain Ranges, forms the mountainous backbone of the department, rising from mid-levels to reach the cold high-Andean páramos. They are crucial for water capture, forming numerous rivers and streams that supply water to the valley and lowland regions. **The geographical valley region of the Cauca River**, situated between the two ranges, is a fertile alluvial plain and one of Colombia's most important agricultural axes. The region hosts ecosystems of tropical dry forests, subxerophytic shrub-lands, floodable forests, and a system of lentic wetlands, among the richest and most threatened at the national level. **The Cauca River**, which runs through this region from south to north, is vital for irrigation and sustenance of the valley's diverse agriculture. The coastal region or the Pacific region extends from sea level along the Pacific coast.

BIEC_ECOSISTEMAS_RESUM

- Arbustales y matorrales calido muy seco en montana fluvio-gravitacional
- Arbustales y matorrales calido seco en piedemonte aluvial
- Arbustales y matorrales medio humedo en piedemonte coluvio-aluvial
- Arbustales y matorrales medio muy seco en montana fluvio-gravitacional
- Arbustales y matorrales medio seco en lomerio estructural-erosional
- Arbustales y matorrales medio seco en montana fluvio-gravitacional
- Bosque calido humedo en montana fluvio-gravitacional
- Bosque calido humedo en piedemonte coluvio-aluvial
- Bosque calido humedo en planicie aluvial
- Bosque calido muy humedo en lomerio-fluvio-gravitacional
- Bosque calido muy humedo en montana fluvio-gravitacional
- Bosque calido pluvial en lomerio estructural-erosional
- Bosque calido pluvial en lomerio fluvio-gravitacional
- Bosque calido pluvial en planicie marina
- Bosque calido pluvial en planicie-fluvio-marina
- Bosque calido seco en lomerio fluvio-lacustre
- Bosque calido seco en piedemonte aluvial
- Bosque calido seco en piedemonte coluvio-aluvial
- Bosque calido seco en planicie aluvial
- Bosque frio humedo en montana fluvio-gravitacional
- Bosque frio muy humedo en montana fluvio-gravitacional
- Bosque frio pluvial en montana fluvio-gravitacional
- Bosque frio seco en montana fluvio-gravitacional
- Bosque inundable calido pluvial en planicie fluvio-marina
- Bosque inundable calido seco en planicie aluvial
- Bosque medio humedo en montana estructural-erosional
- Bosque medio humedo en montana fluvio-gravitacional
- Bosque medio humedo en piedemonte diluvial
- Bosque medio muy humedo en montana fluvio-gravitacional
- Bosque medio seco en montana fluvio-gravitacional
- Bosque muy frio humedo en montana fluvio-gravitacional
- Bosque muy frio muy humedo en montana fluvio-gravitacional
- Bosque muy frio pluvial en montana fluvio-glacial
- Herbazales y pajonales extremadamente frio pluvial en montana fluvio-glacial
- Herbazales y pajonales muy frio muy humedo en montana fluvio-glacial

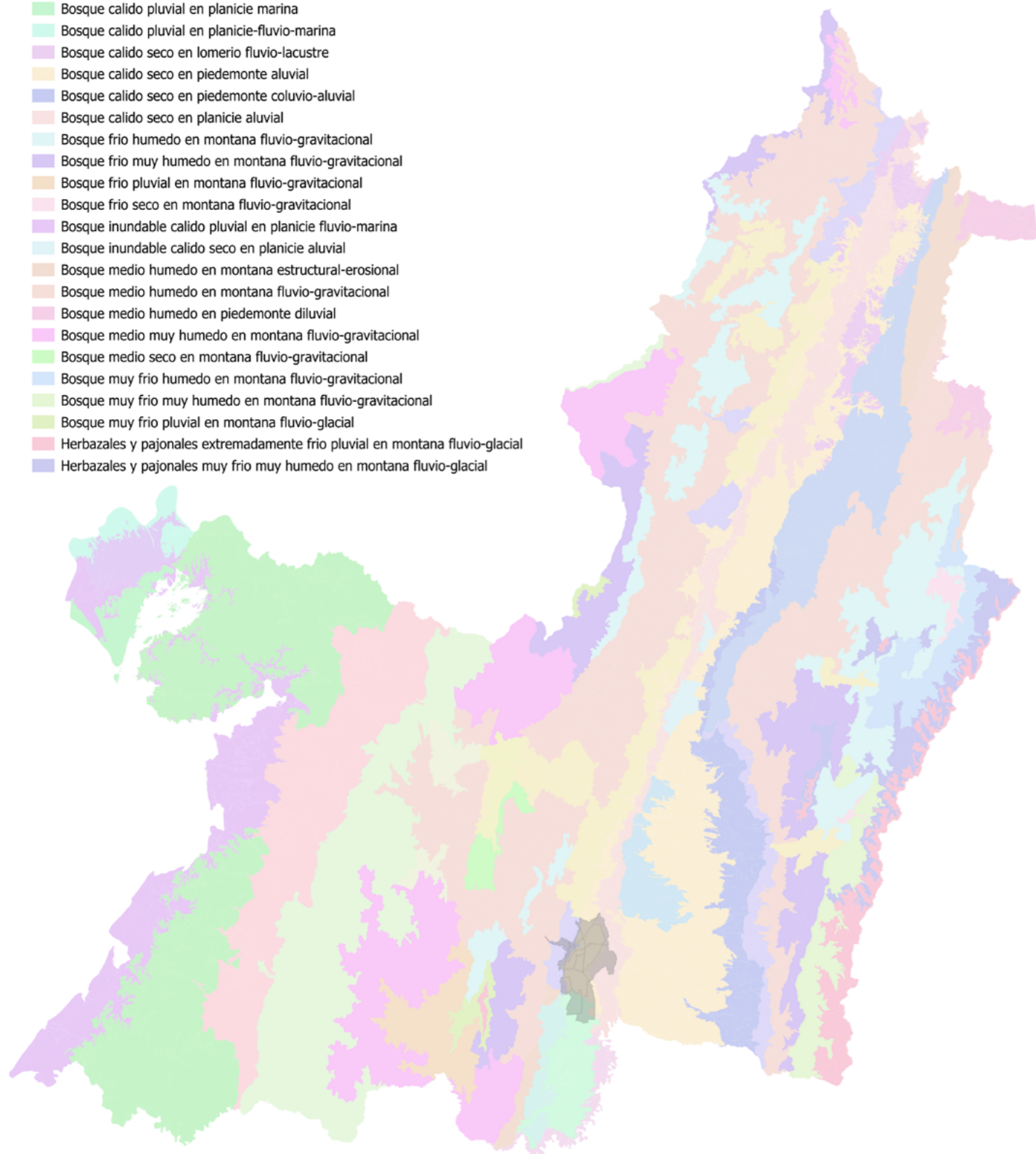


Figure 3: Valle del cauca ecosistemas, based on GeoPortal de la CVC

Within these three major regions, **Valle del Cauca exhibits amazing ecological diversity**, classified into **8 biomes and containing 35 different ecosystems**. According to guidelines from (CVC and IDEAM, 2007-2010) these ecosystems, identified through cartographic analysis of climate, geomorphology, and soils, vary along the altitudinal gradient and are influenced by structural and functional characteristics such as climate, vegetation, and altitude.

The areas with ecological potentialities **offer a wide range of ecosystem services that are essential for maintaining biodiversity, supporting the local economy, regulating critical environmental processes, and providing crucial resources for human and animal life**. Recognizing and protecting these areas is fundamental for environmental conservation and long-term sustainability.

The Valle del Cauca region in Colombia has been a pioneer in environmental conservation with its progressive approach to protected areas. This approach was formalized in 2005 with the issuance of Resolution CVC No. 752, which established the Departmental System of Protected Areas (SIDAP Valle del Cauca).

To date, more than 17% of the identified 35 ecosystems are officially protected, representing a significant progress, but there are still 20 ecosystems to be included in the protection network. The implementation and continuous updating of management plans are essential, not only to expand conservation coverage but also to resolve existing land use conflicts, thus ensuring the sustainability of these vital resources for future generations.



Figure 4:Diagram Biomes of Valle del Cauca taken from DESCUBRIENDO NUESTRO TERRITORIO. SÍNTESIS AMBIENTAL DEL VALLE DEL CAUCA (n.d)



1.2

Cali

The department of Valle del Cauca consists of 40 municipalities, the smallest political-administrative divisions, and two special districts: Buenaventura and Santiago de Cali, commonly referred to as Cali, which is the capital.

Cali is Colombia's third-largest city in both population and economic importance, located in the southern part of the Valle del Cauca department. Geographically, it lies in the valley formed by the Cauca River, **nestled between the Central and Western ranges of the Colombian Andes**, with the prominent **Farallones de Cali** standing out in the Western Range.

The municipality of Cali shares borders with Yumbo and La Cumbre to the north, Palmira to the northeast, and Candelaria to the east. To the south is Jamundí, while Buenaventura's rural area lies to the southwest, and Dagua is situated to the northwest.

The Cauca River, the principal waterway of both the city and the department, flows through the municipality of Cali from the confluence with the Jamundí River to the boundary with Yumbo.

Figure 5: orography of Valle del cauca, in red the Farallone de cali national natural park. elaborated by the author based on Sistema de referencia geocentricopara las americas (MAGNA-SIRGAS)



Rivers

Cali is known by different names; some call it the capital of salsa, others “La Sucursal del Cielo”, the sports capital or **the city of seven rivers** (Alcaldía de Cali, 2019). This last nickname is due to the fact that **the city is crossed by seven rivers, which have influenced its configuration, growth, development and organization until today**. These rivers are part of our **identity** and, historically, have functioned as natural arteries of the city.

Some rivers descend from the western mountain range, crossing the municipal area of Cali, marking boundaries between the rural districts and flowing into the **Cauca River**. In the western part of the municipality, the Cali River originates, entering the urban area between the Cristo Rey and Las Tres Cruces hills, and finally flows into the Cauca River, north of the city. The Cañaveralejo, Meléndez, and **Lilí rivers** originate in the center of the city and flow into the CVC South Intersector Canal, which discharges its waters into the Cauca River in the south of the city. In the Pance neighborhood, the river of the same name is born, which flows into the Jamundí River, flowing into the Cauca River in the southeast of the municipality (Alcaldía de Cali, 2014).

These surface streams form the municipal water network, originate in the Los Farallones de Cali National Natural Park, located in the mountainous region of Santiago de Cali. They run from the mountains towards the urban perimeter with initially steep slopes, which become less steep as they cross the city from west to east. **These water sources supply the population, offer spaces for recreation, beautify the urban landscape, and are essential for drainage and energy generation.**

Because of their location, these streams are a fundamental part of the Upper Cauca river system and the Los Farallones de Cali National Natural Park, recognized as one of the most biodiverse ecosystems in the American Andes. However, as they flow through the city, they face significant challenges, such as contamination from sewage, inadequate connections, and discharges from irregular settlements in riparian protection zones. This scenario points to the urgent need to implement effective management and conservation measures to safeguard these valuable water resources (DAGMA, 2007).

Figure 6: Rivers in Cali taken from Archivo:Rios de Cali.Png. In Wikipedia. https://commons.wikimedia.org/wiki/File:Rios_de_Cali.png



9 Figure 7: Pance river taken from <https://locationcolombia.com/wp-content/uploads/2022/03/juanarias-cfc-90-cali.jpeg>

Figure8: Cali river taken from: <https://www.facebook.com/vypconectamos/>

Wetlands Inventory

Of the 61 wetlands in the urban area of Cali, 18 wetlands are on public land and 43 are on private property.

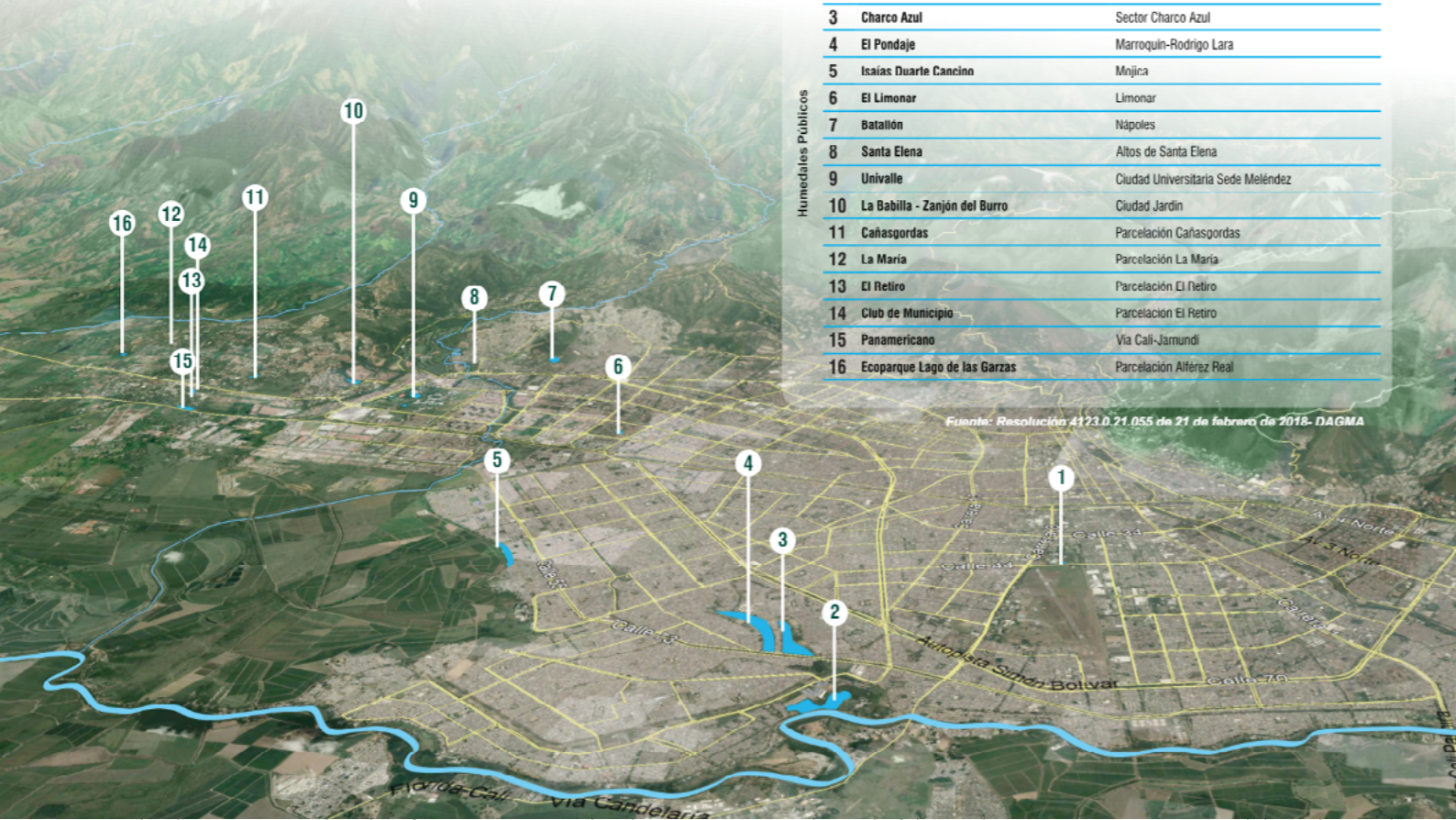


Figure 9: wetland inventory in Cali, taken from Fuente: Resolución 4123.0.21.055 de 21 de febrero de 2018- DAGMA in Humedales urbanos de Santiago de Cali. Alcaldía del municipio de Santiago de Cali, Departamento Administrativo de Gestión del Medio Ambiente-DAGMA- y Corporación Autónoma Regional del Valle del Cauca (CVC). Santiago de Cali, 24 pp.



Humedal Panamericano Cali. Foto: Fotografía publicada en Facebook. Recuperado de [https://www.facebook.com/HumedalPanamericanoCali/?locale=es_LA].

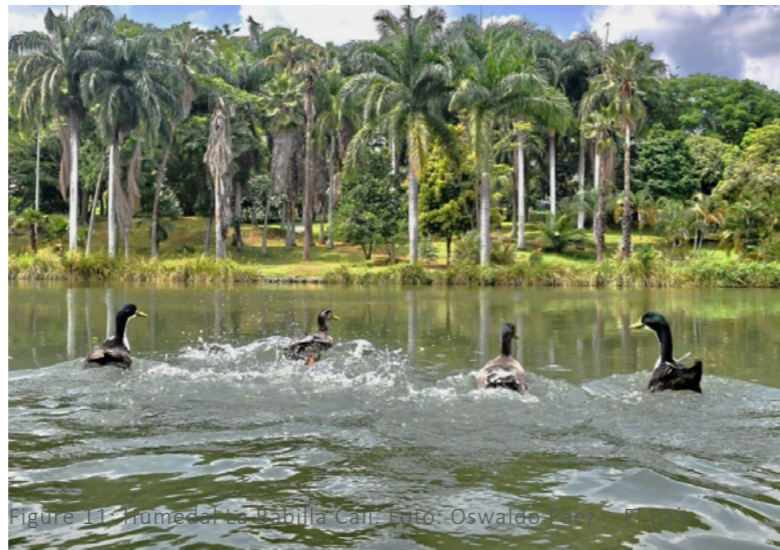


Figure 11: Humedal La Babilla Cali. Foto: Oswaldo



Humedal La Rivierita Cali. Quirro a Cali (2017, marzo 1). Foto: Tia compartida en Twitter sobre Cali, Colombia. En Twitter, taken from [https://twitter.com/quirroacali/status/837078651663138432].

Humedales - Públicos

NOMBRE	BARRIO
1 Parque de la Cana	Base Aérea
2 Puerto Mallarino	Andrés Sanín
3 Charco Azul	Sector Charco Azul
4 El Pondaje	Marroquín-Rodrigo Lara
5 Isaías Duarte Cancino	Mojica
6 El Limonar	Limonar
7 Batallón	Nápoles
8 Santa Elena	Altos de Santa Elena
9 Univalle	Ciudad Universitaria Sede Meléndez
10 La Babilla - Zanjón del Burro	Ciudad Jardín
11 Cañasgordas	Parcelación Cañasgordas
12 La María	Parcelación La María
13 El Retiro	Parcelación El Retiro
14 Club de Municipio	Parcelación El Retiro
15 Panamericano	Vía Cali-Jamundi
16 Ecoparque Lago de las Garzas	Parcelación Alférez Real

Fuente: Resolución 4123.0.21.055 de 21 de febrero de 2018- DAGMA

Wetlands

In Santiago de Cali, wetlands are crucial for both ecological balance and social well-being. According to the Department of Environmental Management (DAGMA), Cali, due to its biogeographical location, climatic regime, and topography, has been characterized by possessing a wide range of wetlands, whether lotic or lentic. It could be considered an **amphibious city**, as evidenced by the presence of springs and groundwater (DAGMA, 2019).

The variability in the location of these wetlands—some located in flat areas and others in higher or foothill areas—is influenced by both urban and rural land use, that is, the **diversity of the region's natural landscape and adaptation to anthropogenic changes in land use**. The geographical distribution of wetlands allows vital interaction with the climate and water management throughout the city. This relationship is crucial for regulating the local climate (DAGMA, 2019.).

The environmental authority has identified a total of 61 wetlands in the urban area of Santiago de Cali, both natural and artificial. Of these wetlands, 51, covering approximately 40 hectares, are predominantly artificial and are linked to the drainage network of the commune 22. Among these, notable wetlands include Las Garzas, La Babilla, Panamericano, El Retiro, and Cañasgordas. However, there are also some remnants of natural wetlands in the flat area, such as Pondaje, Charco Azul, and Las Orquídeas, which have been considerably altered by human activities.

Wetlands are among the most productive and beneficial ecosystems on the planet, as well as being among the most threatened by human activities (DAGMA & CVC. Nd). Although many of the ecosystems are currently quite degraded, wetlands in Cali continue to be crucial areas due to their biological, economic, and social richness. Biologically, they offer habitat to a wide range of animal and plant species, including local, migratory, and endemic species, making these places vital centers for wildlife in the region. Additionally, they provide ecosystem services as these wetlands play an essential role in moderating river floods and are valued for their outstanding natural beauty.

It is clear that they are fundamental for the survival and well-being of our planet, to the extent that they are the only ecosystems with an international convention dedicated exclusively to their conservation. In Cali, these ecosystems are integrated into the Municipal System of Protected Areas and Complementary Conservation Strategies (SIMAP), which represents the main strategy for preserving the city's ecological structure. Additionally, the Department of Environmental Management (DAGMA) plays an active role in this effort, continuously working on the rehabilitation and protection of wetlands. These actions aim to ensure the functionality of these natural spaces, vital for the sustainable development of Cali.

Introduction to the Site

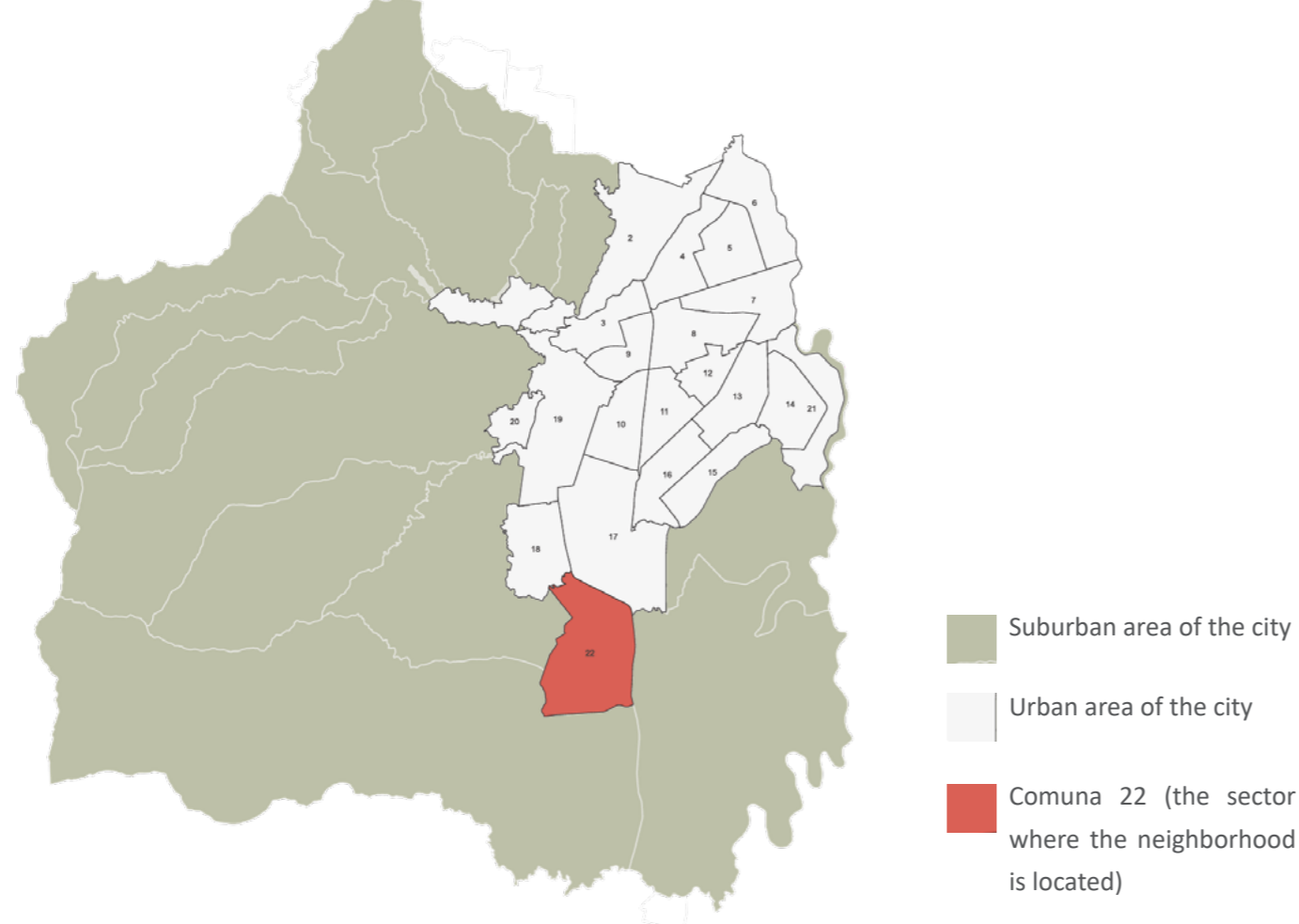


Figure 14: Comuna 22 in cali, elaborated by the author based Geo-portal IDESC cali (n.d)

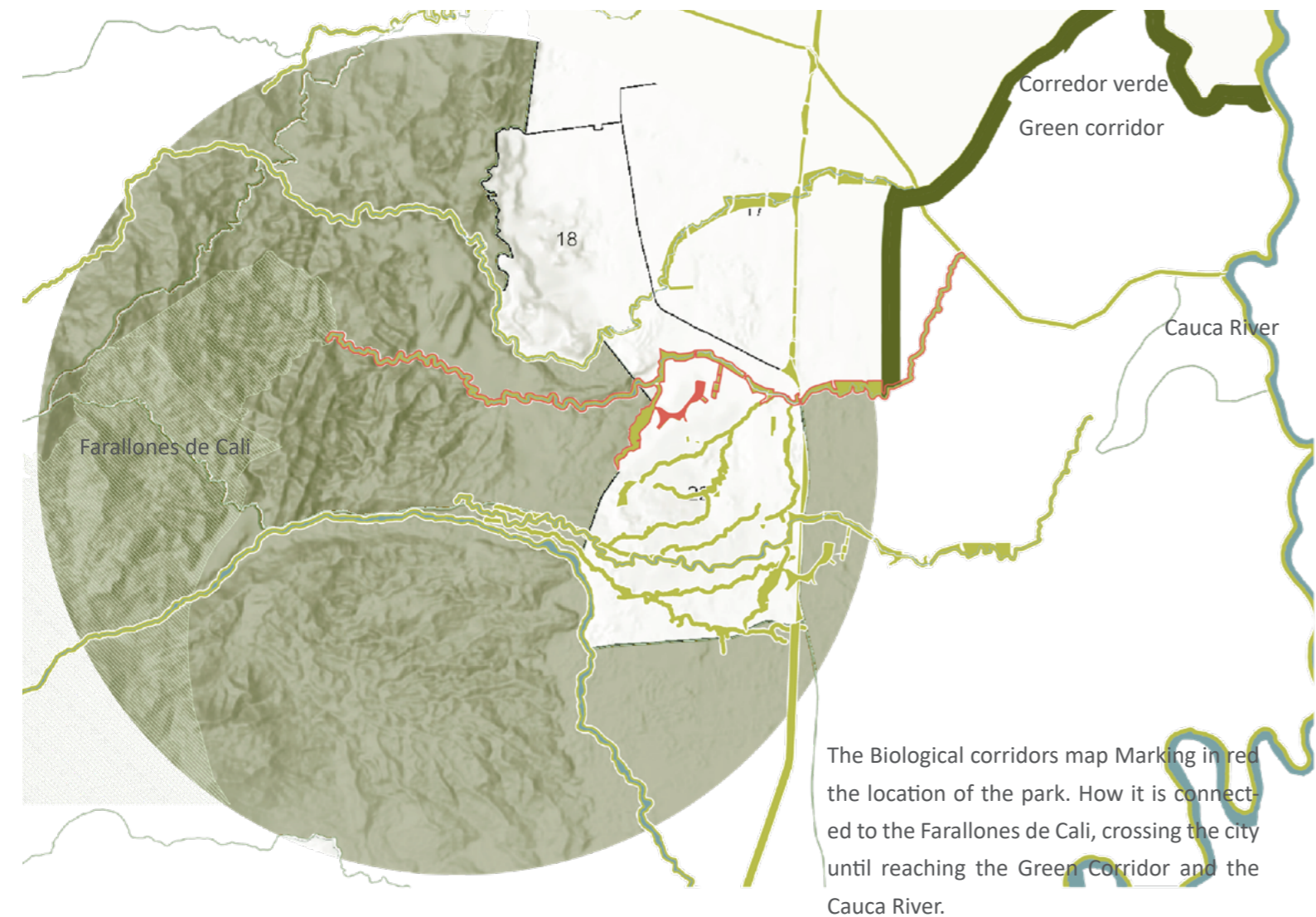
The La Babilla-Zanjón del Burro wetland is located in the south of Cali, in Comuna 22, in the Ciudad Jardín neighborhood. This area has experienced considerable urban development since the 1990s. The wetland is located in an area donated by the municipality, delimited between Carrera 105 and Calle 12, and Carrera 109 and Calle 14.

In environmental terms, it is **located in the piedmont zone of the Pance River deposition cone**. It consists of two artificially modified bodies of water, with a total area of approximately 1.2 hectares and a flood zone in the southern lake. It is fed by the water table: the waters of the Zanjón la Babilla (derivation of the Zanjón del Burro), the spring of water, direct rainwater and runoff from its own catchment basin. In addition, the wetland is also composed of a wooded relict that hosts a diversion of the Pance River.

La Babilla wetland is considered the lung of southern Cali. **It is the natural habitat of a variety of species of fish, birds and some babillas, which give rise to its name.** This space is part of one of the most important environmental corridors of Cali: the wooded relict Zanjón del Burro, being essential for the conservation of biodiversity and ecological connection in the city. It also acts as a natural filter that improves water quality, serves as a water storage area that helps mitigate the effects of flooding, and contributes to the regulation of the local micro-climate and the recharge of aquifers.

Since 1958 with the creation of the Ciudad Jardín neighborhood when the construction company Cuellar Serrano Gómez y Salazar, Cusezar, adapted the area with the purpose of collecting most of the sector's subway water. This space has characterized the urban landscape of the area, providing a natural place where residents can enjoy outdoor activities such as hiking, bird watching, and relaxation in a natural environment.

La Babilla Lake is surrounded by one of the most important commercial streets in the south of the city, on one side, and a residential area on the other, making this space a point of convergence between the city and nature.



The Biological corridors map Marking in red the location of the park. How it is connected to the Farallones de Cali, crossing the city until reaching the Green Corridor and the Cauca River.

Figure 14: Biological corridors in Comuna 22 in cali, elaborated by the author based Geo-portal IDESC cali (n.d)



Chapter conclusions

The territorial analysis in this chapter allows us to understand the greater system of which we are a part, in which The Farallones de Cali, part of the Western Mountain Range, and the Cauca River operate as great ecological axes that traverse the entire Valle del Cauca department, ensuring the connection of biodiversity, water, and territory. These axes are articulated transversally through the environmental corridors formed by wetlands and the rivers that cross Cali, favoring the ecological integration between the mountains and the valley ecosystems.

Likewise, this chapter highlights that natural systems, such as rivers and wetlands, are the very essence of Santiago de Cali. Beyond functioning as urban resources, they form part of the city's natural heritage, defining its identity and shaping its history and development. However, the presence of these corridors within an urban environment also brings challenges: if they become polluted or degraded as they pass through the city, the biodiversity and ecological services they support can be compromised. Cali has then major responsibility to act as a guardian of biodiversity, preventing negative impacts from urbanization.

In this context, La Babilla wetland is not only a green space within the city, but a place where the natural and the urban converge, fostering the connection between the community and its environment. As a node of connection, La Babilla transcends scales, establishing a continuous dialogue between the urban and the regional, and reminding us that the essence of Cali is rooted in its relationship with nature—and in how its inhabitants value and engage with it.

Recognizing this dynamic is a determining factor in achieving the objectives of this thesis, particularly regarding the interplay of culture, human–nature relationships, and the awareness required for environmental management. Moving forward, the next chapter will delve into the policies and regulations that support these conservation initiatives, providing the legal and operational framework needed for their effective implementation—an essential step in addressing current challenges and strengthening future sustainability.

02

Legal and Management Framework

2.1 International Regulations

2.2 National Regulations

2.3 Local Regulations

This chapter is organized into three main sections that analyze the legal and management framework for the conservation of wetlands and natural systems at the international, national, and local levels.

The first section addresses international regulations, outlining key instruments such as the Ramsar Convention and the Convention on Biological Diversity, which establish global principles for the conservation of wetlands and biodiversity. These regulations are fundamental for guiding local policies.

The second section analyzes national regulations, focusing on laws such as Law 99 of 1993, which structured the National Environmental System (SINA), and Law 388 of 1997, which incorporates ecosystem conservation into territorial planning. In addition, specific policies for wetlands are presented, such as the National Inland Wetlands Policy, which reinforces the protection of these spaces within the urban framework.

Finally, the third section examines local regulations, with emphasis on the Plan de Ordenamiento Territorial (POT) of Santiago de Cali, which organizes the territory based on its natural structure. This section also highlights the functions of key agencies such as the DAGMA and the CVC, as well as specific plans such as the Urban Forestry Plan, which promote renaturalization and ecological connectivity.

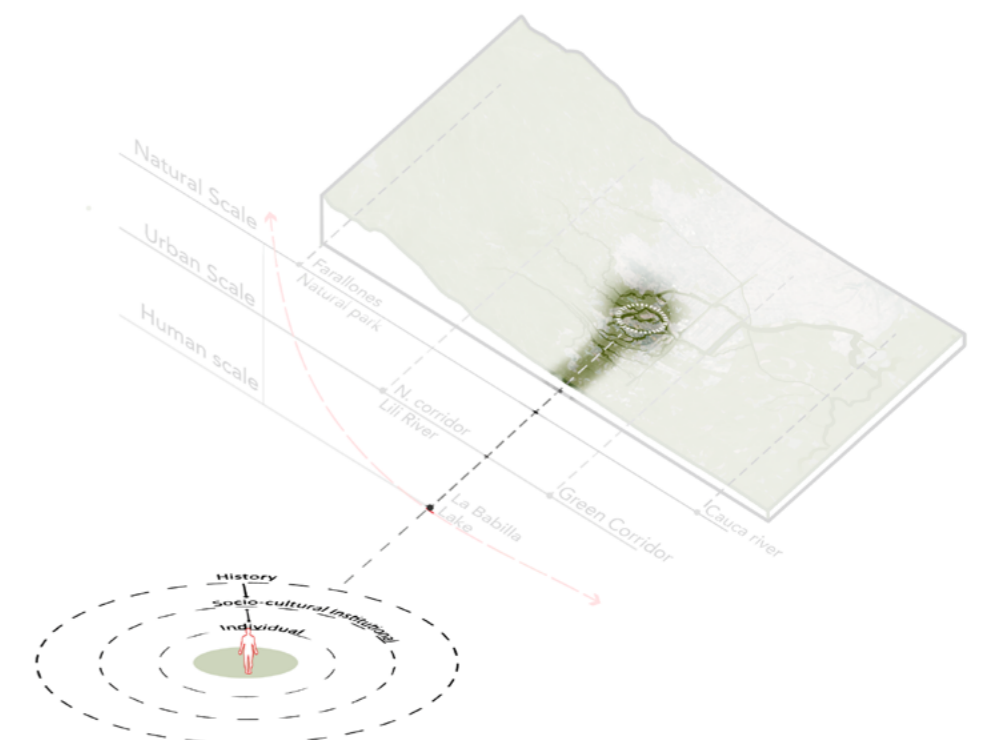


Figure II: societal-individual dimensions diagram, by the author

International Regulations

International regulations has a direct impact on local legislation and policies for wetland management and conservation and for biodiversity. Within the framework of the environmental component of the Territorial Planning Plan (POT) of Cali, the international approach ensures that local strategies comply with global standards and also benefit from a consistent framework that guides conservation practices worldwide.

Ramsar

The Convention on Wetlands of International Importance, known as the Ramsar Convention, is an international treaty that promotes the conservation and rational use of wetlands. It is the only global treaty focused exclusively on an ecosystem. Signed in 1971 in the Iranian city of Ramsar, it commits member countries to make rational use of all their wetlands, designate sites for inclusion in the Ramsar List of “Wetlands of International Importance,” and cooperate in wetland management (Ramsar Convention Secretariat, 2013).

On January 21, 1997, the Constitutional Court of Colombia issued Law 357, by which the country approved adherence to the Ramsar Convention – on June 18, 1998, Colombia formalized its participation in the Convention, designating the delta system of the Magdalena River and the Ciénaga Grande de Santa Marta as part of the list of wetlands of international importance (Congreso de Colombia, 1997).

Convention on Biological Diversity, Rio de Janeiro 1992

The Convention on Biological Diversity, adopted in 1992 under the auspices of the United Nations, has as its fundamental objectives the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. This international treaty advocates for the importance of biological diversity for the health, food, and economic well-being of humanity, focusing on the need for a coordinated and cooperative approach globally for its conservation and sustainable use (Secretariat of the Convention on Biological Diversity, 1992).

Under Law 165 of 1994, Colombia ratified the Convention on Biological Diversity, signed at the Rio de Janeiro Summit in 1992. As a signatory party, Colombia assumes specific responsibilities for biodiversity protection, including provisions for wetland protection. These include Articles 8 letters D and E, which obligate the protection of ecosystems and promote development that protects the environment of areas adjacent to protected areas; letter F, which focuses on the reha-

bilitation of threatened species; Article 13, which promotes education and awareness about the importance of conserving biodiversity; and Article 14, which refers to the assessment and mitigation of environmental impact in development projects, ensuring the protection of biological diversity (Congreso de Colombia, 1994).

Global Charter for the Right to the City and Housing

The Global Charter for the Right to the City, adopted in global and regional forums between 2004 and 2005, represents significant advances by civil society in promoting the right to the city as a new urban paradigm. This document consolidates as a collective response to urban inequalities exacerbated by development models that generate segregation and social exclusion (Harvey, 2008).

Essentially, the Charter is distinguished by amalgamating previously recognized individual and collective rights and expanding these rights to incorporate the collective, social, and economic dimensions that are vital for vulnerable groups. This approach to the right to the city implies an interdependence between the population, resources, the environment, and economic relations that are fundamental to improving current and future urban quality of life (Lefebvre, 1996).

The Charter proposes structural transformations in patterns of production and consumption and in territorial management, aiming to mitigate the adverse effects of globalization and privatization, as well as the increasing scarcity of natural resources and the rise of global poverty (UN-Habitat, 2012). Additionally, this document addresses the recognition and effective implementation of these principles require a joint commitment from civil society, local and national governments, and international organizations to ensure that all people can live with dignity in urban environments (UN-Habitat, 2012).

National Regulations

The Colombian legal framework related to fishing, natural resources, and environmental protection shows an evolution and consolidation of laws, decrees, and resolutions that seek to comprehensively regulate and protect the country's natural heritage. It responds to internal conservation and management needs and aligns Colombia with international commitments, such as those established in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Ramsar Convention (Congreso de Colombia, 1997; Ramsar Convention Secretariat, 2013). To ensure that the project complies with all legal requirements and obtains the necessary permits for its execution, and to carry out urban interventions that respect, conserve, and enhance natural heritage, and to ensure that the project in Babilla Park is sustainable, educational, and environmentally friendly, the following should be pointed out:

The Global Charter for the Right to the City, adopted in global and regional forums between 2004 and 2005, represents significant advances by civil society in promoting the right to the city as a new urban paradigm. This document consolidates as a collective response to urban inequalities exacerbated by development models that generate segregation and social exclusion (Harvey, 2008).

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Table of national standards

Subject	Relevant Legislation and Decrees
Water Resources Management	- Decree 1541 de 1978 (Standard related to water resources) - Decree 1594 de 1984 (Uses of water and liquid wastes)
Biodiversity Conservation	- Decree 1608 of 1978 (Wildlife) - Law 17 of 1981 (CITES) - Law 611 of 2000 (Sustainable management of wild and aquatic fauna and flora species) - Resolution 584 of 2002 (Threatened Species)
Wetlands Protection	- Law 357 of 1997 (Ramsar Convention) - Resolution 157 of 2004 (Regulation on wetlands) - National Policy for Inland Wetlands of Colombia 2002 - National Policy for Inland Wetlands of Colombia 2002
Sustainable Use of Resources	- Decree Law 2811 of 1974 (National Code of Natural Resources) - Decree 1681 of 1978 (Hydrobiological resources) - Decree 1681 of 1978 (Hydrobiological resources)
Environmental Policy and Planning	- Law 23 of 1973 (Natural Resources Code) - Law 99 of 1993 (Creation of the Ministry of the Environment) - Law 388 of 1997 (Land Use and Zoning Law) - Decree 1200 of 2004 (Environmental Planning Instruments)
Breeders' Rights and Access to Genetic Resources	- Decision 345 of 1993 (Protection of Plant Breeders' Rights) - Decree 533 of 1994 and amendments thereto (Protection of Plant Breeders' Rights) - Decision 391 of 1996 (Access to Genetic Resources)
Governance and Institutional Framework	- Political Constitution of Colombia 1991 (Broad protection of natural resources) - Decree 216 of 2003 (Organization of the Ministry of the Environment, Housing and Territorial Development)
Environmental Education and Awareness	- National Biodiversity Policy 1997 (Framework for the conservation and sustainable use of biodiversity) - Resolution 1218 of 2003 (Coordinating Committee for the Categorization of Endangered Wildlife Species)

Anex1:Elaborado por el autor basado el documento : DAGMA (2012). Plan de Manejo Ambiental Humedal La Babilla – Zanjón del Burro. Santiago de Cali, Colombia: Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). <https://www.cali.gov.co/dagma/publicaciones/138918/humedal-la-babilla-cali/>

Regional Regulations, Integrated Wetlands Management Project - Agreement C.D No. 038 of 2007:

Biodiversity Action Plan for Valle del Cauca (CVC Acuerdo 028 2005 and Resolución D.G 752 of 2005): Adopted through CVC Acuerdo 028 2005 and Resolución D.G 752 of 2005, it is based on thematic axes of knowing, conserving, and using biodiversity. It proposes short, medium, and long-term objectives and goals to address current issues regarding the biological diversity of the region. This plan could provide a framework for integrating educational and conservation activities in Babilla Park, focusing on sustainable use and conservation of local biodiversity.

Regional Environmental Management Plan - PGAR (2002-2012): Aims to guide the management, administration, and sustainable use of renewable natural resources in Valle del Cauca, promoting sustainable development according to the biophysical, economic, social, and cultural characteristics of the region. This plan offers guidelines for planning and managing sustainable development that are essential for structuring interventions in the park, ensuring that they contribute to regional sustainability objectives.

Integrated Wetlands Management Project - CVC: Since 2000, the CVC has been implementing the "Integrated Wetlands Management Project," which is based on three basic approaches (knowledge, conservation, and sustainable use). It focuses on the integrated management of wetlands in Valle del Cauca through technical, scientific, educational, and recreational activities, including community participation and conducting studies and diagnoses.

Agreement C.D No. 038 of 2007: The CVC declares the natural wetlands of the Cauca River geographic valley as reserves of renewable natural resources and adopts measures for their restoration, conservation, or preservation. This agreement - article 47 - provides legal support for conservation and restoration actions in Babilla Park, allowing these activities to be integrated into an established regulatory framework.

Local Regulations

POT (Land Use Plan) - Environmental Component The aforementioned regulations are relevant to understanding the basis of the POT - Territorial Planning Plan of the municipality of Santiago de Cali.

Objectives of the POT: The POT of Santiago de Cali establishes a framework for the planning and management of protected areas. Article 3 specifies relevant aspects to consider in the development of a regional agenda, which are foundational elements of the Territorial Planning Model (Alcaldía de Santiago de Cali, POT, Art. 3).

The planning and management of protected areas jointly, with special emphasis on the management of the Cauca River basin, Los Farallones de Cali National Natural Park, and the Cali National Protective Forest Reserve. These elements form the basis of the territorial planning model and are of great importance for the development of a regional agenda that considers the conservation and integrated management of these natural spaces (Alcaldía de Santiago de Cali, POT, 2014, Art. 3). This means that any intervention must integrate these spaces into territorial planning and management, considering integrated conservation and coordinated management with these important natural systems.

Territorial Articulation: Article 4: Cali recognizes as its foundation the set of environmental and geographical offers and restrictions, with special emphasis on watersheds and water sources, elements that articulate and structure the urban territory. This means that interventions must respect and enhance these natural characteristics, using these areas as central axes in the design and planning of the project (Alcaldía de Santiago de Cali, POT, 2014, Art. 4).

Article 5. Guidelines of the Territorial Planning Model: The guidelines highlight municipal environmental offers as a key element for sustainability. This implies that the project must integrate practices that promote biodiversity conservation, sustainable use of natural resources, and environmental education, aligning with conservation and sustainable use goals (Alcaldía de Santiago de Cali, POT, 2014, Art. 5).

Article 6: Elements of the Territorial Planning Model, where it identifies the municipal ecological structure as a key component, along with other elements such as centralities, activity corridors, mass transportation corridors, equipment nodes, among others (Alcaldía de Santiago de Cali, POT, 2014, Art. 6).

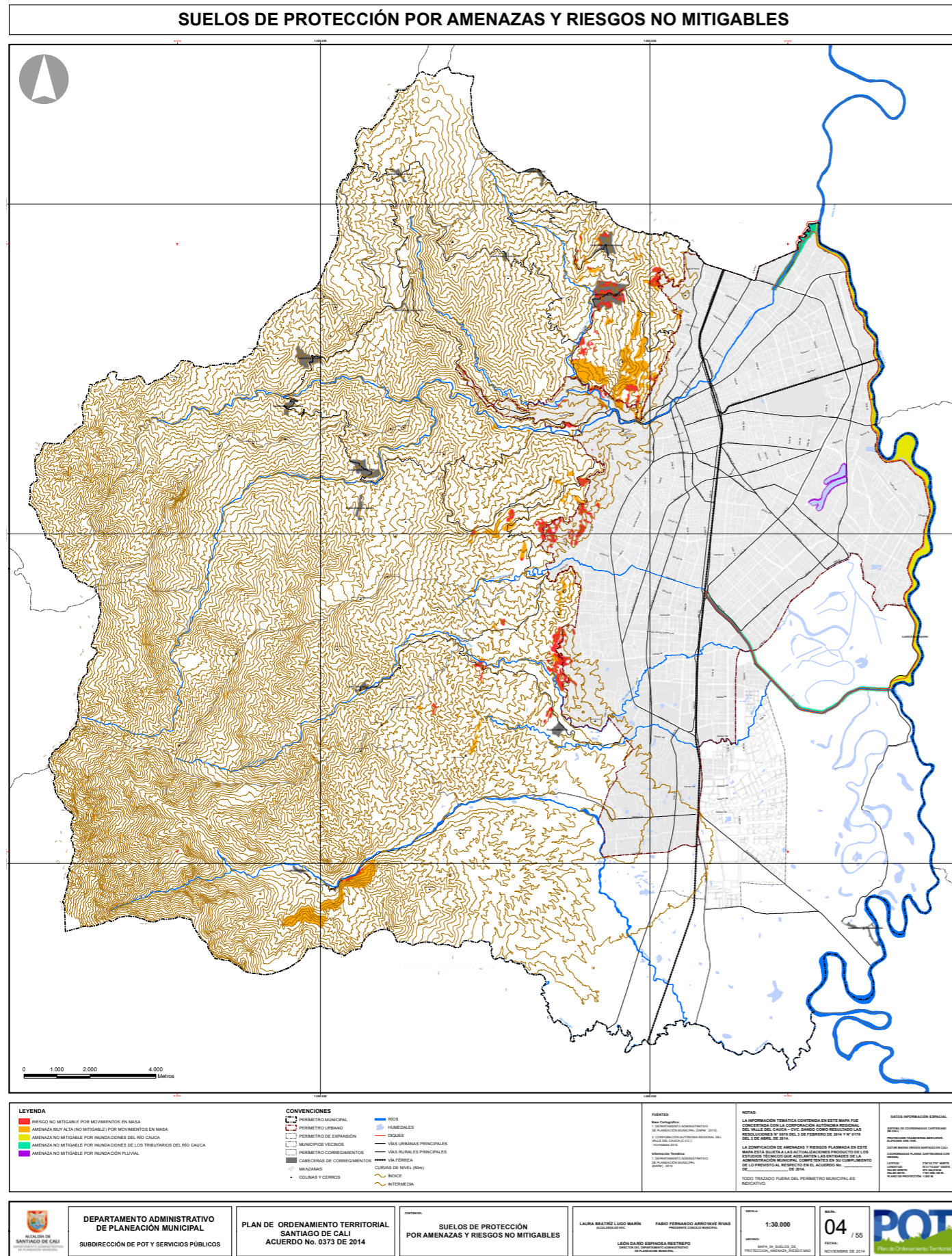


Figure 16: Map of Protection Soils by Threat, Risks, and Non-Mitigable Risks (Alcaldía de Santiago de Cali, POT, 2014).

Environmental Sustainability and Ecological Conservation Policy (Article 9) This article proposes a comprehensive vision of ecological conservation and restoration, focusing on restoring and connecting strategic ecosystems, promoting water and biodiversity conservation, and educating the community about the importance of the natural environment. It also proposes strategies designed to implement ecological conservation and restoration objectives in a way that integrates natural and urban elements, improving sustainability and quality of life in Cali (Alcaldía de Santiago de Cali, POT, 2014).

Objectives

Ecosystem Conservation and Restoration: Directing development towards the conservation and restoration of the natural environment to ensure the municipality's sustainability and continuous provision of environmental goods and services (Alcaldía de Santiago de Cali, POT, 2014). Spatial Integration between Nature and Urbanism: Establishing effective relationships between elements of the ecological structure and the built environment to enhance ecological, urban, recreational, and cultural benefits (Alcaldía de Santiago de Cali, POT, 2014).

Strategies:

Integration of Environmental Planning: Harmonizing municipal environmental management with subregional and regional policies, using the Main Ecological Structure as a reference framework (Alcaldía de Santiago de Cali, POT, 2014).

Prioritization of the Protected Areas System (SIMAP-Cali): Using SIMAP-Cali as the main conservation tool, defining municipal protected areas, and creating environmental corridors that provide ecological and cultural value (Alcaldía de Santiago de Cali, POT, 2014).

Connecting Ecological Structures with Urban Infrastructure: Linking the ecological structure with mobility, equipment, services, and public space systems to improve urban habitat (Alcaldía de Santiago de Cali, POT, 2014).

Restoration of Degraded Areas: Promoting the restoration of critical areas for biodiversity and risk reduction, prioritizing places such as tutelary hills and degraded wet-lands (Alcaldía de Santiago de Cali, POT, 2014).

Water Resource Conservation: Increasing actions aimed at conserving and efficiently using water, especially groundwater resources (Alcaldía de Santiago de Cali, POT, 2014).

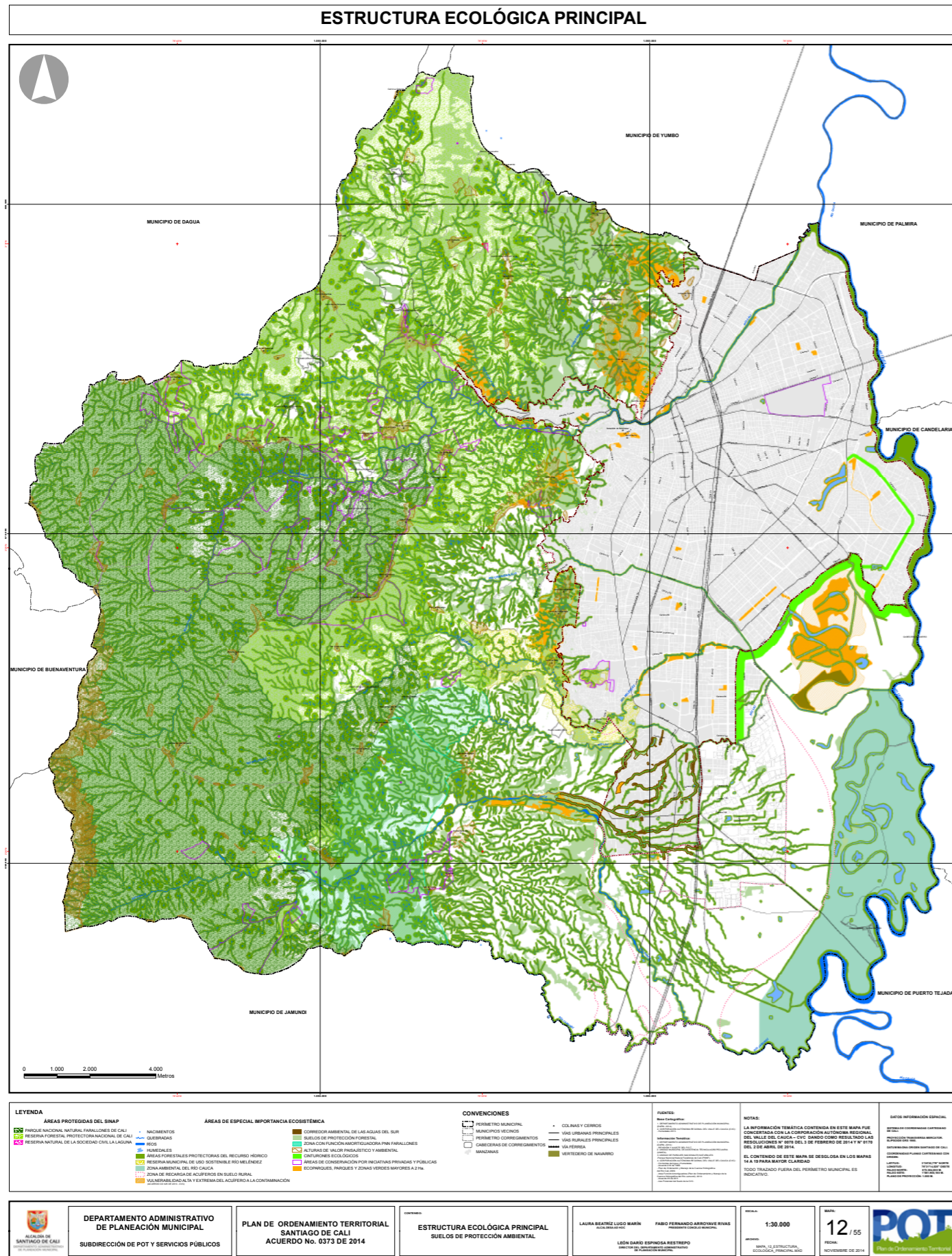


Figure 17: Main Ecological Structure Map (Alcaldía de Santiago de Cali, POT, 2014).

Chapter III on the Environmental System of the municipality of Santiago de Cali. This chapter is designed to integrate the ecosystemic basis and cultural appropriation of the territory, ensuring sustainable and responsible management of the urban and natural environment. This system is structured around three main components (Article 31) for environmental planning and resource management in the city (Alcaldía de Santiago de Cali, POT, 2014):

1. Threats and Risks: Focusing on identifying and managing areas susceptible to environmental risks (Ley 1523 de 2012)

2. Municipal Ecological Structure (EEM): Composed of:

-**Main Ecological Structure (EEP) - Environmental Protection Soil:** Critical areas for conservation that serve as main reservoirs of biodiversity and ecosystem services, fundamental for the ecological stability of the region (Alcaldía de Santiago de Cali, POT, 2014).

-**Complementary Ecological Structure (EEC):** Comprises elements that complement the EEP, including ecological corridors that facilitate connectivity between protected areas and other elements of the urban and rural landscape, improving integration and functionality of the ecosystem (Alcaldía de Santiago de Cali, POT, 2014)

3. Environmental Quality: Territorial determinants of environmental quality: Standards and guidelines that define land management and use based on sustainability and environmental quality criteria, seeking to promote urban development that respects and enhances the natural values of the municipality (Alcaldía de Santiago de Cali, POT, 2014).

ENVIRONMENTAL SYSTEM	
THREATS AND RISKS	Protection Floor for threats and non-mitigable risks.
	Areas of mitigable threats and risks.
MUNICIPAL ECOLOGICAL STRUCTURE (EEM)	Actions and regulations for the prevention and mitigation of risks.
	Main Ecological Structure (EEP)- Environmental Protection Soil.
ENVIRONMENTAL QUALITY	Complementary Ecological Structure
	Territorial determinants of environmental quality.

Anex 2: "Environmental System", is based on the content of the Plan de Ordenamiento Territorial (POT) de Santiago de Cali Alcaldía de Santiago de Cali, POT, 2014, 2014, traduced by the author).

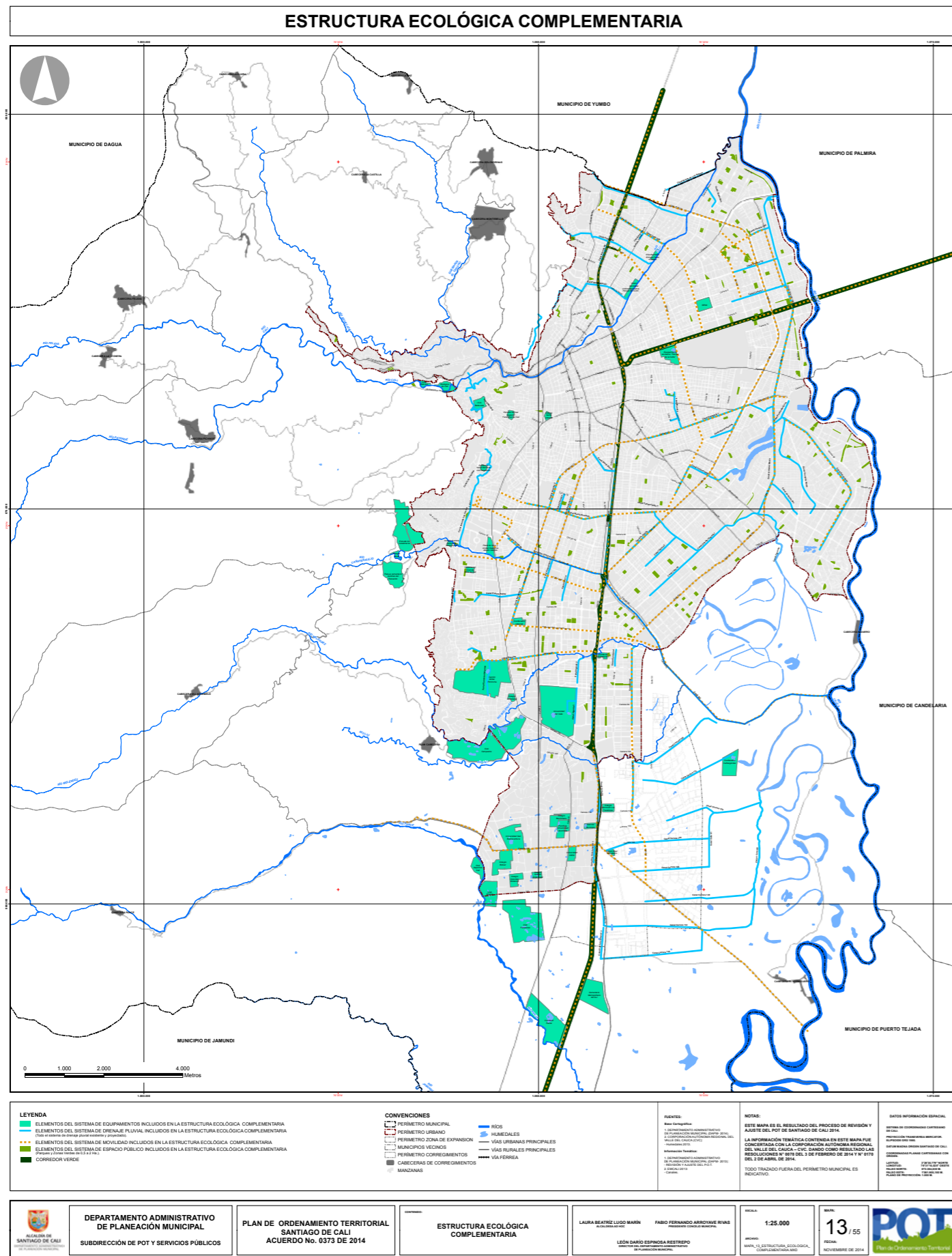


Figure18: Complementary Ecological Structure Map (Alcaldía de Santiago de Cali, POT, 2014,).

SUB-CHAPTER II MUNICIPAL ECOLOGICAL STRUCTURE

The Municipal Ecological Structure is the set of natural and built elements whose environmental and/or ecosystemic quality contributes to the formation of a green network that connects, recovers, and conserves the Ecosystem Base, ensuring long-term processes that sustain human life, biodiversity, the supply of services, and the environmental quality of the Municipality (Article 58) (Alcaldía de Santiago de Cali, POT, 2014).

It comprises the Main Ecological Structure and the Complementary Ecological Structure. The former includes areas such as natural parks and reserves, which are of high importance for biodiversity and ecosystem services, such as climate regulation and water purification, while the latter consists of green corridors and other spaces that facilitate ecological connectivity between main areas, allowing the movement and interaction of species and ecological processes (Alcaldía de Santiago de Cali, POT, 2014).

The Municipal System of Protected Areas (SIMAP – Cali) allows the incorporation of new protected areas selected according to ecological and environmental criteria. The approval and adoption of these areas in SIMAP – Cali must be validated by the competent environmental authority, ensuring that they contribute to the environmental planning objectives of the municipality (Alcaldía de Santiago de Cali, POT, 2014). The article also underscores the need to protect watersheds and areas with biodiversity, indicating that the expansion of the ecological structure must be regulated through scientific criteria and must be approved by the competent environmental authority through an administrative act, ensuring that inclusions in the ecological network are justified and contribute to the city’s environmental management objectives (Alcaldía de Santiago de Cali, POT, 2014).

The regulation of these areas is established in Articles 60 to Article 94 of the POT.

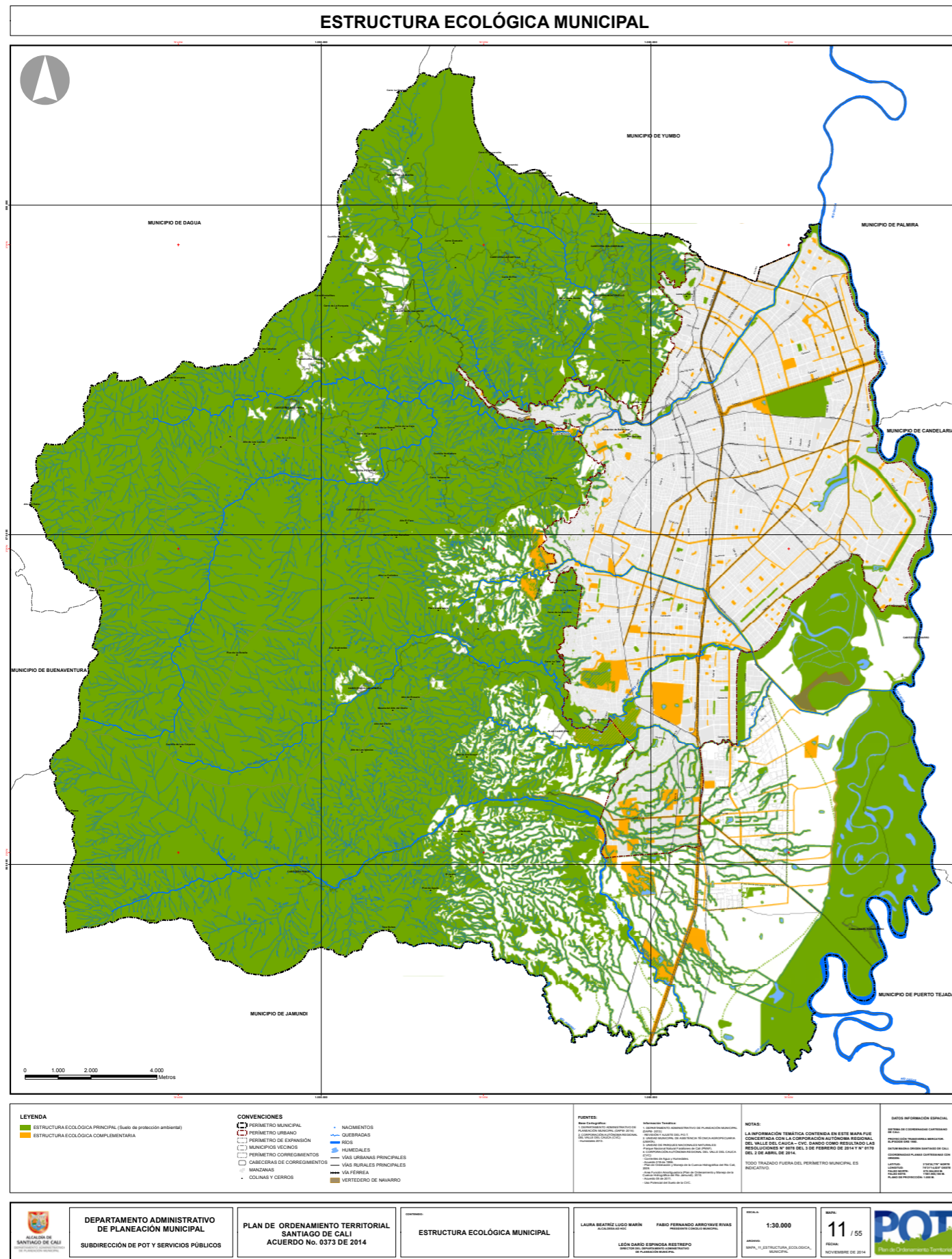


Figure 19: Map of Municipal Ecological Structure (Alcaldía de Santiago de Cali, POT, 2014).

- Article 60. Ecological and Environmental Restoration : Focuses on ecological and environmental restoration within the municipality, establishing specific guidelines for the revitalization of critical areas in the Main Ecological Structure. This article emphasizes the importance of wetlands, protective forest areas for water resources, and tutelary hills, considering them priorities for restoration actions due to their ecological relevance and role in biodiversity conservation and natural resource conservation (Alcaldía de Santiago de Cali, POT, 2014). For urbanized areas, restoration is oriented towards environmental recovery and afforestation. These activities must align with the Urban Forestry Statute of Santiago de Cali, which will be detailed later in this document. Special priority is given to the use of native species and soil restoration techniques, seeking to recover the ecological functionality and integrity of affected ecosystems. In the short term, the Administrative Department of Environmental Management (DAGMA), in collaboration with the Regional Environmental Authority and National Natural Parks of Colombia, will develop and implement an Ecological and Environmental Restoration Plan. This plan will address the recovery of degraded ecosystems in Cali, with specific strategies for areas affected by erosion, forest fires, mining activities, and informal occupation (Alcaldía de Santiago de Cali, POT, 2014).

-Article 94, Tools for Ecological Landscape Management : Recognizes the importance of living fences (natural barriers or boundaries composed of plants, trees, or shrubs commonly used in agricultural, suburban, or urban landscapes to separate areas, protect privacy, control wind, reduce erosion, improve biodiversity, and foster habitats for various species of wildlife) and other productive systems such as agroforestry and silvopastoral systems, which contribute to ecological connectivity between different areas of the urban and rural landscape. Neighborhoods and plots can be considered ecodistricts if it is demonstrated that they contribute to ecological connectivity or the conservation of ecosystem basics (Alcaldía de Santiago de Cali, POT, 2014).

DAGMA (Environmental Authority)

The Administrative Department of Environmental Management (DAGMA) is Cali's highest urban environmental authority, responsible for managing natural resources, defining environmental policies, and promoting sustainable development (Decreto 516 de 2016). DAGMA's functions include formulating and implementing environmental policies, conducting research, granting licenses, managing protected areas, and fostering community participation in conservation efforts, all aimed at enhancing environmental sustainability and quality of life (Congreso de Colombia, F 1993; DAGMA, n.d.).

Urban Forestry Plan Administrative Department of Environmental Management (DAGMA). (n.d.). Forestry Plan for Induced Renaturalization in the Urban Area of Santiago de Cali.

The Forestry Plan, adopted by resolution 1530 of the year 2019, proposes a strategy of "induced re-naturalization" for the urban area of Santiago de Cali, focused on increasing, renewing, managing, and conserving the city's vegetation cover. (DAGMA, 2019).

This is done with the aim of **improving connectivity and ecological functionality between urban and rural areas**. It is recognized that about 70% of the urban area is affected by heat islands due to the lack of tree cover, which increases temperatures and affects the well-being of the population. In addition to the low representation of species of the Tropical Dry Forest, the city's main ecosystem and threatened at the national and global levels (DAGMA, 2019).

The plan seeks to promote knowledge, establishment, and conservation of plant species of this ecosystem, as well as to improve quantitatively and qualitatively urban vegetation covers. Emphasis is placed on citizen participation and social legitimation of the process, recognizing the cultural and community importance of trees in the city's identity.

"Trees are and must continue to be part of the identity testimonies of our city, which is made up of a blend of migrants who contribute their imprints to build today's 'Caleñidad', which far exceeds that imposed by the sugar culture and gives a multicolored strength to today's Cali." (DAGMA, 2019)

Technical protocols are proposed for tree planting and management, as well as strategies to **increase biodiversity and benefit the bird community**. The plan also includes guidelines for generating financial sustainability and is based on previous experience and collaboration among different actors, including municipal administration, the community, and the business sector.

Chapter conclusions

This chapter demonstrates how international, national and local legal frameworks interrelate to strengthen environmental conservation strategies at different scales. International instruments such as the Ramsar Convention and the Convention on Biological Diversity provide a global approach that guides national and local regulations, allowing regulations such as the Plan de Ordenamiento Territorial (POT) of Santiago de Cali to structure urban development from its natural essence. This framework ensures a coherent approach to wetland conservation, facilitating their functional integration into the city.

In Cali specifically, there has been notable progress and dedication to protecting wetlands and ecosystems. These frameworks serve as valuable tools, guiding design with thorough ecological studies and ensuring grounded, knowledge-based decision-making.

Being familiar with this legal and management framework is important for the design of interventions since they ensure respect for current regulations and provide tools that include concepts such as ecological connectivity, which guarantees the mobility of fauna and the functionality of ecosystems; the restoration of degraded areas, aimed at recovering environmental integrity; and induced renaturalization, which promotes the integration between the built and the natural. These are fundamental axes that guide interventions to create spaces that respect, protect and enrich the natural environment.

In the following chapters, we will explore how these policies influence public perception and interaction with the environment, examining both their positive impact and potential constraints on fostering a bond with nature.

03

The urban context

Second Scale: Characterization of Comuna 22

3.1 UPU 14

3.2 Urban development

3.3 Morphology and typology

3.4 Environmental system

3.5 Mobility system

3.4 Facility system

3.5 Activity areas

3.6 Socioeconomic

This chapter addresses the next scale of analysis, an intermediate scale, focusing on Comuna 22, to understand the broader area in which La Babilla Park is located in terms of its urban dynamics, physical, social, economic characteristics and structuring systems. It seeks to identify the advantages, disadvantages and potentialities that this area offers for the design and integration of natural and urban systems.

UPU 14 is introduced as an urban piece within Cali's planning system, describing its location, role in the city and its relevance within the urban and natural dynamics.

It analyzes its historical development as a peripheral expansion zone characterized by dispersed residential growth, which has generated difficulties in urban cohesion, resulting in a diversity of architectural typologies and an irregular morphology that define its current character.

It evaluates the natural elements that structure the UPU, such as ecological corridors and wetlands, recognizing their importance and role within the city's environmental network for biodiversity.

It also studies the dynamics of mobility, identifying as one of its main disadvantages the priority of the private vehicle over the pedestrian, reflected in the lack of adequate infrastructure for pedestrian traffic.

This chapter identifies the main urban facilities that shape population dynamics and the use of space, as well as the main corridors and nodes of economic and social activity that structure population flows and facilitate the interaction between people and space.

Finally, it describes the demographic profile and the social and economic dynamics of the UPU, in order to understand the social and community tensions with the territory, noting how these influence the perception, use and appropriation of urban and natural spaces.

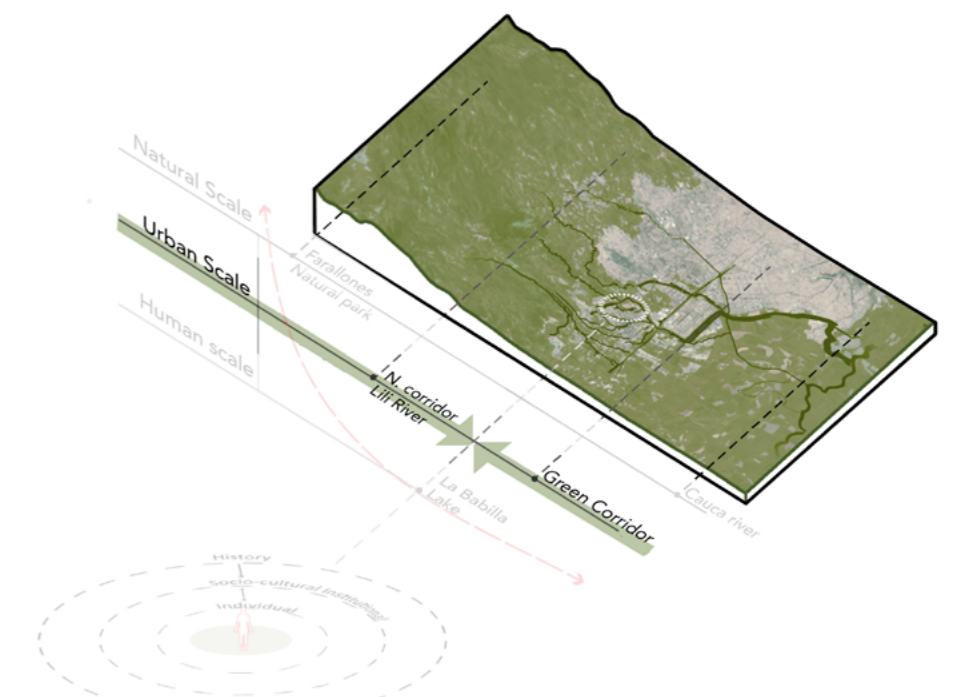


Figure III :2nd scale diagram, by the author

3.1

UPU: “Urban Planning Units”

Are **intermediate planning instruments** through which portions of the urban territory that share similar physical characteristics, both in terms of potential and needs, are delimited. Based on this, their **role in the territorial planning** model is defined, and territorial policy guidelines are established for their formulation as planning instruments aimed at consolidating the proposed territorial planning model at the zonal scale. Instrument of inter-institutional coordination and citizen participation for the collective construction of the territory from the intermediate scale. The community recognizes it as a legal basis (respect for administration). It guides public investment at the zonal scale. (Alcaldia de Cali, 2018)

The urban area of Santiago de Cali is composed of fifteen (15) Urban Planning Units.

Comuna 22 is located in **UPU number 14** called **Pance**.

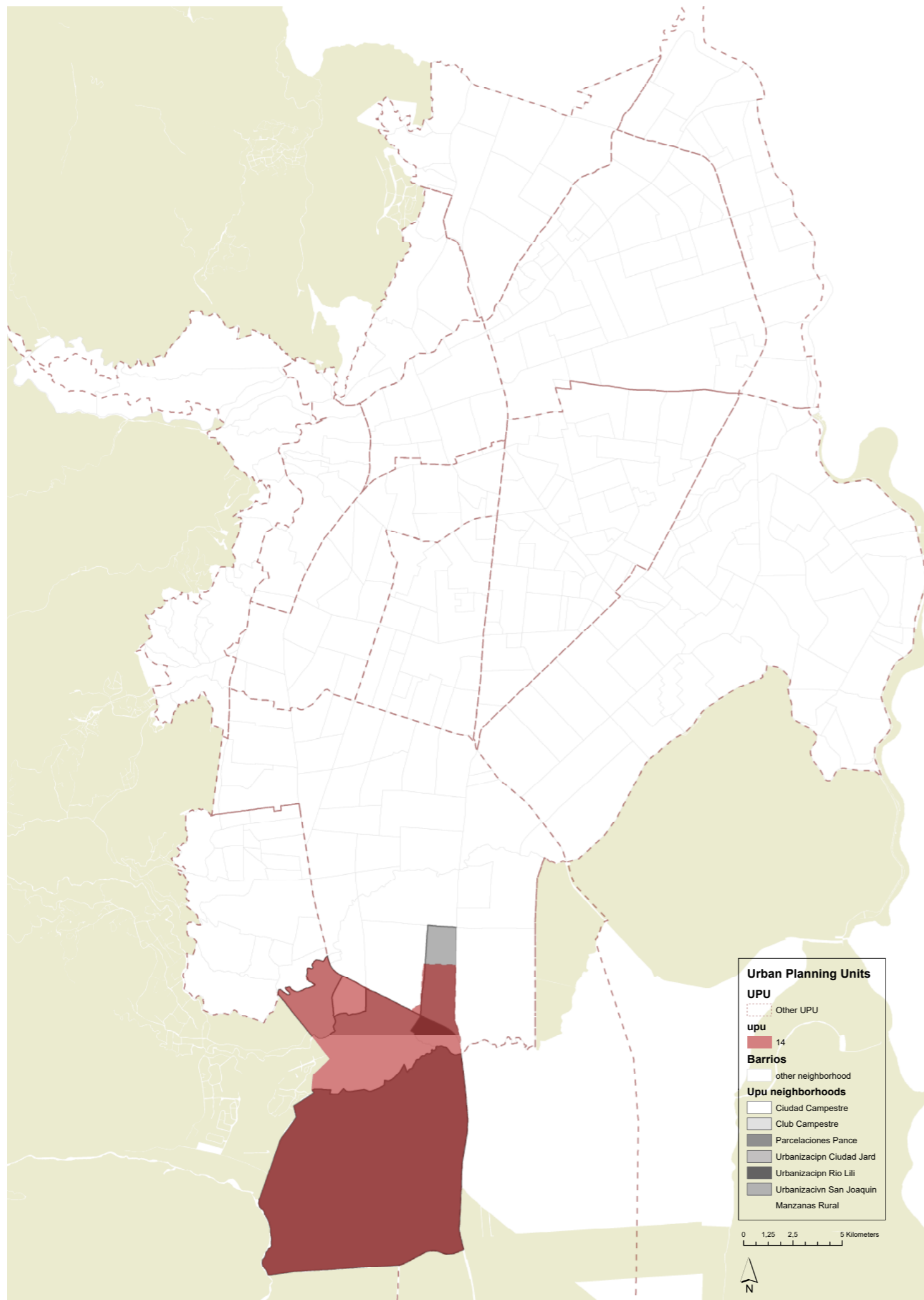
Location and General data

It is located south of the urban area of Santiago de Cali, bordered on the east by 25th Street or Green Corridor, on the west by the urban edge and Rural Planning Unit 4 - Pance, on the north by the southern edge of the Meléndez River, Carrera 100, bordering the San Joaquín neighborhood along 16th Street and Carrera 95, and on the south by Carrera 127.

Area: 1,120.8 ha

Population: 26,298 (DANE 2023 high scenario projections)

Neighborhoods: 6



Código	Barrio	Estrato						Estrato Moda
		1	2	3	4	5	6	
Comuna 22		2	175	0	2	629	17,786	6
2201	Urbanización Ciudad Jardín	-	-	-	-	252	3,307	6
2296	Parcelaciones Pance	-	-	-	-	1	10,683	6
2297	Urbanización Río Lili	2	175	-	-	-	1,706	6
2298	Ciudad Campestre	-	-	-	2	376	1,776	6
2299	Club Campestre	-	-	-	-	-	314	6

Anex1: Population projections by total, headwaters and the rest, in Cali 2018- 2024, Departamento Administrativo de Planeación Municipal. (2018). Proyecciones de población según total, cabecera y resto, en Cali 2018–2024. Santiago de Cali, Colombia.

Figure 1: Urban Planning Units: La Babilla Park is located in UPU 14 elaborated by the author based Geo-portal IDESC cali (n.d)|

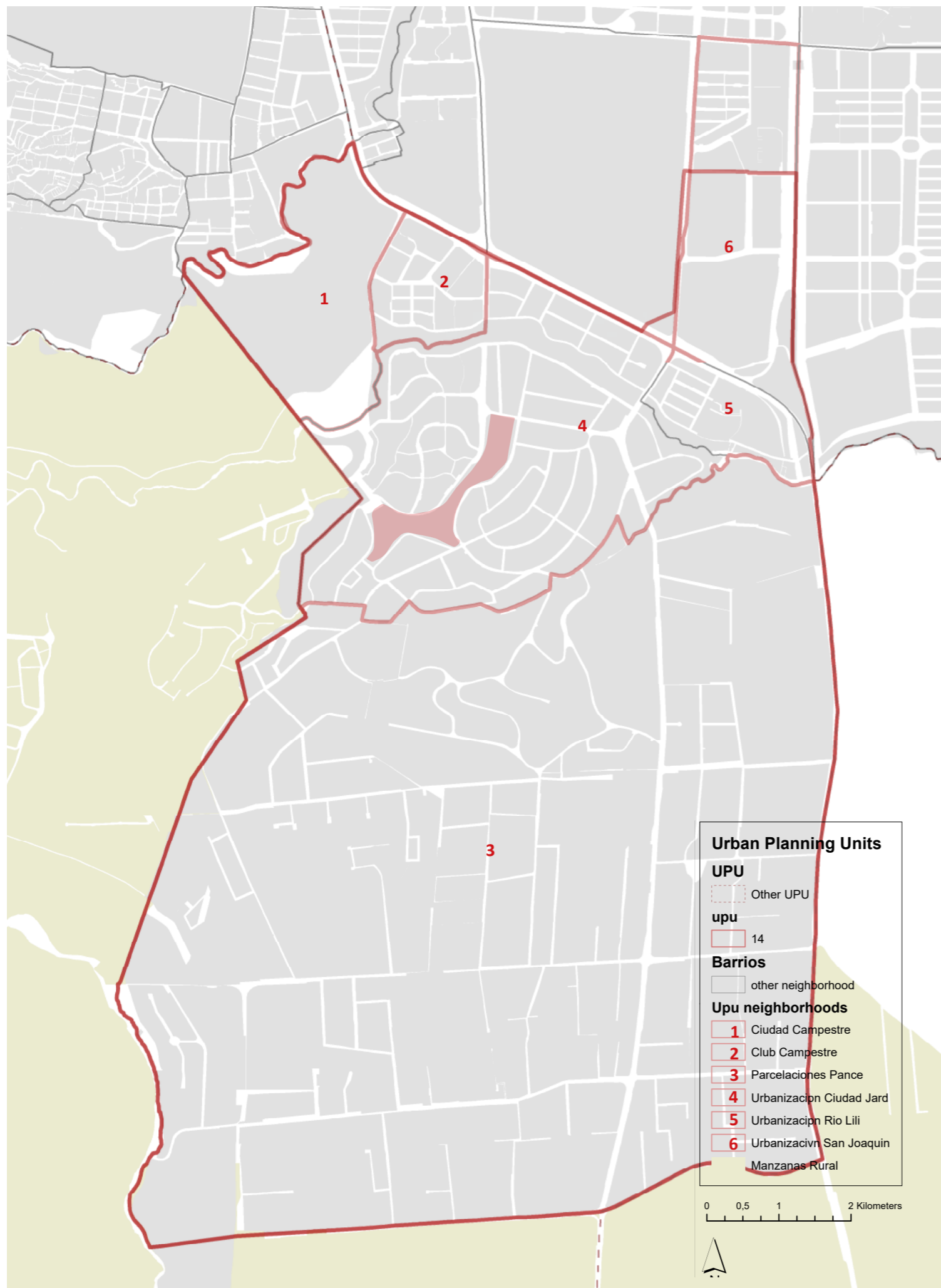


Figure 2: Urban Planning Unit 14: It is composed of 6 neighborhoods, La babilla lake is located in Urbanization Ciudad Jardín. elaborated by the author based Geo-portal IDESC cali (n.d)

Article 21 of the agreement establishes the role and policy guidelines of each UPU, based on which their formulation should be developed, and the definition of zone-scale projects that compose them. The UPU 14 is designated as an **“Area residential oriented towards densification with housing for high-income groups and the recovery and use of its environmental values for the enjoyment of the entire community as elements of citizen encounter.”** (Alcaldía de Santiago de Cali, POT, 2014, p. 28)

Policy guidelines:

“1.Consolidate The UPU as a net residential area in certain sectors with the possibility of high-density housing construction as long as the necessary infrastructure for this purpose is adapted, with special emphasis on storm-water drainage, water supply, sewage, mobility, and public space.

2.Limit urban development subject to the water supply of the area, prioritizing its recovery and conservation, and structure urban development based on the water resources of the area, conserving them and using them to improve the quality of life in development processes.

3.Strengthen Economic activities located in centralities according to their development characteristics.

4.Consolidate Existing equipment nodes called “Pance” and “Piedra Grande” identified in the equipment proposal.

5.Articulate the area of the Los Farallones de Cali National Natural Park and the geographical valley, permeating the urban area through the conservation of the water system and biodiversity in the urban area and providing services with environmental support for recreation, micro-climate control, water regulation, etc.” (Alcaldía de Santiago de Cali, POT, 2014,p. 28)

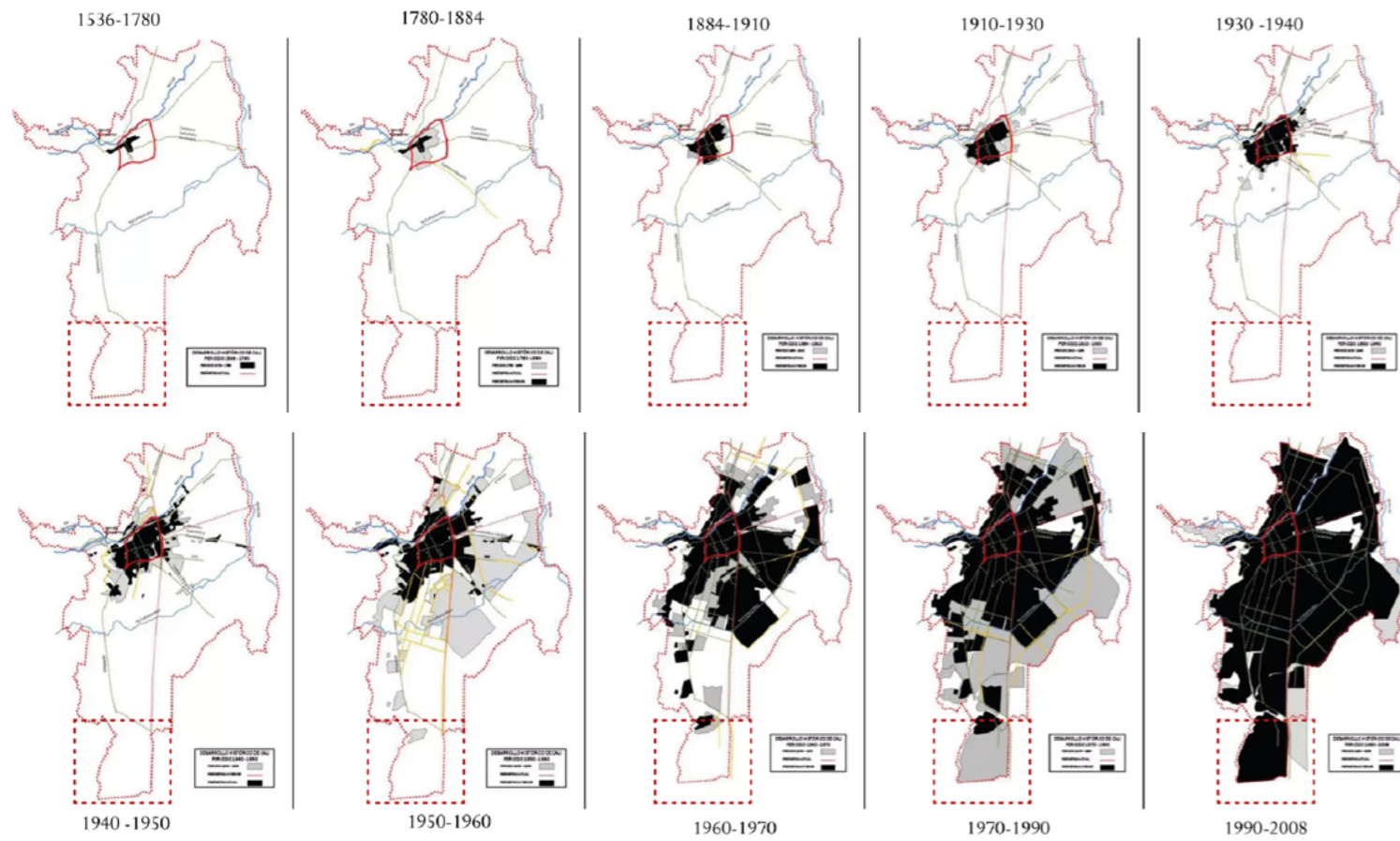


Figure 3: diagram illustrating Cali's historical development is based on the content presented in the studio diagnóstico para la formulación del plan del centro global Cali" (2010).

3.2

Urban developmet

UPU 14 and Comuna 22 in Cali were developed as a result of a historical process of **expansion of the city, located in the urban periphery**. This development is characterized by closed **residential complexes**, both in apartment and house typology, in the form of isolated citadels. A representative example is the Ciudad Jardín Urbanization, initially designed for a local elite that had historically settled in the center of the city and on the western bank of the Cali River. This urbanization was developed on the land of the former Hacienda Cañasgordas, owned mostly by the traditional elites and the new ruling classes of the city. Over time, Ciudad Jardín **evolved to include a mix of residences and commercial, educational, and service establishments**.

The growth of UPU 14 has been disordered, not as a uniform expansion from one point, but through "patches" or individual lot-by-lot developments, **making it difficult to perceive the urban piece as a cohesive whole**. (Alcaldía de Santiago de Cali, 2018, pp. 20–21).

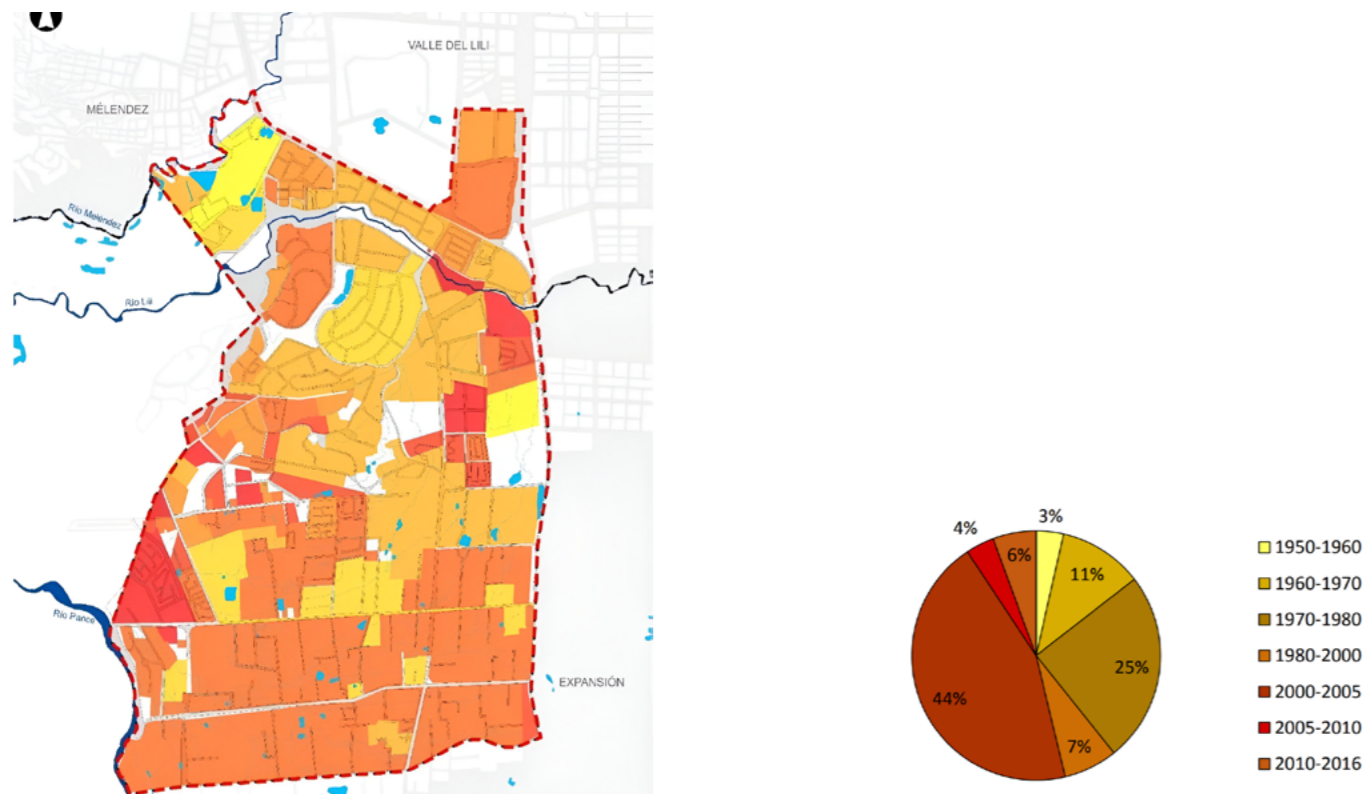


Figure 4: The map illustrates the historical development of UPU 14 and Comuna 22, the expansion stages from 1950 to 2016. the urban growth patterns of the area(DTS UPU 14 – Pance, DAPM- Consultoría Geografía Urbana, 2016).



1950-1960:

- Areas used for agriculture and livestock, with ample **green spaces and rural activities**.
- **Beginning of urban development** with the old Hacienda Cañasgordas and the Club Campestre.
- The Regulatory Plan of Wiener and Sert marks a period of industrial growth that begins to slow down.
- The round plot becomes evident as the functional and morphological structure of UPU 14, emphasizing the **garden-city character of the area, rich in water resources that have not yet been altered**.



1985-2000:

- Continued development and consolidation of Ciudad Campestre and the Río Lili urbanization.
- Significant **increase in urbanization due to housing demand and Cali's southward expansion**, with the first signs of **pressure on natural resources and infrastructure**.
- Reduction in minimum plot size, allowing the subdivision of larger plots of land into smaller plots and promoting the supply of suburban housing.
- **Development of "safer" gated communities with communal open spaces**.
- Environmental problems: **individual sewage and water treatment systems, increased runoff due to soil impermeabilization**.
- **Fragmented growth** without a comprehensive urban planning project, making it difficult to create a coherent and efficient infrastructure



1960-1970:

- Stage I of the Ciudad Jardín Urbanization appears, designed under the precepts of the "post-war garden city".
- Continuation of residential development and beginning of Parcelaciones Pance.
- Creation of the first residential developments, accompanied by the need to **develop basic infrastructure and public services**.
- Use of an **irregular grid** with roundabouts and branches with access in cul de sacs, taking advantage of the low density and generous green spaces linked to the natural and scenic potential of the site, including views over the Valley and the Lili River.



2000-2005:

- Rapid urban growth, with more urbanizations and infrastructure expansion.
- Creation of Comuna 22 by means of Agreement 134 of August 10, 2004, integrating urbanizations such as Ciudad Jardín, Parcelaciones Pance, Urbanización Río Lili and Ciudad Campestre.
- Beginning of the implementation of the Land Management Plan (POT) in 2000, declaring the change from rural to urban land.



1970-1985:

- Introduction of the UPAC (Unidades de Poder Adquisitivo Constante), a financial system to facilitate the acquisition of housing.
- Changes in urban design: transition of **blocks and lots to residential complexes**, optimizing space by grouping multiple housing units.



2005-2010:

- The expansion of residential and commercial developments continues, with an emphasis on improving infrastructure and services.
- The construction of **large educational and commercial facilities** is increasing, consolidating the supply of services in the area.
- Persistent environmental problems: individual sewage and storm-water management solutions remain a challenge.
- Comuna 22 continues to **attract high-income sectors, maintaining its exclusivity and high living costs**.

Figure 5: Historical development and total occupied area for UPU 14 over the decades (Alcaldía de Santiago de Cali, UPU diagnostic study 14, DAPM- Geografía Urbana, 2018).

Morphology and typology

1. Ring Roads: A form of modern urbanization that is distinguished by the specific distribution of its streets and the layout of its green areas. It is designed to minimize the slopes of the roads.
2. Detached buildings: In the Garden City typology, detached buildings refer to single-family dwellings with large built-up areas, located on large lots.
3. Row housing is a type of semi-detached construction that forms closed complexes. The population density in these areas is low, since the dwellings are distributed in a less concentrated manner. The dwellings form an enclosed complex.
4. Apartment towers represent a shift towards higher housing density and better use of usable area. A trend towards modernization and intensive urbanization, aligned with the needs of a growing population.
5. Large facilities

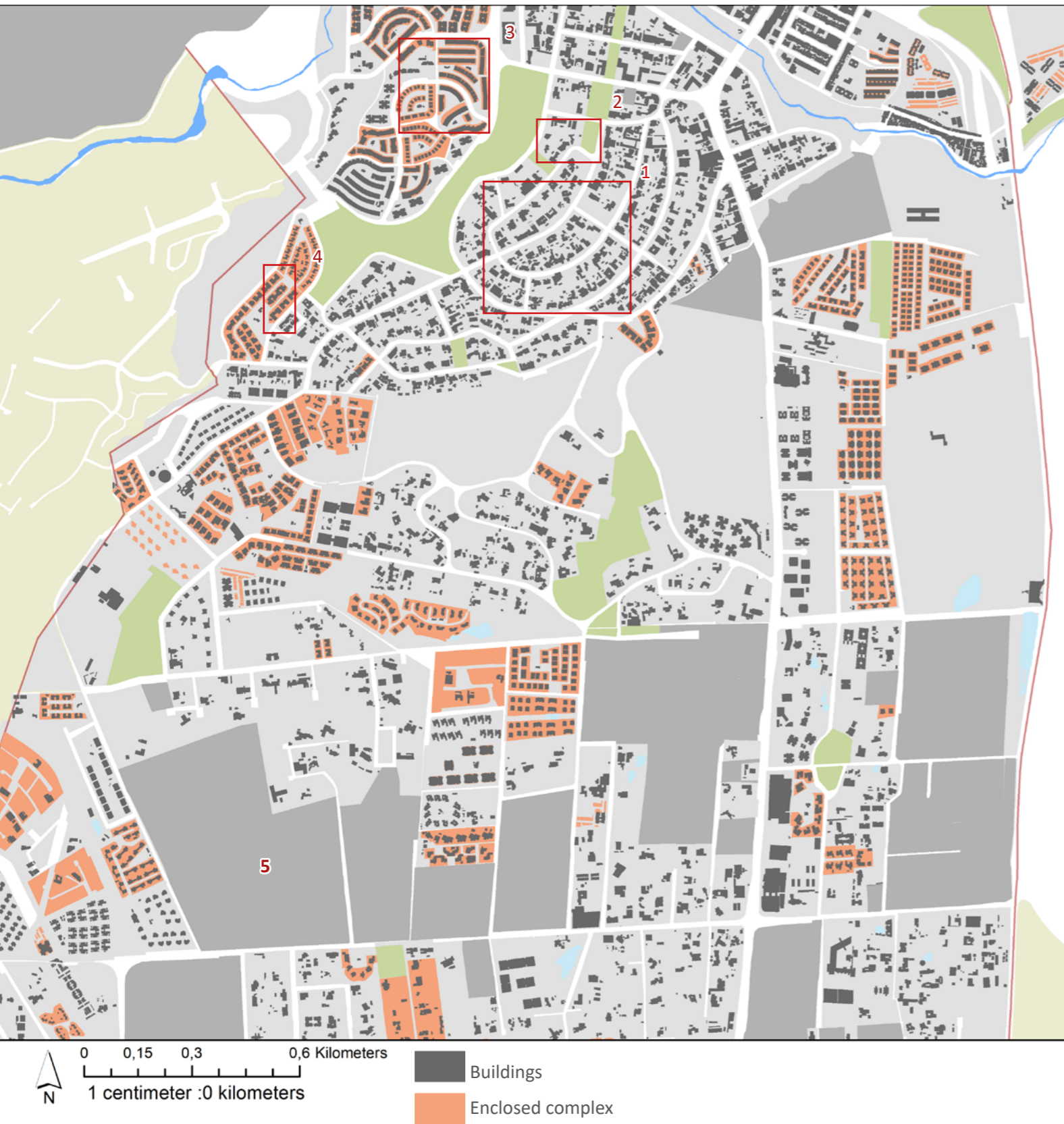


Figure 7: Condominium complex, Row housing
Obtained from Google Maps (Google Maps, 2024).



Figure 8: Right: Apartment towers, Condominium complex, Row housing
Obtained from Google Maps (Google Maps, 2024).



Figure 9: Garden City typology, detached buildings housing
Obtained from Google Maps (Google Maps, 2024).

Figure 6: Morphology and typology: elaborated by the author based Geo-portal IDESC cali (n.d)

Environmental system

As seen in the previous chapter, one objective that is constantly being pursued in the city is to preserve and **improve ecological connectivity**.

*“The importance of the **water network as a system of urban environmental corridors** to consolidate the municipal ecological structure (EEM), promoting the continuity of ecosystem dynamics, **the flow of native flora and fauna species from the Farallones de Cali National Park to the Cauca River** and the spatial-functional connection of urban activities with the natural elements of the territory, based on alternative mobility (pedestrian and bicycle routes) in a west-east direction.”* (DAGMA, 2019 ,p. 11).

The aim is not only environmental, but also one of integration into urban life. **Ecological connectivity is the ability of animals on land or in water to move freely from one place to another.** Development and infrastructure in cities is a threat to this connectivity, breaking and degrading habitats. It is indispensable for the existence, conservation and preservation of biodiversity in a territory.

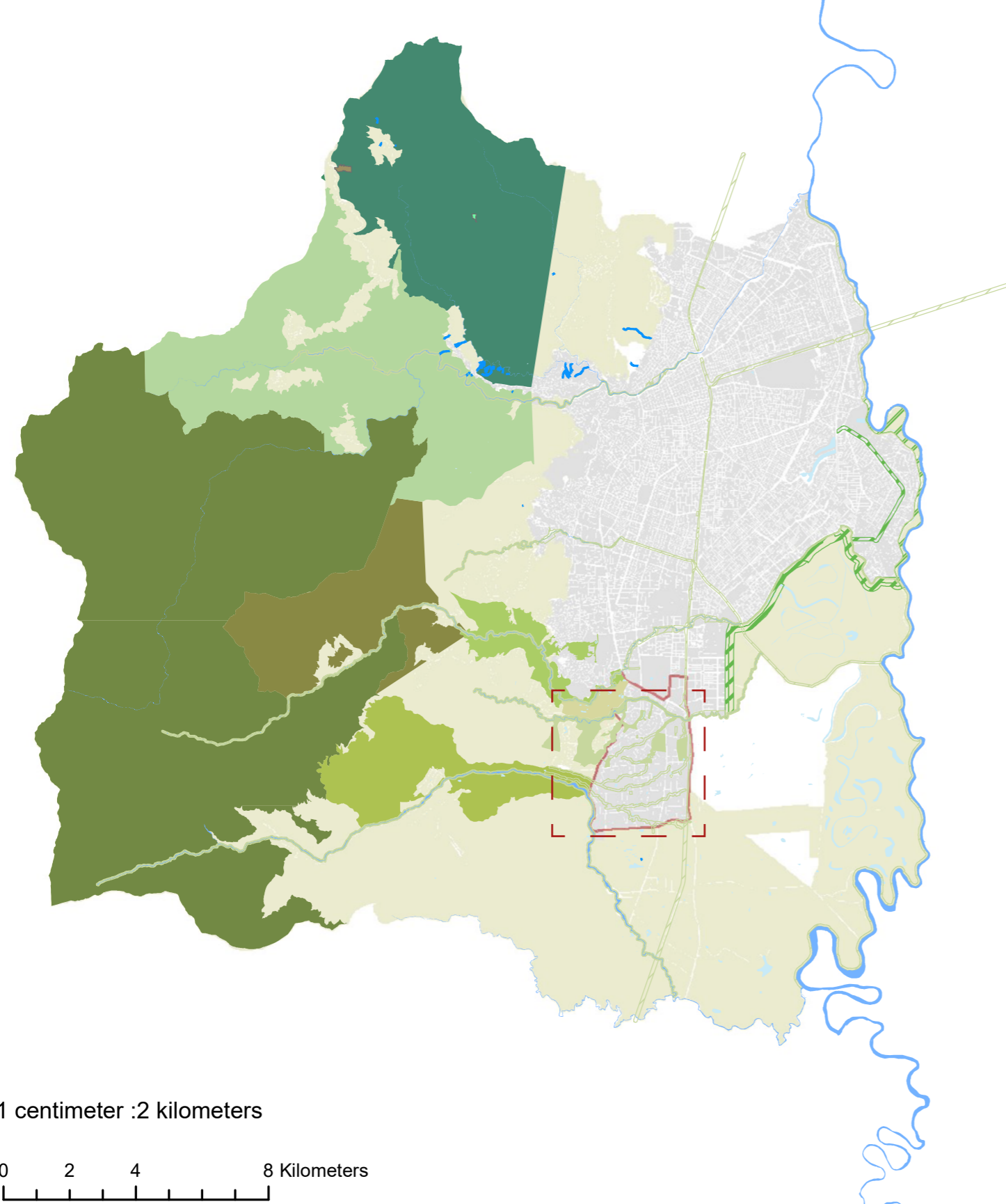
Ecological connection, according to the patch-corridor-matrix model (Armenteras and Vargas Ríos, 2016), refers to how landscape elements, such as patches, corridors and matrix, interact to maintain the functionality and biodiversity of the ecosystem. These elements create a mosaic that allows species mobility, gene flow and plant dispersal, ensuring the resilience of the landscape to disturbances.

A Patch is Relatively homogeneous, non-linear areas that differ from their surroundings. Patches are fundamental components of the landscape that harbor specific habitats and species. Patches provide essential habitats for species and can be areas of intensive conservation.

The corridors act as linear connections between patches and matrices in a landscape, facilitating the movement of species and the transfer of resources between habitats, Corridors facilitate the migration of species between patches, which is vital for the survival of small, isolated populations.

In the case of Cali, the POT defines them as:

Environmental corridors: *“These are large articulating and transversal elements of the Municipal Ecological Structure that, through a continuous layout of linear spatiality, link the city and its rural areas, especially the mountain range (Los Far-*



1 centimeter :2 kilometers



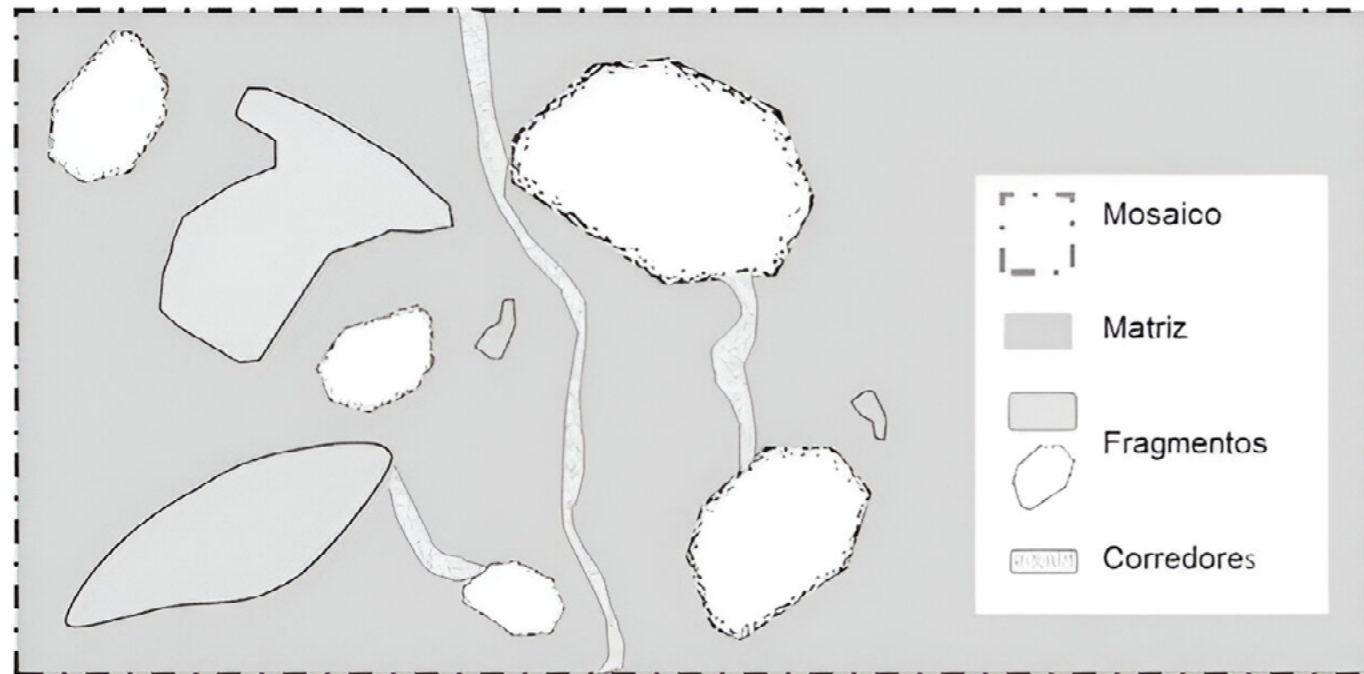


Figure11: Landscape elements in the framework of a mosaic-matrix-patch-corridor model. (Armenteras and Vargas Ríos, 2016)

allones de Cali National Natural Park) with the geographic valley (Cauca River) through the urban area, thus increasing the environmental and ecological connectivity of areas of importance for biodiversity conservation. They are composed of various elements, both natural and built, such as rivers, forests, elements of the mobility system, public space and/or canals, which together promote ecosystemic and environmental conservation activities, and citizen encounters through spaces for mobility and permanence (effective public space), which combine alternative modes of transportation and travel elements such as linear parks or promenades, characterized by a high density of trees” (Alcaldía de Santiago de Cali, POT, 2014, p. 28).

Matrix: The dominant, connected element in a landscape that has the greatest control over landscape dynamics. The matrix forms the environment within which patches and corridors are located, and its quality can influence the connectivity and functionality of the landscape.

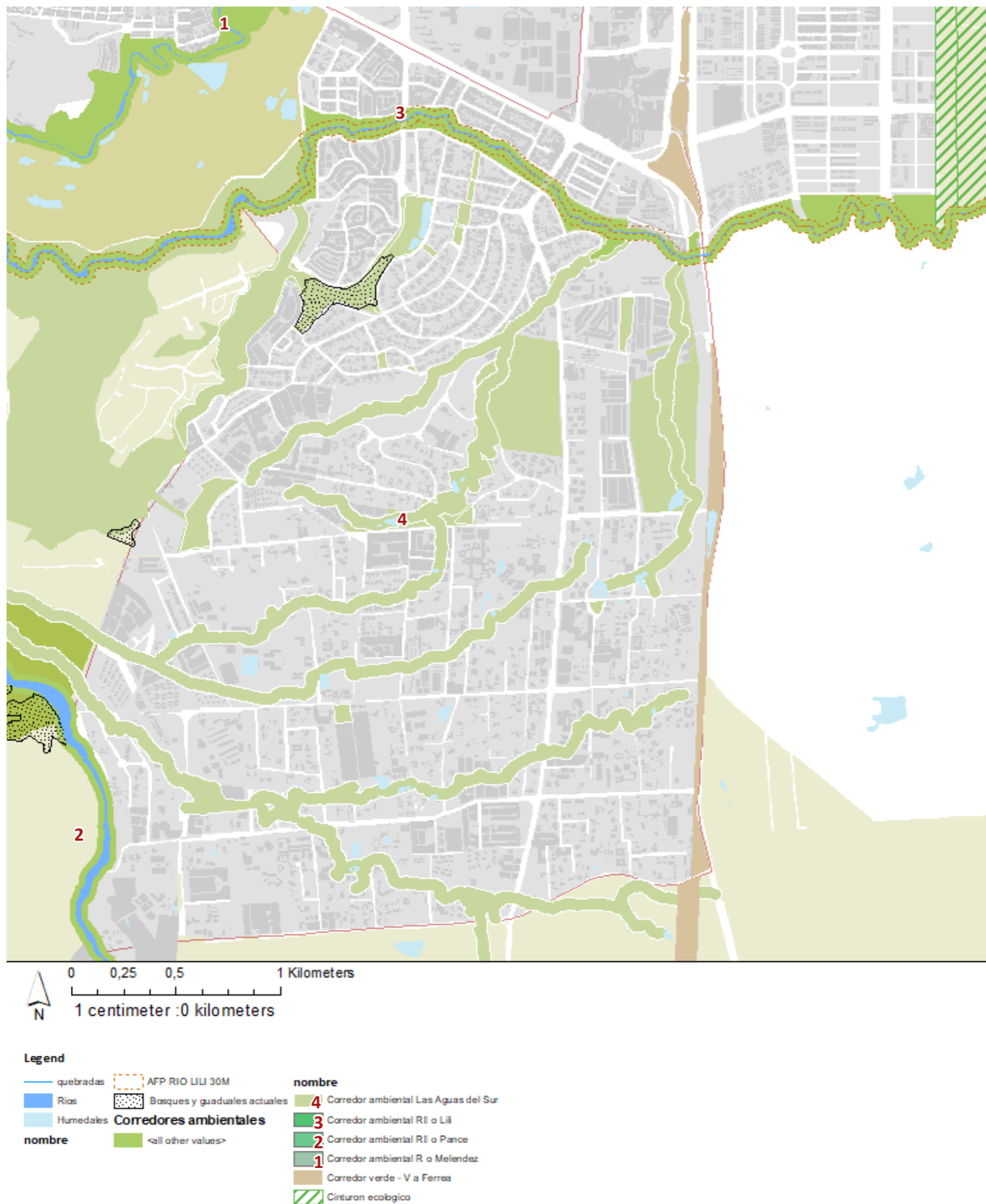
The most important nodes of connection in the city are the Farallones and the Cauca River, which in the same way are articulating elements of the natural habitat throughout the region. These environmental corridors, in addition to allowing this large-scale continuity, knit the city, its built environment with the natural environment, provide habitat for local wildlife, preserving and increasing biodiversity within the city. Promotes joyful and productive interactions between people and nature in cities, enhancing both ecological and socio-economic development. Linking urban life as part of that biological whole.

This UPU is the part of the city with the most natural elements, with 3 of the 7 rivers of Cali.

Meléndez River: Its source is located in the Farallones National Natural Park and is the origin of diverse species of flora and fauna. The Lili River flows from it.

Lili River: A tributary of the Meléndez River, contributing to the ecological and hydrological balance of the area.

Pance River: Rising in the Pance hill, the highest point of the Farallones National Natural Park, it is a critical natural element for biodiversity and ecological connectivity in the city.



The map of environmental corridors in Cali reveals that Comuna 22 (UPU Pance) is **one of the areas of the city that best preserves ecological continuity, avoiding the fragmentation caused by urban development.** This zone also facilitates a robust connection between the Farallones and the Cauca River, and is particularly notable for the **Lili River corridor, which is interconnected with La Babilla Lake, thus strengthening the region's ecological network.**

The environmental corridors located in Commune 22 are one of the few areas of the city that still have areas that define highly natural ecosystems, play an important role in the hydrological cycle, in local atmospheric processes, in trophic chains and in biochemical cycles; they also facilitate the maintenance of good atmospheric quality as a fundamental element for a healthy environment. They are also a refuge for fauna and flora. (Dagma,2016)

The environmental corridor of the Lili River that crosses the UPU in the northern part, the environmental corridor of the Meléndez River that borders the UPU on the northwestern side, and the environmental corridor of the Pance River that borders the southwestern side, as well as the streams and ditches that are part of the Aguas del Sur environmental corridor. These bodies of water, their Protected Forest Areas and the wetlands that are part of this water network, such as the La Babilla wetland, represent 37% of the total area in the UPU with approximately 416 hectares, as part of the city's Main Ecological Structure (Alcaldía de Santiago de Cali, 2018).

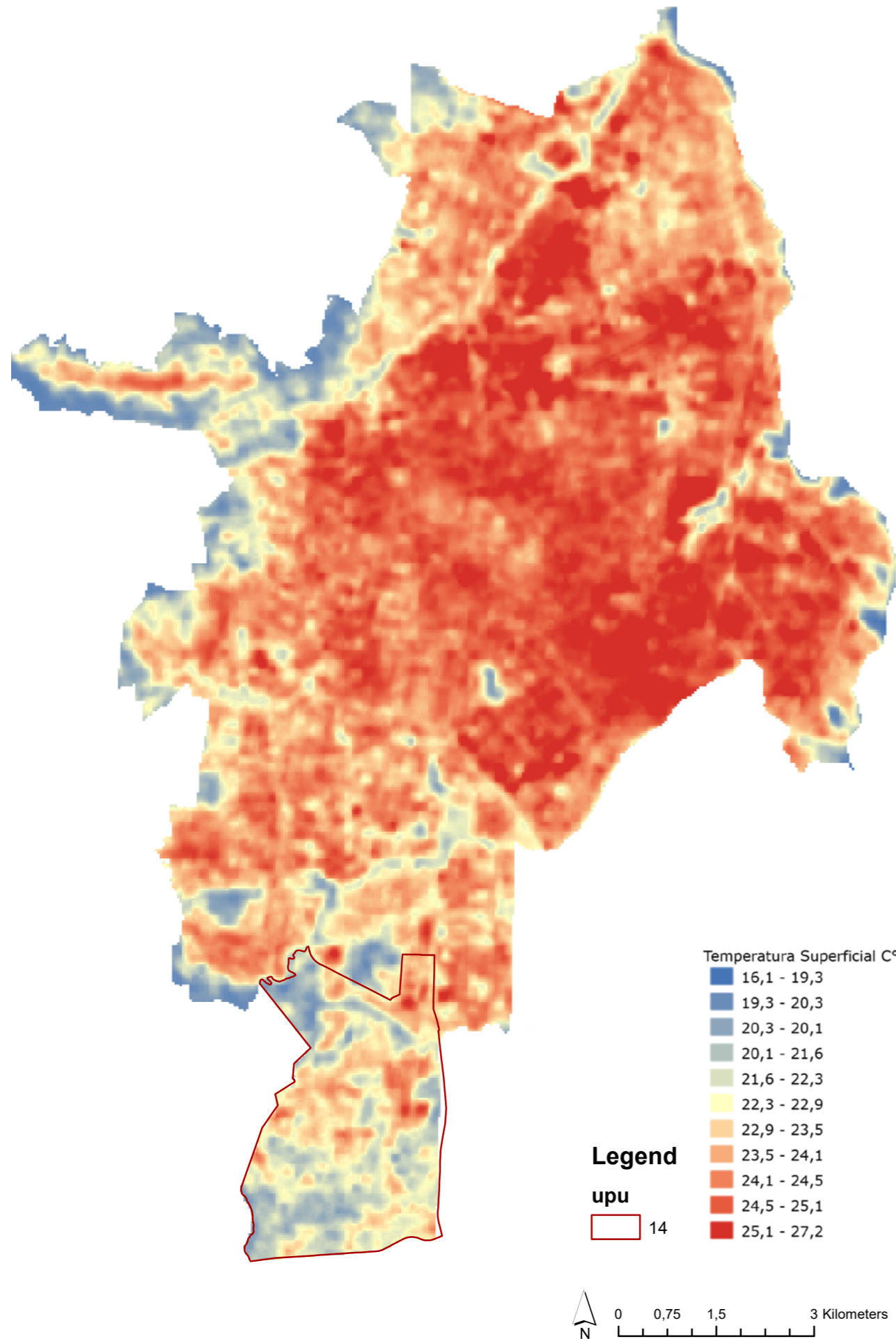


Figure 13, showing the heat map, illustrates that Comuna 22/UPU 14 is one of the areas of the city with the lowest presence of heat islands. This is due to the high density of the ecological structure present in the sector, which acts as a natural thermal regulator and contributes to maintaining better balanced temperatures compared to other urban areas.

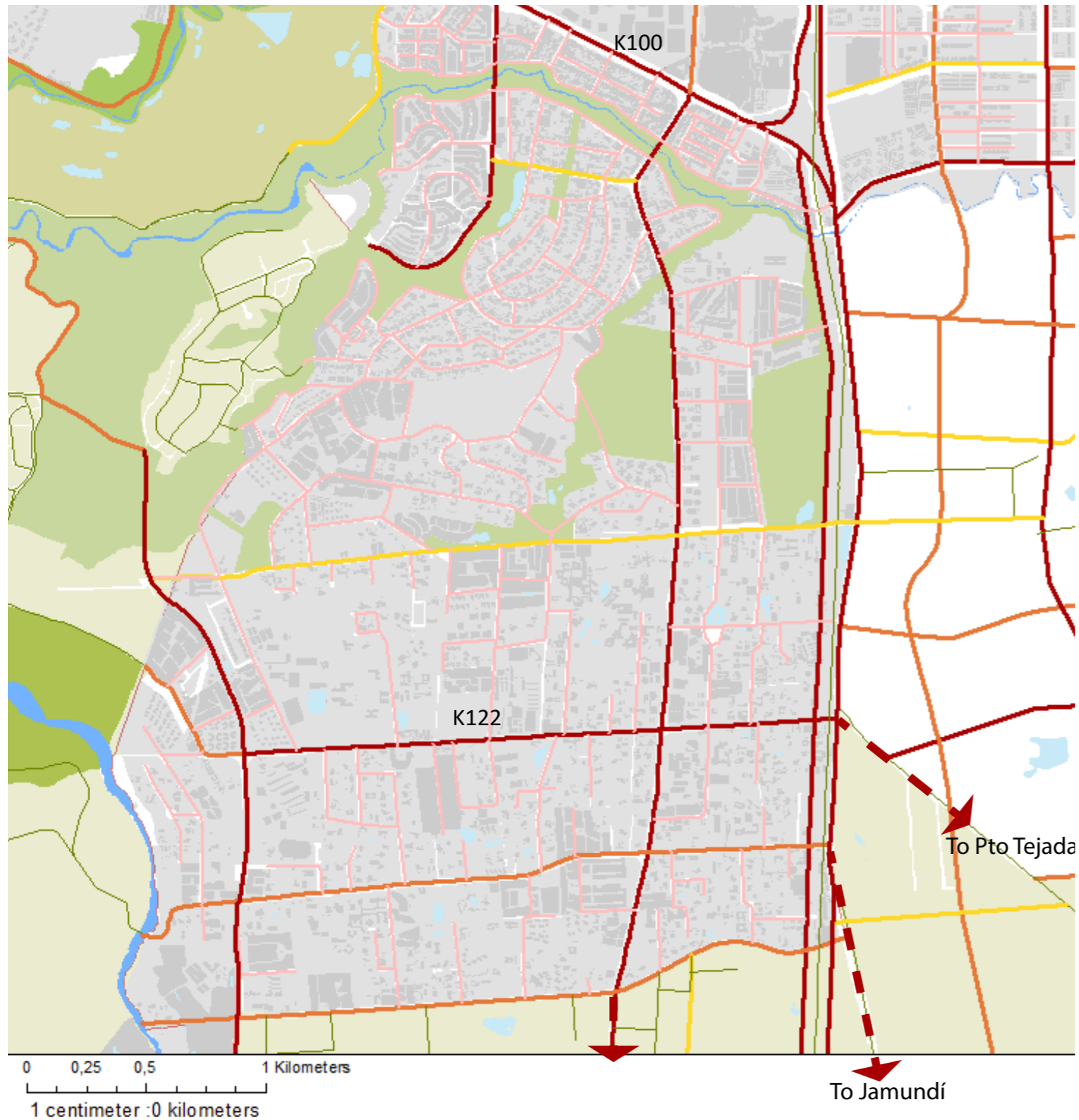
Mobility system

The main problem in UPU 14 in terms of mobility concerns mainly vehicular traffic. “The highest socioeconomic strata (4, 5 and 6) contribute the most to the rate of motorization by automobile, while the lowest strata (1, 2 and 3) contribute the most to the rate of motorization by motorcycle,” (Alcaldía de Santiago de Cali et.al.,2017).

More than half of the transport in the sector is based on the private car. The high ratio of vehicles per inhabitant in the southern zone increases the demand on available roads and parking spaces. **The presence of a large number of daily visitors who travel to the area for study and work purposes significantly increases the volume of traffic,** generating additional pressure on the existing road infrastructure. (Alcaldia de Cali, 2018).

UPU 14 also acts as a traffic corridor for vehicles traveling between Cali and neighboring municipalities like Jamundí, thus contributing to vehicular congestion. This combination of factors results in chronic vehicular congestion, which is exacerbated during peak hours, inhibiting the efficient flow of traffic and prolonging travel times. Due to the amount of floating population that moves to UPU 14 to access the services and activities located there and added to the few main access roads to the sector (13th Street, Cañasgordas Avenue and 25th Street), very high volumes are generated on the road network, resulting in service levels in the primary and secondary arterial network. (Alcaldia de Cali, 2018)

Pedestrian infrastructure in UPU 14 is deficient as figure 1 shows. Many sidewalks are deteriorated or simply do not exist, forcing pedestrians to walk on the roadway, exposing them to additional risks.



Legend

Jerarquizacion_vial

tipo_via

- Via Arteria Principal
- Via Arteria Secundaria
- Via Colectora
- Via Local
- quebradas
- Rios
- Humedales

Figure 14: Mobility system in upu14/ Comuna 22 elaborated by the author based Geo-portal IDESC cali (n.d)

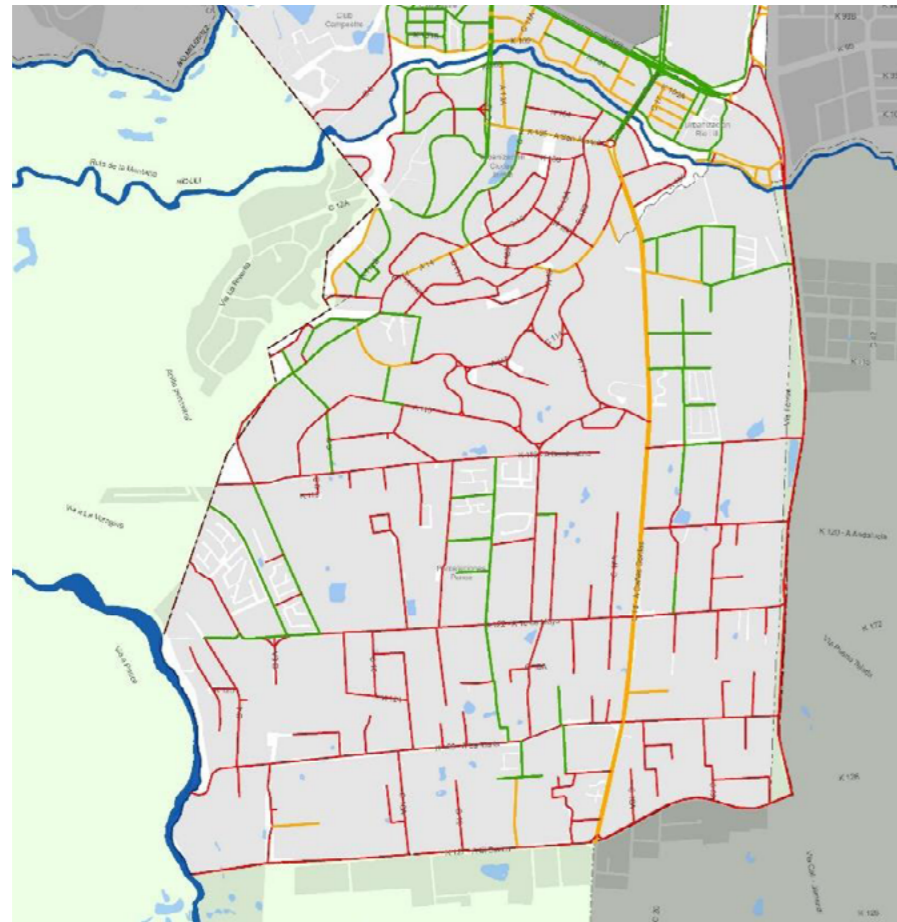


Figure 15: Condition of sidewalks Source: Alcaldia de Cali, 2018

To mitigate these problems, it is essential to invest more in the MIO public transport system. It would not only alleviate the burden on the roads, but also offer an efficient and sustainable alternative for daily commuting. **The sector also has great pedestrian potential that could be tapped by improving pedestrian infrastructure, connecting existing environmental corridors and activity axes.** Enhancing the use of these corridors for pedestrian and bicycle traffic would not only improve mobility, but also contribute to the quality of life and the environment in UPU 14. (Alcaldia de Cali, 2018).

Vehicle used for transportation in the UPU	63% Private car	15.6% MIO	8.7% Motorcycle	3.9% Piracy 1.4%Taxi
	3.3% Bicycle	2.1% Tradicional bus	1.7%Walking	0.1% School routes

anex 2: vehicle used for transportation in UPU 14 Source: Mobility and accessibility study commune 22(Alcaldia de Cali, 2018) translated by the author

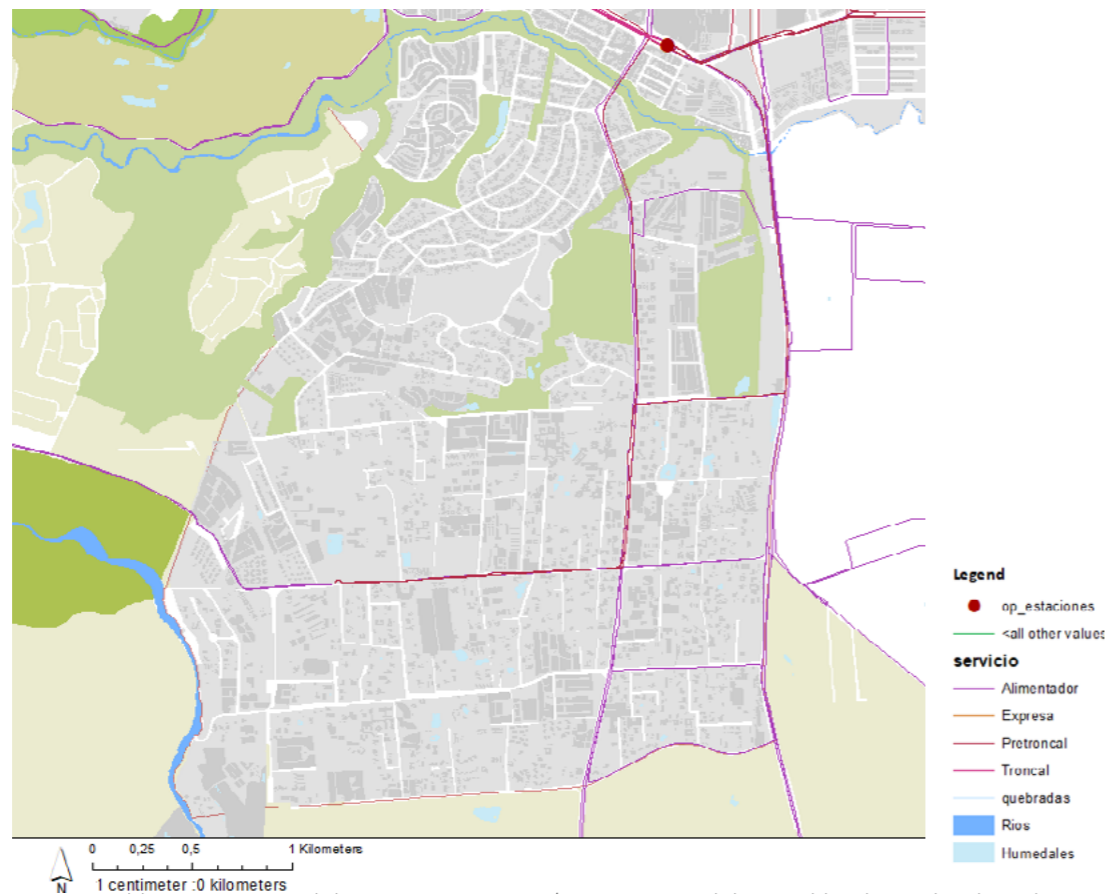
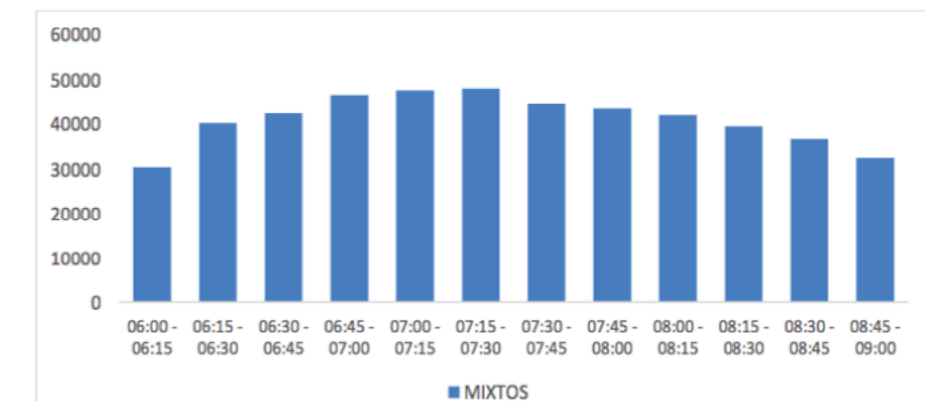


Figure 16: Pblc transport Mobility system in upu14/ Comuna 22 elaborated by the author based Geo-portal IDESC cali (n.d)



Hourly distribution of vehicular volumes

anex 3: Source: Mobility and accessibility study commune 22 (Alcaldia de Cali, 2018) translated by the author

3.6

Facilities system

The phenomenon of large numbers of floating population flows in UPU 14 is due to the **large number of facilities located in the area, mainly educational institutions**. These facilities occupy 19% of the land, with approximately 198.8 hectares, and are mostly represented by schools (49) and universities (9). Among the universities are ICESI, Javeriana, San Buenaventura, Católica and Libre, while the schools include Alemán, Bolívar, Claret, Nuevo Cambridge, Colombo Británico, Sagrada Familia and Hebrew, among others. **The majority of the population commutes to this area to study**, followed by those who go to work. In addition, a large number of people only travel through the area to drop off or pick up someone, and the rest travel to carry out various short-term tasks. (Alcaldía de Cali, 2018).

Facilities system	Area HA	% in the sector
Area of facility lots	198,8	19%
Facility constructions	20,3	2%

Anex 4: "Area of equipment in commune 22." Source: DAPM - SPT, 2019. Translated by the author

Activity corridors are axes that concentrate economic activities and are classified according to their function and dynamics in the planning model. The following are found in Commune 22:

Calle 18 at Avenida Cañasgordas: Classified as an urban corridor of commercial and service uses 3, it is **intended for commercial and service activities of a considerable scale**, boosting commerce and the local economy by attracting both residents and visitors.

Calle 13 with Pasoancho Avenue and Carrera 105 with San Joaquín Avenue (in front of the park): Defined as urban corridors with a vocation for commercial and service uses 2. These corridors are less intensive than type 3 but are still crucial for local economic development. **They facilitate access to goods and services for residents**, improving the quality of life and **promoting the growth of local businesses**.

16th Street: Identified as an urban corridor with a **vocation for commercial and service uses 1**, it plays an important role in **supporting economic activities at a more local and accessible scale**.

In addition, on the perimeter of the sector, on the axis of the old railroad track (green corridor plan), is the business use corridor on Carrera 100. This corridor is designed to concentrate companies and offices, which can encourage the arrival of new investments and businesses, generating employment and boosting the local economy.

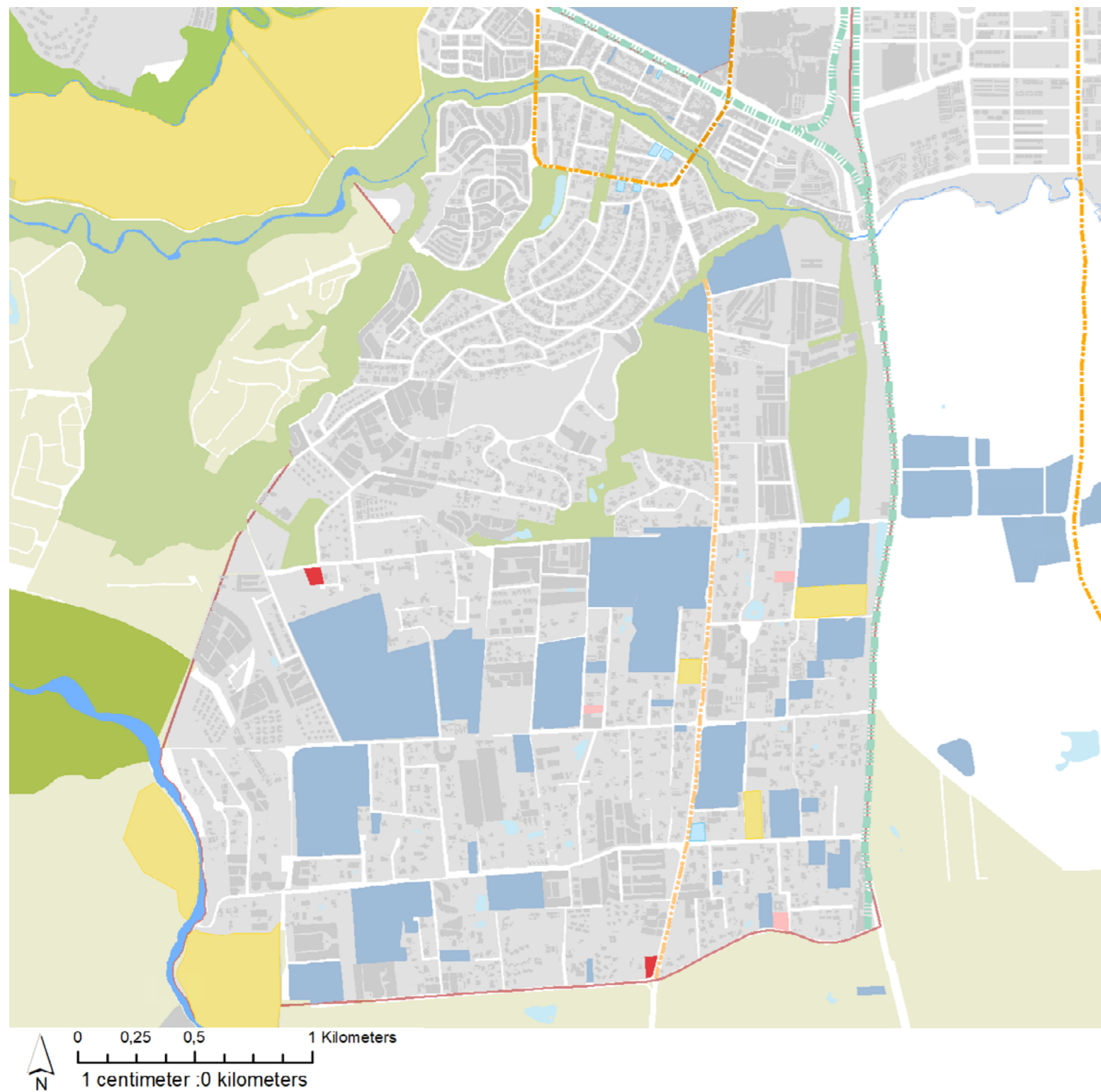


Figure 17: Facility system in upu14/ Comuna 22 elaborated by the author based Geo-portal IDESC cali (n.d)

Activity Areas

Activity areas are defined as **areas of land with similar socioeconomic conditions, characterized by the predominance of a specific land use**. These uses are regulated and defined based on their predominant function, with permitted complementary uses and their intensity detailed in Article 288 of the POT. The classification includes Area of Net Residential Activity, Area of Predominant Residential Activity, Area of Mixed Activity, and Area of Industrial Activity (Alcaldía de Santiago de Cali, POT, 2014, Art. 288). Land Use Distribution in UPU 14 - Pance:

Residential use: The Area of Net Residential Activity (Article 289) corresponds to urban zones designated exclusively for residential use, without other activities permitted. In UPU 14 - Pance, this use is predominant, **occupying 53% of the total area. Complementary economic activities are permitted only in designated zonal activity corridors within urban planning units** (Alcaldía de Santiago de Cali, POT, 2014, Art. 289).

Use of Facilities: **Approximately 21% of the UPU area is designated for institutional uses**, including educational, health, administrative facilities, and other public and private entities providing essential services for both residents and the floating population (Alcaldía de Santiago de Cali, POT, 2014). **Mixed Activity Areas:** According to Article 291, these areas integrate mixed uses such as residential, commercial, and specialized services, contributing to a dynamic local economy. In UPU 14 - Pance, **mixed activity zones are primarily located along main road axes and account for 17% of the total area**. This diversity of activities is one of the UPU's main strengths, as identified in electronic surveys (Alcaldía de Santiago de Cali, 2019). **Green Zones and Public Spaces:** **Green areas occupy 9% of the total area in the UPU**, but many are **appropriated by private entities**, limiting accessibility and community use. Citizens have expressed concerns about the inadequate maintenance of green areas and the encroachment of public spaces by informal commerce and vehicles, as well as the lack of recreational and cultural infrastructure (Alcaldía de Santiago de Cali, POT, 2014; Alcaldía de Santiago de Cali, 2019).

The increase in commercial activities in predominantly residential areas has also generated negative impacts, including a lack of recreational, sports, and cultural facilities, especially in the Río Lili Urbanization, which requires improved sports and recreational infrastructure (Alcaldía de Santiago de Cali, POT, 2014).

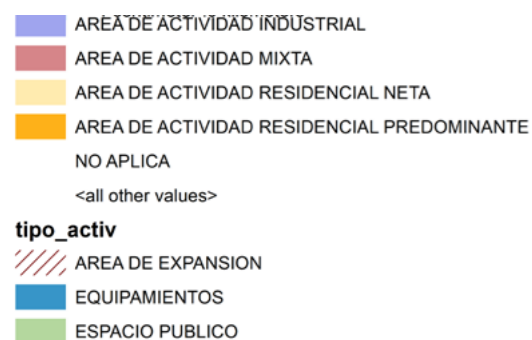
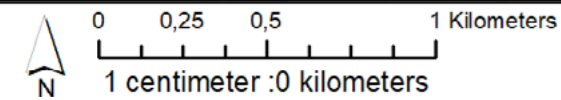
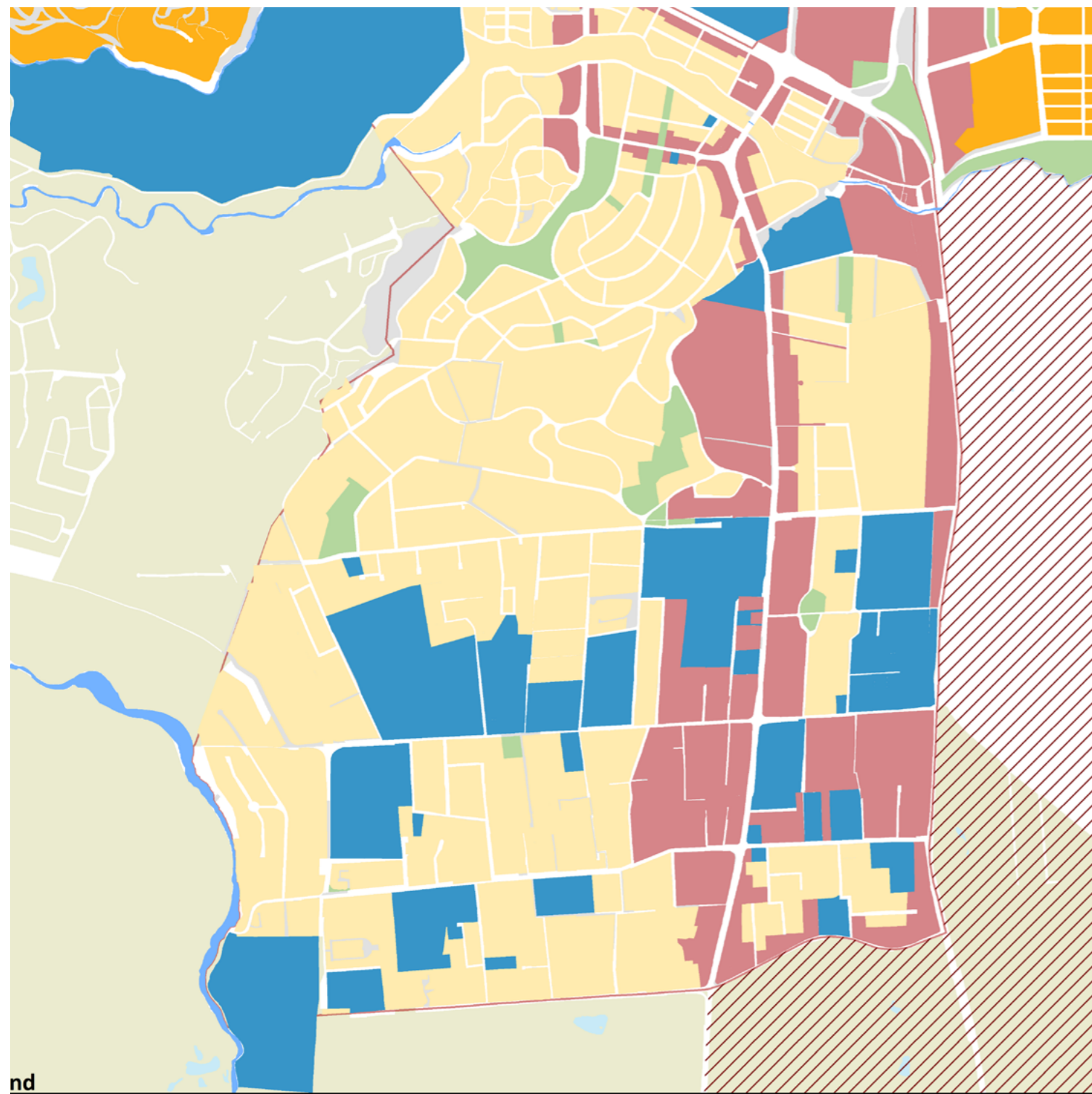


Figure 18: Activity areas in upu14/ Comuna 22 elaborated by the author based Geo-portal IDESC cali (n.d)

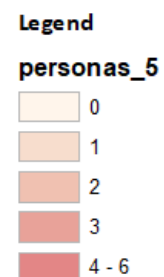
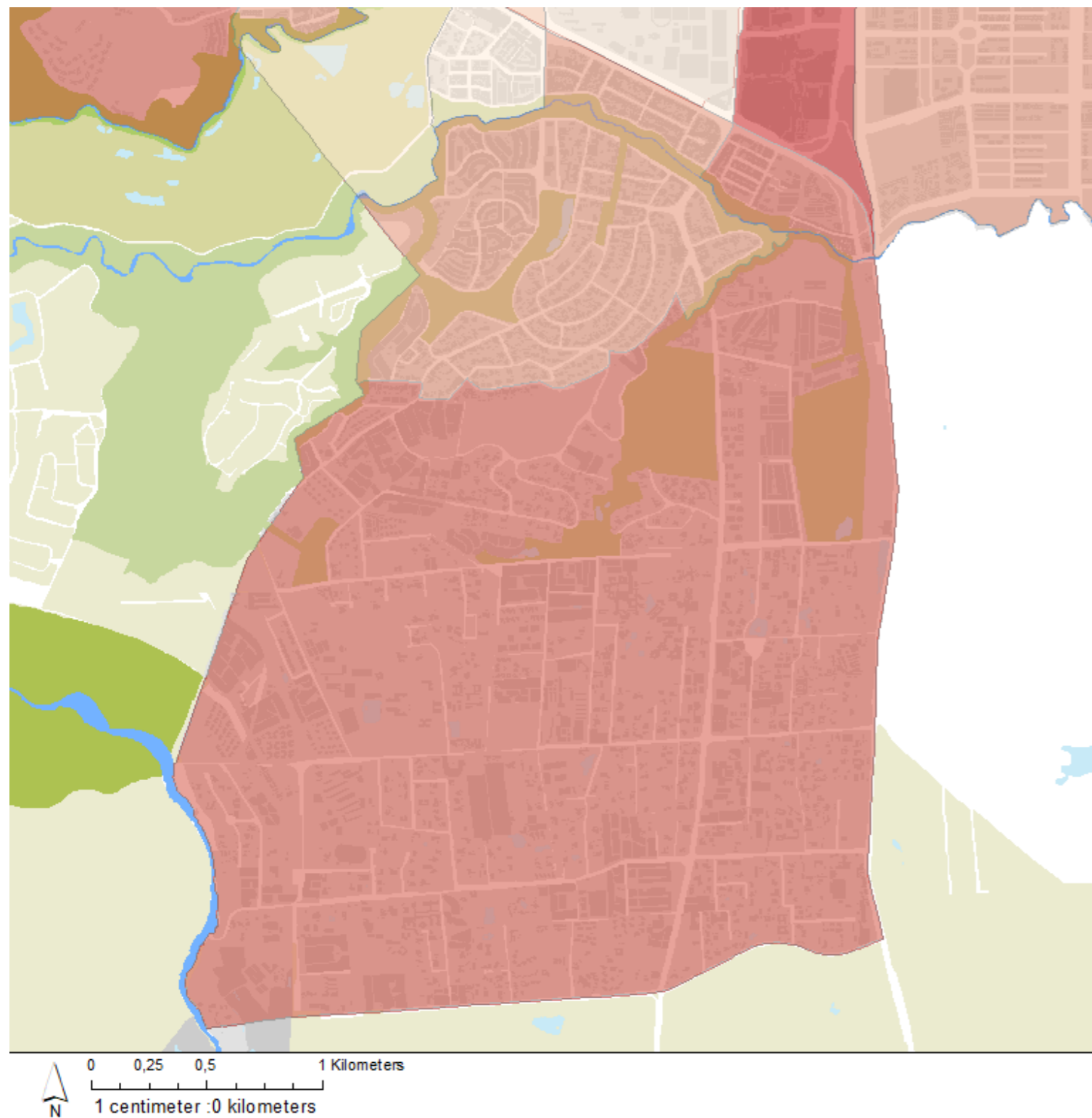


Figure 19: Population density (Person per house) in upu14/ Comuna 22 elaborated by the author based Geo-portal IDESC cali (n.d)

3.8

Socio-economic

According to the Cali in Cifras 2023 document, the projection for 2023 is 26,298 people, representing approximately 1.15% of the total population of Cali, which is 2,280,522 people. Commune 22 occupies 9% of the urban area with 1,120 hectares of extension, the area of UPU 14. This is reflected in the population density, with the highest net density being between 41 and 56 inhabitants per net hectare, which is low compared to the average density of the city, which is 190.45 inhabitants per hectare. Likewise, housing density per hectare in commune 22 is low, with 4.2 dwellings per hectare compared to Cali's 41.6 dwellings per hectare. (Cali en cifras, 2023)

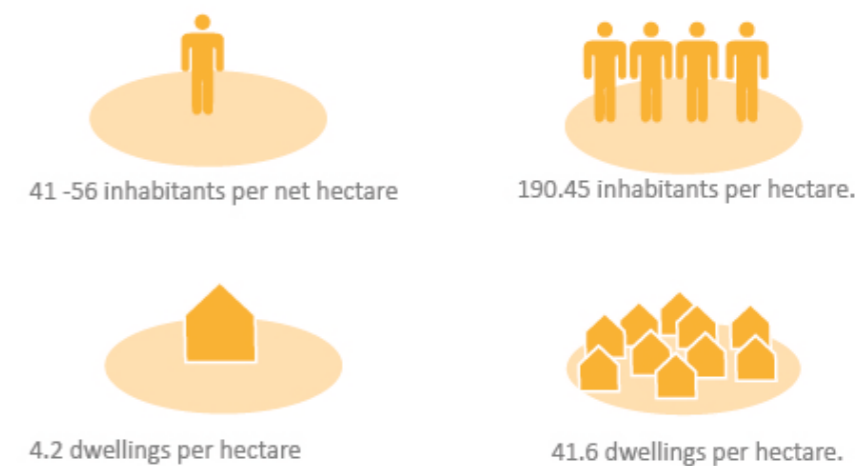


Figure 19: Diagram population density (Person per house) in upu14/ Comuna 22 elaborated by the author based (Cali en cifras, 2023)

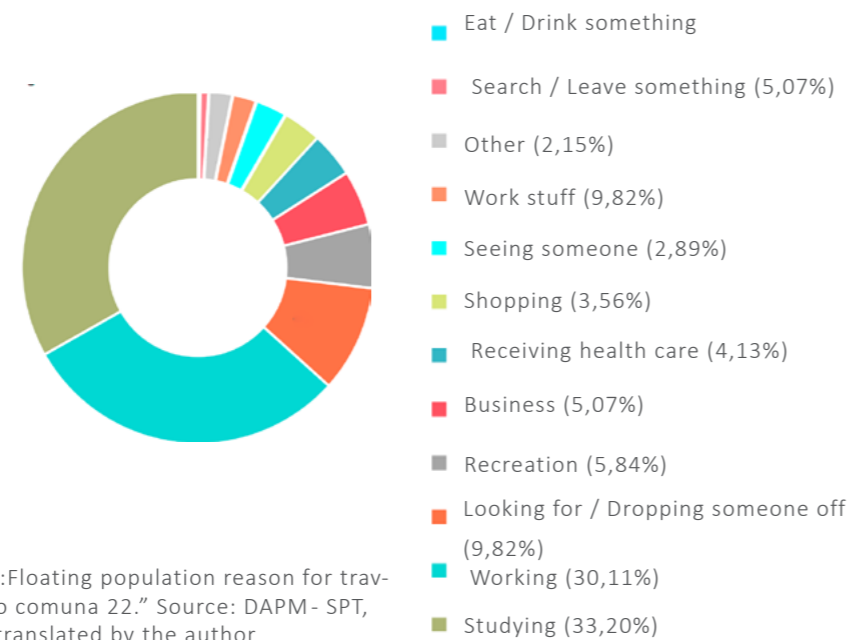
One of the most important and determining aspects is the population of the sector, which has a **very small resident population compared to the floating population**. Based on Encuesta de Movilidad 2015 (Estimated, under review by DAPM.) The floating population is approximately **80,000 people per day who travel to the area**, including students, teachers, patients, tourists, sportsmen, researchers and service customers. (DAPM, 2015).



Figure 20: Diagram Floating population in upu14/ Comuna 22 elaborated by the author based(DAPM, 2015)

The educational institutions of Comuna 22 are a determining factor of attraction, including major centers like Universidad del Valle and around 32 preschool, primary, and secondary schools, generate significant urban dynamics in the area, attracting students and staff daily (Pontificia Universidad Javeriana, 2008, p. 39).

These institutions generate secondary services and businesses catering to their needs, forming a economic, social, and cultural base. This activity creates a floating population of employees, service users, and students, shaping local behaviors and habits. (Pontificia Universidad Javeriana, 2008, p. 40)



Anex 5: Floating population reason for traveling to comuna 22." Source: DAPM- SPT, 2019. translated by the author

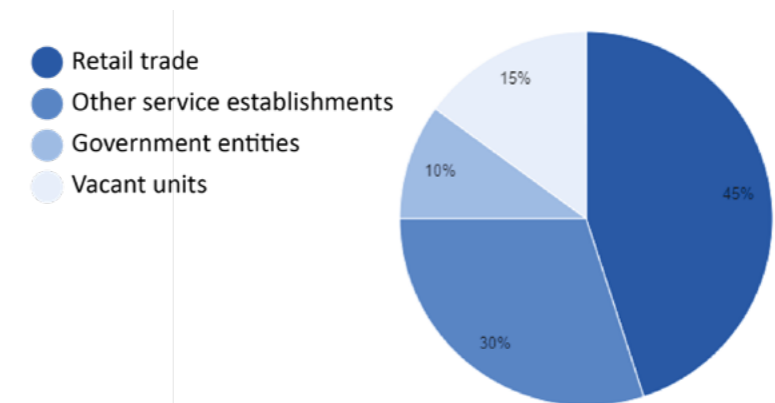
The Business Network in Comuna 22

Comuna 22 hosts 2,200 formal businesses, 2.6% of Cali's total, with 66.6% being micro-enterprises and 22.5% small businesses (Secretaría de Desarrollo Económico de Cali , 2022).The area's primary economic activities are concentrated in commercial complexes or corridors, which comprise 20.7% of businesses, evidencing their central role in the economic activity of the sector. Services (8.8%), and retail (8.3%), alongside government entities (7.9%) and essential services like health and education, also contribute completing a multifaceted and dynamic economic base. (Pontificia Universidad Javeriana, 2008, p. 42).

Companies by size located in commune 22	
Companies	Part (%) commune
Micro	66,6
Small	22,5
Medium	9,3
Big	1,5

Anex 6: S Companies by size located in Comuna 22 source: Elaborate Centro de Inteligencia Economica y Competitividad CIEC. Secretaria de Desarrollo.

Most frequent economic activities in Commune 22.



Anex 7: most frequent economic activities in Commune 22 based on (Pontificia Universidad Javeriana, 2008)

Informal economic activity in Comuna 22 involves 124 vendors, with only 18 residing locally, making the area a net attractor of informal sellers. Most external vendors come from Comuna 18 (18.1%, 21 vendors) and Comuna 15 (14.7%, 17 vendors) (Pontificia Universidad Javeriana, 2008, p. 44).

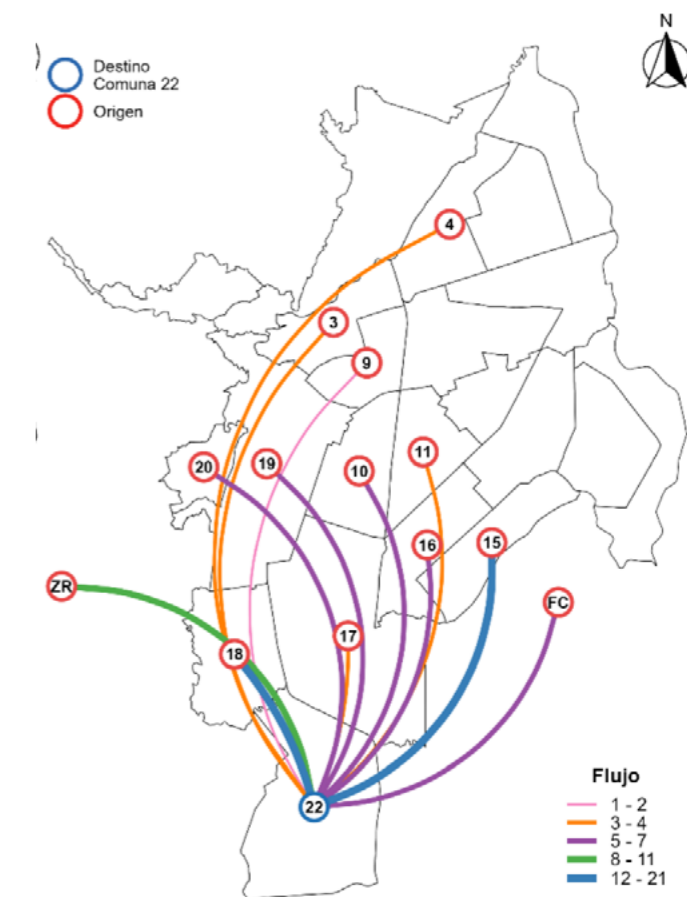


Figure 20: Flows of vendors from other neighborhoods, Source: Elaborate Centro de Inteligencia Economica y Competitividad CIEC. Secretaria de Desarrollo Económico de Cali con base en caracterización de vendedores informales Secretaria de Seguridad y Justicia (2022).)

The relationship between economic units and the territory is complex. **Companies and businesses in Comuna 22 are not considered an integral part of the community**, and the presence of a large floating population, including clients and temporary workers, contributes to a diffuse and fragmented social dynamic.

The Pontificia Universidad Javeriana's 2008 study revealed weak community connections among Comuna 22's businesses and users. Only 15.13% of businesses knew about Community Action Boards (CABs), with just 4% attending events, and 47.9% showed no interest in participation. Businesses primarily value the area for its development and client potential (35.29% and 32.77%, respectively), while environmental factors drew minimal attention (0.84%) (PUJ, 2008, pp. 44-46).

Public space users prioritized security (26.17%), comfort (16.82%), and the natural environment (13.08%) but showed limited commitment to improving public spaces, with 13.8% unsure or disinterested in participating (PUJ, 2008, p. 50). **It is evident that there are weak social bonds among the occasional users of the territory; they recognize the qualities of Comuna 22, but not all of them feel motivated or capable of actively contributing to its improvement and maintenance.**

On the other hand, there is the student population. In Colombia, students attend school from age 5 to 18, and then continue to university, which can last from 4 to 6 years. Considering that school days are usually from 7 a.m. to 3 p.m., a student spends a considerable part of his or her day at the educational institution. This means that the students of the schools in the area spend more time inhabiting the territory of this commune than their own.

Some of these same questions were asked to 398 students, 199 university students and 199 high school students. 75.38% of university and 59.30% of high school students are unaware of the commune where their institution is located, despite using its spaces for daily activities (Pontificia Universidad Javeriana, 2008, p. 52). High school students expressed willingness to participate in activities benefiting environmental conservation. As 66.83% of university students and 47.24% of high school students value the sector for its environmental conditions (Pontificia Universidad Javeriana, 2008, p. 53). However, both groups noted a lack of cultural spaces, with 64 and 112 reports from university and high school students, respectively (Pontificia Universidad Javeriana, 2008, p. 53).

The resident population of the sector show low levels of community engagement, similar to the floating population. Despite an average residency of 13.53 years, with 87.1% owning their homes and 70.3% choosing the area for its environmental benefits, participation in local initiatives is minimal. Chaotic road access is cited as the main disadvantage. Additionally, 68.3% are unaware of local programs or projects, and 64.4% do not know if private companies contribute to development. While 70.14% have been invited to Community Action Board meetings, only 58.57% have participated (Pontificia Universidad Javeriana, 2008, p.79).

The absence of a sense of community may stem from longstanding dynamics. Inhabitants often solve issues privately, limiting the State's role and revealing vulnerabilities when urban growth exposes the shortcomings of private solutions.

Dominant private property, limited public space, and streets designed mainly for vehicles—combined with a passive attitude—prevent the construction of a city where public space fosters community ties and encourages valuing the sector's natural conditions for healthy social and family life, as well as the development of sustainable communities.

Observations on the resident and floating population of Comuna 22 paint a concerning picture of a lack of community and ownership. Among residents, it appears entrenched in a dynamic where private solutions dominate, limiting public participation and exposing vulnerabilities as urban growth intensifies. The prioritization of private property, limited public spaces and vehicle-oriented streets impede the development of community ties. This lack of shared spaces and collective interaction restricts opportunities to value the natural attributes of the commune that might otherwise support healthier social and family dynamics.

For the floating population, the situation points to the functional and depersonalized use of spaces, which contributes to a lack of belonging and symbolic rootedness. The environmental richness of the area is often overlooked, with economic and educational activities taking precedence. However, this disconnection could be transformed into an opportunity. By integrating these activities with the natural conditions of the territory, it is possible to establish an identity in which the environmental potential of the municipality plays the leading role.

Chapter Conclusions

Comuna 22, due to its development and urban expansion processes without adequate planning towards the south, generated a territory with suburban characteristics, but its role as an educational center and its commercial dynamics have turned it into a focal point that receives a constant flow of people, thus overflowing the response capacity of its infrastructure.

The presence of three important road corridors that cross the neighborhood -the entrance road to the Club Campestre, Pasoancho Avenue (13th Street), and Cañasgordas Avenue together with Carrera 100 and its connections - which contribute to the constant traffic of the floating population, mostly students, given the location of the most important universities in the region and about 32 educational institutions.

The absence of a true sense of community, due to a predominant individualistic approach. The inhabitants have prioritized the indoor and personal comfort of their homes, leaving unattended the exterior spaces that require collective attention. It operates in terms of a human conglomerate inhabiting a territory, instead of operating as an integrated whole, where citizens engage collaboratively as interconnected members of a community. This lack of a unified identity means there is no shared perception of belonging or collective responsibility toward the community. Each person is primarily concerned with their own personal interests and fails to recognize their role as part of a greater whole.

On the other hand, its territory has the greatest environmental conditions in the city, with the natural corridors that cross it to connect two main natural structures of the city and the region (Farallones and the Cauca River), integrating the natural ecosystem to the city, generating habitat for local wildlife, preserving and increasing biodiversity within the city and improving the quality of human life.

These elements render it as a hub of connections, human and natural, both local and regional. Facilitating transit between Cali and cities such as Jamundí, and ensuring ecological continuity between the Farallones and the Cauca River. It has immense potential for reconciling the natural ecosystem with urban life, allowing to heal and re-signify the relationship of its inhabitants with the unique characteristics of this territory. The goal should be to build a strong community that enjoys and cares for its natural and shared environment, transforming individualism into a collective effort towards a sustainable and cohesive future.

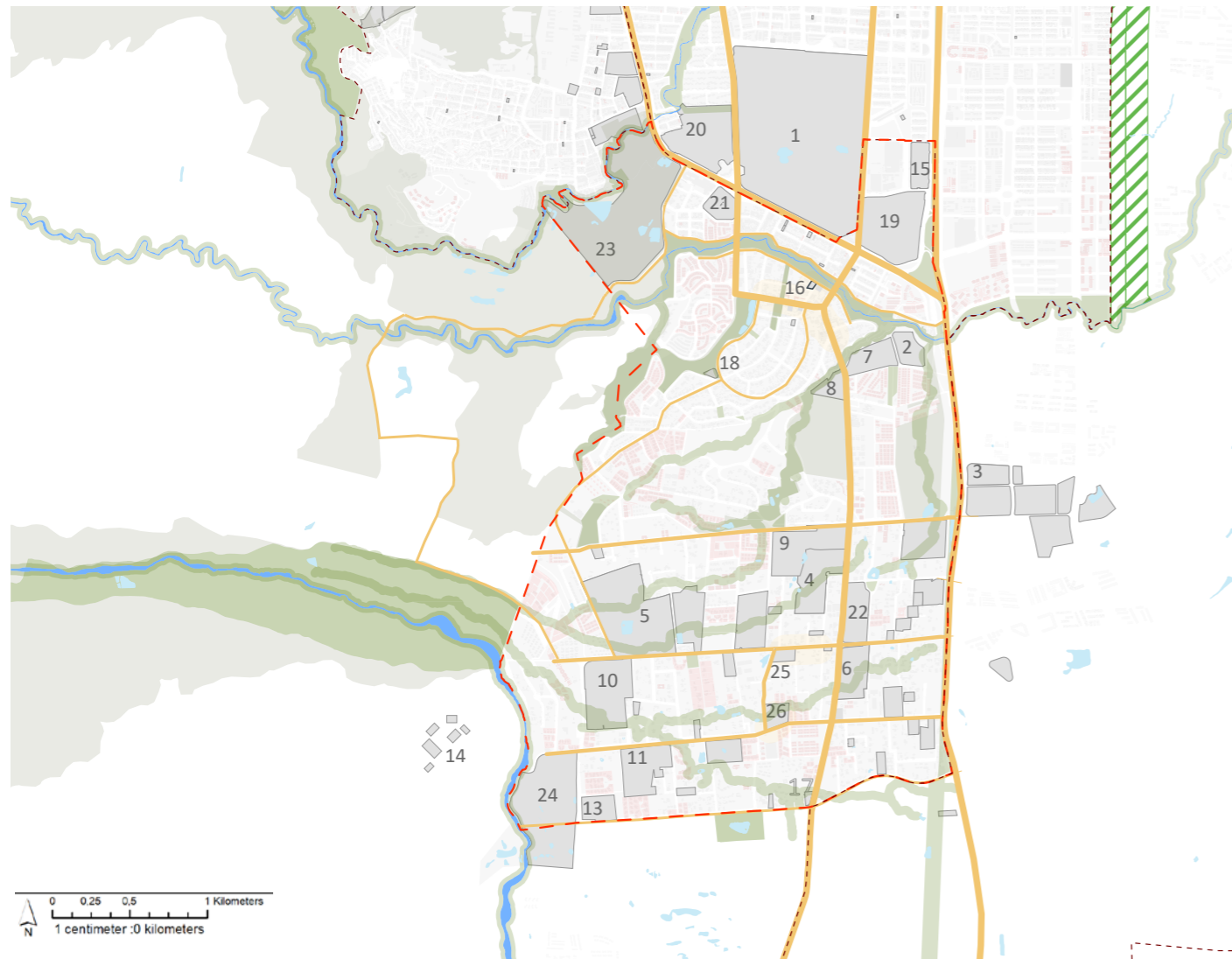





Figure 21: Urban structure in upu14/ Comuna 22 elaborated by the author based Geo-portal IDESC cali (n.d)

- | | | |
|------------------------------------|--|------------------------------|
| schools | 15.Clinic Valle del lili | 23. Club Campestre |
| 7. Alemán- 759 students | 16.Medical Center Imbanaco | 24. Club Shalom |
| 8. Bennett- 690 students | 17.Church La maría | 25. Alto Pance Mall |
| 9. Berchmans-1362 students | 18.Church La Transfiguracion del Señor | 26. Puerto 125 Mall |
| 10. Bolívar- 1299 students | 19.Shopping mall jardín plaza | 27. Eco Park Lake Las Garzas |
| 11.Colombo británico-1173 students | 20. Commercial center Unicentro | |
| 12.New Cambridge- 375 students | 21. Holguines Trade Center | |
| 13.Juanambu- 294 students | 22. PriceSmart | |
| 14.Arboleda- 803 students | | |

-  important road corridors (attraction flows)
-  Private residential units
-  Environmental structure

04

La babilla lake park

Third Scale: Immediate context and site

- 4.1 Legislation Review
- 4.2 History of the wetland
- 4.3 Ecosistem and bioma
- 4.4 Biodiversity, fauna and flora
- 4.5 Localization: geographical, delimitation, catchmet basin, protection area
- 4.6 Ecological structure
- 4.7 Uses and activities
- 4.8 Mobility
- 4.9 Conclusion (swot analisis)

This chapter focuses on the immediate scale of analysis, examining the La Babil-la - Zanjón del Burro wetland and its surrounding sector. Working from the broader ecological and urban context established in the previous chapters, this section narrows the lens to understand site-specific dynamics, challenges and opportunities.

First by understanding historical transformations of the wetland, including its ecological and physical changes over time, influenced by how people perceive and interact with space. This lays the basis for studying its current state, the physical ecological characteristics such as wetland's topography, vegetation, hydrology, and biodiversity. alongside the legal management frameworks for its protection.

Simultaneously, this connects with the study of the physical characteristics that shape the way people interact with it: its connectivity, accessibility, and integration with the urban fabric.

This dual focus on ecological and human dynamics and physical features create the picture of the role of the wetland evolved within its urban and cultural context.

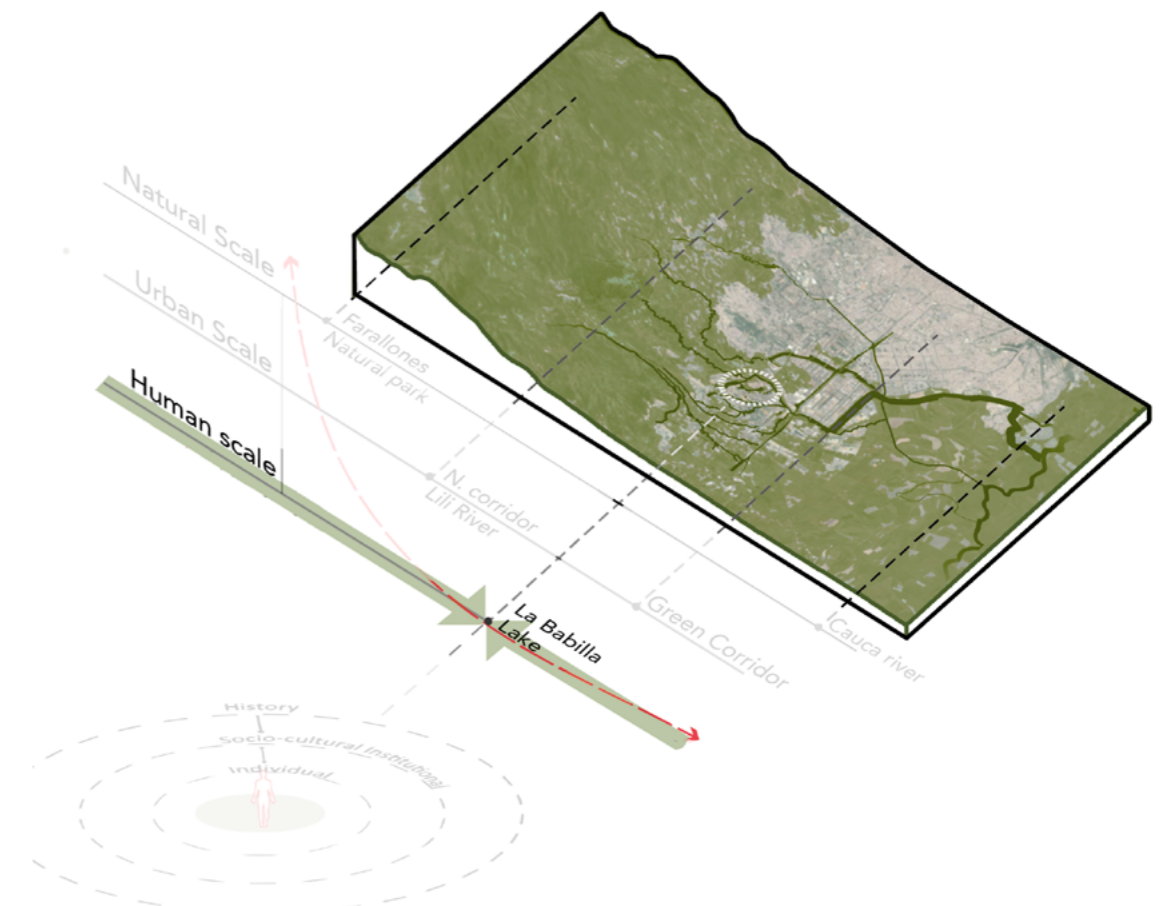


Figure IV :3th scale diagram, by the author



4.1

Legislation Review

Well understood the context in which La Babilla wetland is located, as well as its importance and role in a larger ecosystem scale, it is necessary to focus our attention on a more detailed and localized analysis.

The ecological corridor facilitate the connection between the areas with environmental values in the rural zone and the remaining urban ecosystems present in commune 22. This connectivity, called “ecological communication”, is essential for the maintenance of biodiversity, as it allows the flow of species and the conservation of existing habitats while serving to mitigate the negative impacts of fragmentation caused by development. (Dagma,2016)

It is important to remember that according to the POT Agreement 373 of 2014, El Zanjón del Burro is part of the municipal ecological structure with category of environmental corridor and is protected by the agreement in the following articles:

- Article Soil protection, as an environmental system, risk threat, municipal ecological structure and environmental quality.
- Article 58, Municipal Ecological Structure.
- Article 59, components of the Municipal Ecological Structure.
- Article 61, Municipal System of Protected Areas of Cali SIMAP-Cali.
- Article 62. Environmental Corridors

The area of Zanjón del Burro and Humedal La Babilla includes the 4 objects of conservation of SIMAP Cali which are: **The water resource, the relict of Tropical Dry Forest, The wetland and birds**; this places it as a strategic area of the municipality and deserves to be conserved to give continuity to the ecological processes that develop there. (Dagma,2016)

The Environmental Management Plan for the La Babilla - Zanjón del Burro wetland was carried out as part of the Environmental Recovery of Urban Wetland Ecosystems of Santiago de Cali project.

The methodology of the Environmental Management Plan for the La Babilla - Zanjón del Burro wetland (DAGMA,2012) was developed using the Ramsar model (2002), which proposes a systemic and integrated approach for wetlands, considering physic-biotic, socioeconomic, and cultural components. The Ramsar model is based on ecological valuation criteria, supply of services, and the current status of the ecosystems.

History of the wetland



Figure 1: Aero fotografía 1957, source IGAC



Figure 2: Aero fotografía 1988, source: IGAC

The area where the La Babilla - Zanjón del Burro wetland is located, during pre-Hispanic times was a **fertile valley**, associated to the Lili and Pance rivers. This area was inhabited by the Gorriones Indians, who gave this name to the fish. (DAGMA, 2012)

By the middle of the 16th century, Cali had been founded in this sector known as Valle del Lili, a name that was later given to the city, which was later changed to Cali. This area was the zone of interaction between the foothills and the lowlands of the Cauca River, which was characterized by being full of **valleys and flooded areas**. (DAGMA, 2012)

The relationship between the city and the La Babilla wetland reflects the evolution of human interactions with the environment. Initially, indigenous communities such as the Gorriones established a **sympiotic relationship with the wetland**, integrating it into their way of life and respecting its natural cycles (DAGMA, 2012, p. 15). This interdependence contrasted drastically with the utilitarian approach introduced during **Spanish colonization**, which prioritized lands deemed more productive for agriculture and cattle raising, neglecting the ecological importance of wetlands (DAGMA, 2012, p. 17).

The accelerated urbanization that followed further **degraded** the wetland. However, in recent decades, environmental awareness has grown, driven by regulations recognizing the wet-land's ecological value and promoting **conservation** (DAGMA, 2012, p. 20). This shift offers an opportunity to restore a sustainable relationship between the city and its natural environment, **drawing on ancestral knowledge** and implementing conservation and restoration practices.

Studies of the geological and hydrological evolution of the area have identified significant changes in drainage systems over time. Using aerial photo-interpretation and historical maps, researchers have mapped these transformations, revealing the impact of urbanization on the region's water dynamics (DAGMA, 2012, p. 25).



Figure 3: Aero fotografia 1998, source CVC.



Figure 4: Aero fotografia 1998, source CVC

Human dynamics

Pre-Hispanic Period:

- Established a symbiotic relationship with the wetland, integrating it into their way of life while respecting its natural cycles through sustainable practices
- Knowledge of river dynamics allowed them to adapt to floods and obtain benefits from fertile soils.

Spanish Conquest and Colonization:

- The Spanish, in search of fertile land and avoiding the swampy areas, founded Cali in a place away from the wetlands.
- Large haciendas spread throughout the region, including areas near the wetland, but their exploitation prioritized activities such as agriculture and cattle ranching.
- The wetland was seen as a marginal and unusable area.

Nineteenth and twentieth centuries:

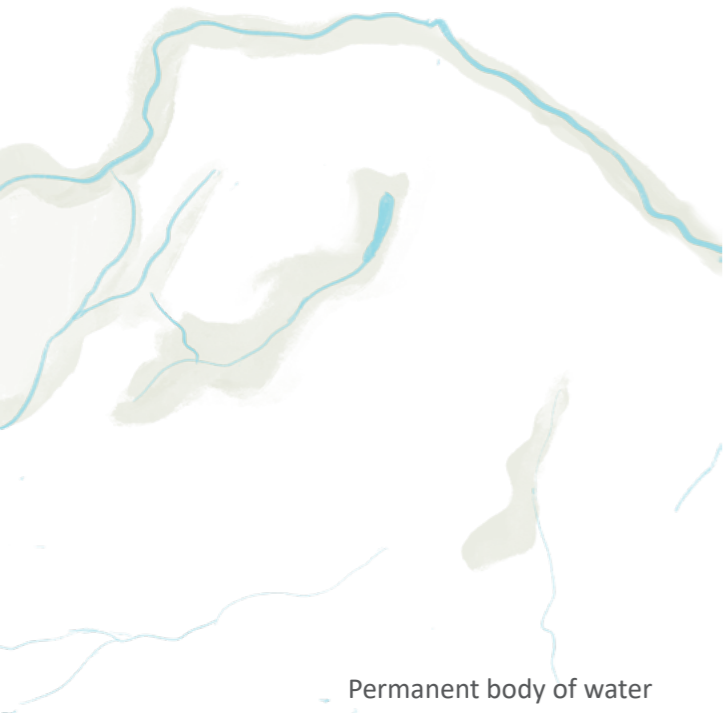
- City expansion and population growth led to increased pressure on natural resources, including the wetland.
- The construction of road infrastructure and the urbanization of new areas directly impacted the wetland ecosystem.
- The wetland gradually lost its importance as a source of resources and became a marginal and undervalued space.

XXI Century:

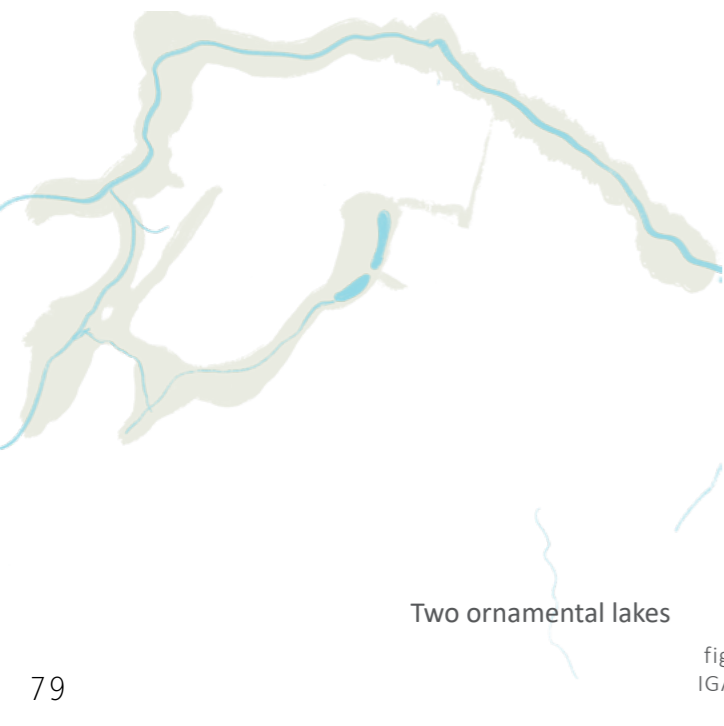
- With the creation of Comuna 22, the importance of the wetland was recognized and processes were initiated for its conservation and protection.
- However, urban pressure and lack of planning have continued to affect the ecosystem



Seasonally saturated



Permanent body of water



Two ornamental lakes



Natural processes

Influence of the Cali Fault:

- A geological fault is a fracture in the earth's crust along which rocky blocks have moved.
- Rivers and streams (drainages) often follow lines of weakness in the earth, such as faults. In this case, the fact that the drainages are diverted following the trace of the Cali Fault suggests that this fault has influenced the formation of the landscape and the direction that the waters take. The movements of the tectonic plates, has configured the land where the wetland is located.

Periodic flooding:

- The wetland area floods because it is located in a low-lying area and receives overflow water from other water bodies such as the Pance River.
- Flooding has been a recurrent phenomenon in this area due to natural factors such as topography and climate, which have shaped the wet-land's landscape and influenced the vegetation and wildlife that inhabit it.

Impact of urbanization:

- The construction of buildings, roads and other infrastructure reduces green areas and impermeabilization the soil, making it difficult for rainwater to be absorbed. This increases the amount of water that runs off the surface and reaches rivers and streams, causing flooding.

Loss of natural watercourses:

- Construction and urban development have led to the disappearance of old watercourses and soil erosion.

figure 5: Natural changes of the green corridor, based on Aeropicture IGAC, CVC

Origin and alterations:

The wetland formed naturally in the thalweg of a former intermittent watercourse. Initially, it was a watering area, seasonally saturated, with water present periodically but not constantly. A water canal was built to direct flow from the Zanjón del Burro to the wetland's upper catchment, transforming it into a permanent water body. Later, the wetland was divided into two ornamental lakes, known as Cisne Lake and La Babilla Lake (DAGMA, 2012, pp. 17-18).

In 1958, during the construction of Ciudad Jardín, the company Cuellar Serrano Gómez y Salazar (CUSEZAR) modified the land to collect most of the sector's groundwater, integrating the wetland into the urban development of the neighborhood. Originally a riparian wetland, it underwent significant alterations to function as a flood regulation lagoon, affecting its connections with the Pance River and altering water flow and recharge patterns in the area (DAGMA, 2012, pp. 19-21).

As classified by Mitsch, W. J., & Gosselink, J. G. (2021), the wetland now behaves as a Type A Discharge Wetland, which remains susceptible to flooding during heavy rainfall events. These transformations illustrate how urbanization and human interventions have significantly altered the ecology and functionality of the wetland, reducing its capacity to act as a natural buffer in the hydrological environment (DAGMA, 2012, p. 25; Mitsch, W. J., & Gosselink, J. G., 2021).



figure 6: Water canal, Zanjón del burro taken from google

Characteristics of a **Riparian Wetland/Alluvial Plain:**

- Sourcing: These wetlands are fed primarily by groundwater, which means groundwater that rises to the surface.
- Proximity to Watercourses: They are close to rivers or streams that can flood them, either by overflow or surface communication.
- Hydrological Function: They act as aquifer loading and unloading systems, helping groundwater recharge during floods and functioning as a temporary water reservoir.

Characteristics of a **Discharge Wetland:**

- Reduced Surface Recharge: Alterations have decreased the wetland's ability to recharge the aquifer superficially.
- Sources of Inflow: The current water inflows are a diversion from the Pance River and a spring.
- Reduced Retention Time: Water is not adequately retained in the wetland, and passes quickly into the storm sewer system.

4.3

Ecosistem and bioma

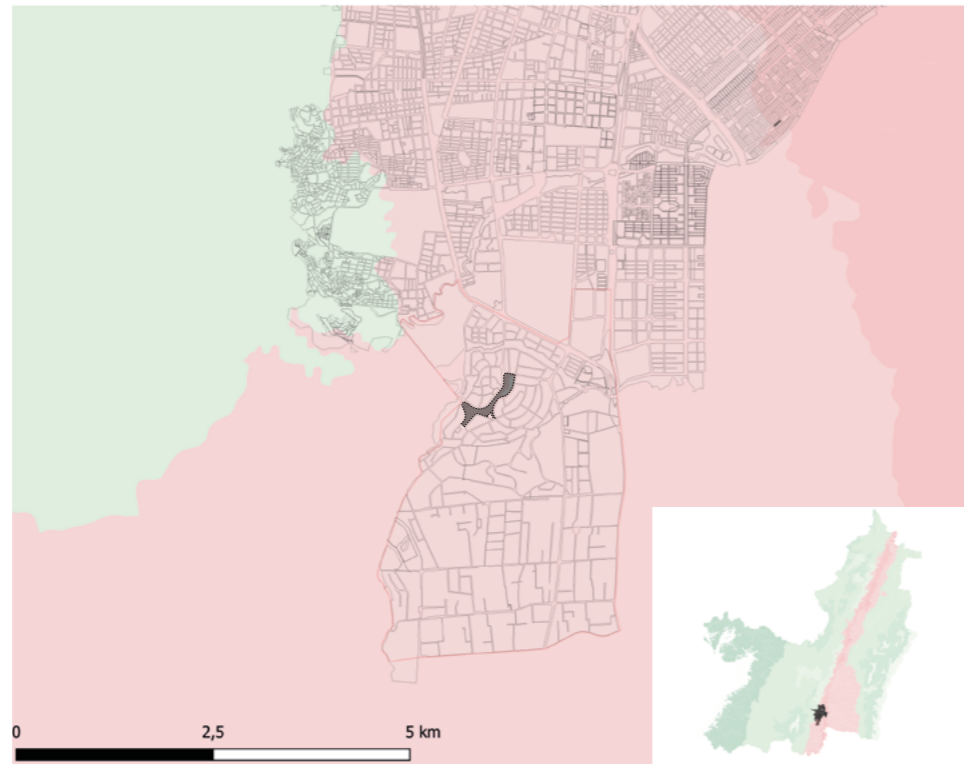


Figure 7: Ecosistem location, elaborated by the author based on GeoPortal de la CVC

BIEC_ECOSISTEMAS_RESUM	
[Red]	Helobioma del Valle del Cauca
[Light Red]	Zonobioma Alternohigrico Tropical del Valle del Cauca
[Light Green]	Halobioma del Pacifico
[Light Green]	Orobioma Alto de los Andes
[Light Green]	Orobioma Azonal
[Light Green]	Orobioma Bajo de los Andes
[Light Green]	Orobioma Medio de los Andes
[Light Green]	Zonobioma Tropical Humedo del Pacifico

Valle del Cauca Helobiome Biome: This is like the largest “home” of the wetland. A biome is a large community of plants and animals that share a similar habitat. In this case, the Helobioma is characteristic of wet and swampy areas. Are found mainly in areas such as swamps, lagoons, and river margins, where there is a water-logging of the soil. An alternohygric zonobiome is a biogeographic category that describes regions where there are alternating periods of humidity and drought, typical of tropical climates. (CVC, 2023)



Figure 8: Biome location, elaborated by the author based on GeoPortal de la CVC

IEC_ECOSISTEMAS_RESUM		
[Purple]	AMCSPMH	BOMMHMH
[Purple]	AMCSEPA	BOMSEMH
[Purple]	AMMHUPX	BOSHUMH
[Purple]	AMMMSMH	BOSMHMH
[Purple]	AMMSELS	BOSPLMG
[Purple]	AMMSEMH	HPPLMG
[Blue-Gray]	BICPLRY	
[Blue-Gray]	BICSERA	
[Blue-Gray]	BOCHUMH	
[Blue-Gray]	BOCHUPX	
[Blue-Gray]	BOCHURA	
[Blue-Gray]	BOCMHLH	
[Blue-Gray]	BOCMHMH	
[Blue-Gray]	BOCPLLH	
[Blue-Gray]	BOCPLLS	
[Teal]	BOCPLLS	
[Teal]	BOCPLRM	
[Teal]	BOCPLRY	
[Teal]	BOCSELF	
[Teal]	BOCSEPA	
[Teal]	BOCSEPX	
[Teal]	BOCSERA	
[Teal]	BOFHUMH	
[Teal]	BOFMHMH	
[Teal]	BOFPLMH	
[Teal]	BOFSEMH	
[Teal]	BOMHUMH	
[Teal]	BOMHUMS	
[Teal]	BOMHUPD	

Ecosystem Warm dry forest in alluvial plain (BOCSERA): This is the most specific “neighborhood” of the wetland. An ecosystem is a community of living organisms and their physical environment. The BOCSERA, as its name suggests, is a forest found in a flat area formed by river sediments (alluvial plain) and has a warm, dry climate.

Is located in the foothills of the Pance River’s dejection cone, which means that it is in a transition zone between the river valley and the nearby mountains. This area is characterized by sediment deposits brought by the river, forming an alluvial fan. (DAGMA, 2012, p. 22). Lower Pance River Basin: The wetland is part of a larger region that drains into the Pance River. (DAGMA, 2012, p. 25).

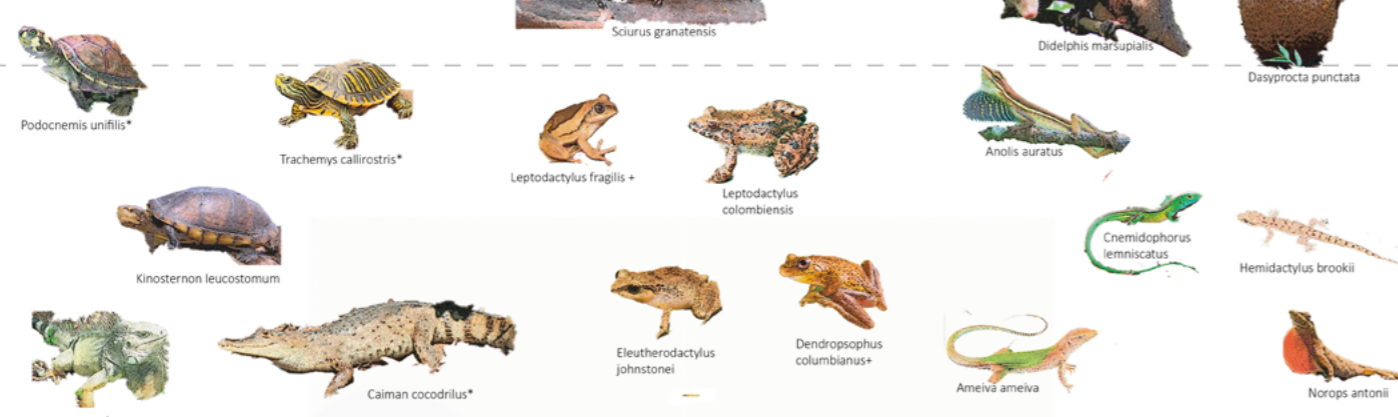
65 species- 20 orders
-30 families



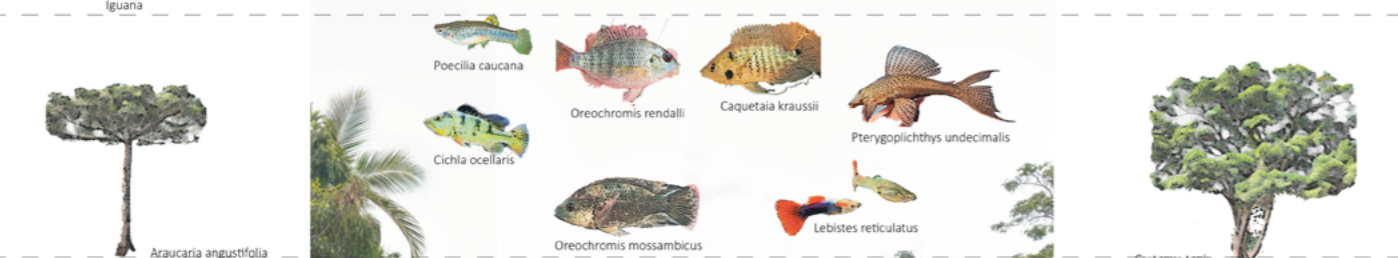
9 species



10 species- 8 families
4 species - 3 families



7 species, 3 families



109 plant species, including trees, shrubs (terrestrial and aquatic), shrubs and palms.



4.4

Biodiversity, faun and flora

According to the 2012 Environmental Management Plan, the wetland water has a pH of 6.8, adequate for aquatic life, and a dissolved oxygen level of 10 mg/L, exceeding the minimum allowed level of 5.5 mg/L according to Decree 1594 of 1984. However, high levels of dissolved solids and a COD of 63.4 mg/L indicate contamination from municipal waste discharges (DAGMA, 2012, pp. 35-37).

In terms of fauna, 7 species of fish, 4 species of amphibians, 10 species of reptiles (including introduced species such as Podocnemis unifilis, classified as vulnerable, and Trachemys callirostris, almost threatened) were recorded. In addition, 65 bird species were identified, among which 9 are of conservation priority, and 9 mammal species, including the yaguarundi (Puma yagouarundi) (DAGMA, 2012, pp. 40-45).

The wetland flora includes 109 species of trees, shrubs, grasses and palms. Ornamental species such as Mangifera indica, Washingtonia sp. and Roystonea regia predominate in the area surrounding the water body. On the other hand, the Zanjón del Burro area presents a natural succession process with species such as Cecropia angustifolia, characteristic of tropical and transitional dry forests (DAGMA, 2012, pp. 50-53).

Despite its richness, the deterioration of water quality and ecosystem fragmentation limit its biodiversity, thus the need for conservation and restoration actions.

Figure12: Wetland biodiversity diagram elaborated by the author

Location

Geographic Location:

It is located at an average altitude of 980 meters above sea level (masl).

The water body and the forest relict (remnant forest area) are within a municipal lot, in an area of cession, which implies that it is a portion of land for public use, belonging to the municipality of Santiago de Cali. This lot is located between (DAGMA, 2012, p. 30):

- Carrera 105 and Calle 12.
- Carrera 109 and Calle 14.

Wetland delimitation

- Elevation 979.6 m: This level was established as the upper limit of the wetland.
- Slopes: The natural slopes surrounding the water body act as physical limits and match the established elevation.

(DAGMA, 2012, pp. 31-32)

Catchment basin

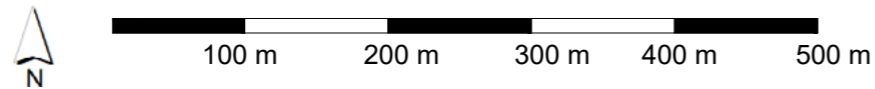
A catchment basin is something similar to a funnel, but in terms of water. It is a **geographical area where all rainwater, small rivers, and other water sources flow into a common point**, in this case, the La Babilla-Zanjón del Burro wetland. The catchment of the wetland directly influences the health and functioning of this ecosystem.

The water that feeds the wetland has its main source in the Pance river. A part of the water from the Pance river is diverted to a channel called Zanjón del Burro, This diversion is the main source of water that feeds the La Babilla wetland.

The natural circulation of water is interrupted by roads and highways. These infrastructures collect rainwater and direct it to the wetland through ditches and paved roads. (DAGMA, 2012, p. 37).



Figure 9: Location of the park Google Maps. (2023). Satellite image of Parque La Babilla, Cali, Colombia. Modified Retrieved from <https://www.google.com/maps>.



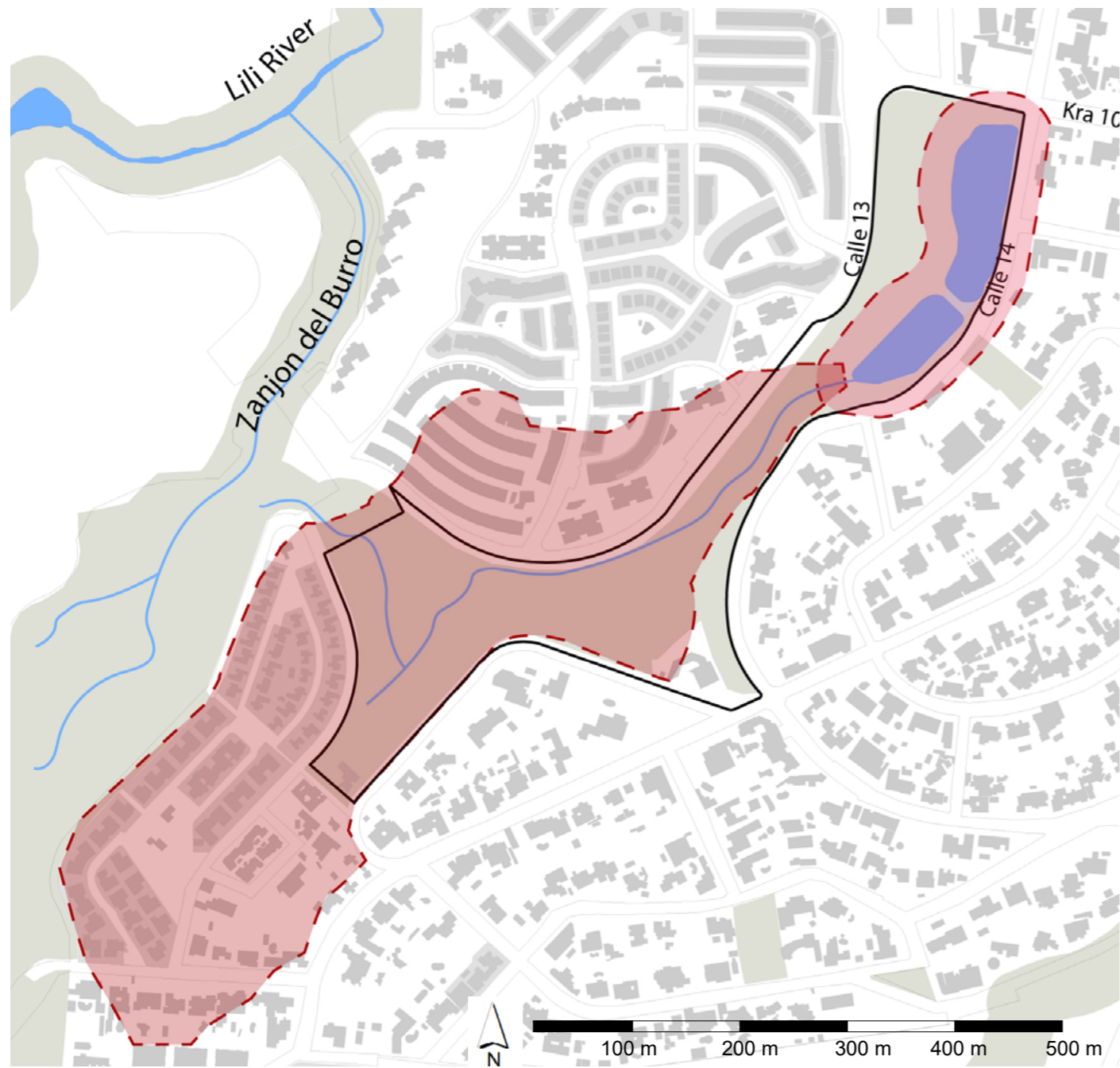


Figure 10: La Babilla- Zanjón del Burro wetland catchment. Author based Geo-portal IDESC cali (n.d) and DAGMA. (2012).

Protective Buffer Line

The protection zone is made up of the green zone lot where the water bodies and the forest relict known as Zanjón del Burro are located. The area of the protective forest buffer zone has been used for ecological purposes, planting ornamental and native plant species to increase the environmental supply and improve the quality of the ecosystem. Although legally it should be **30 meters** as established by Colombian legislation (Articles 83 (d) and 14 of Decree 1541 of 1978), avenida del Lago and Calle 12 are urban barriers that disrupt the connectivity of the forest with the hillside area, which can affect the movement of species and the ecological continuity of the area. (DAGMA, 2012, p. 35).

Ecological structure

The ecological structure that integrates the La Babilla Wetland and the Zanjón del Burro is composed of different interconnected elements that hold its environmental functionality and biodiversity. Two main bodies of water, Lake La Babilla and Lake Los Cisnes, are fed by runoff and a channel derived from the Zanjón del Burro, which connects this system with other water sources, such as the Lili River. These water features are distributed in two areas. In the northern half, accessible to the public, is the park with the main lake surrounded by a forest that combines ornamental and native vegetation, intended for recreational use of contemplation. In contrast, the southern half, known as the Zanjón del Burro Reserve, is a dense forest relict with no public access. This area preserves native flora and connects with the rural zone and extends into the Farallones de Cali National Natural Park. To the east of the park stands the linear park, which is part of the ecological corridor. This park connects the park with the Lili River. However, the surrounding urbanization has disrespected the natural buffer areas, which creates problematic such as the need to improve water quality, restore degraded areas and mitigate ecological fragmentation caused by urban infrastructure.

Flora: Includes aquatic, herbaceous, arboreal, and shrub vegetation adapted to humid ecosystems. The reserve's dense forest is dominated by native flora, which provides ideal habitats for species. **Fauna:** The system harbors a wide diversity of resident and migratory birds, amphibians, reptiles, small mammals, and aquatic life.

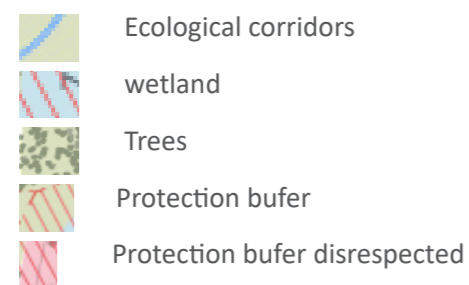
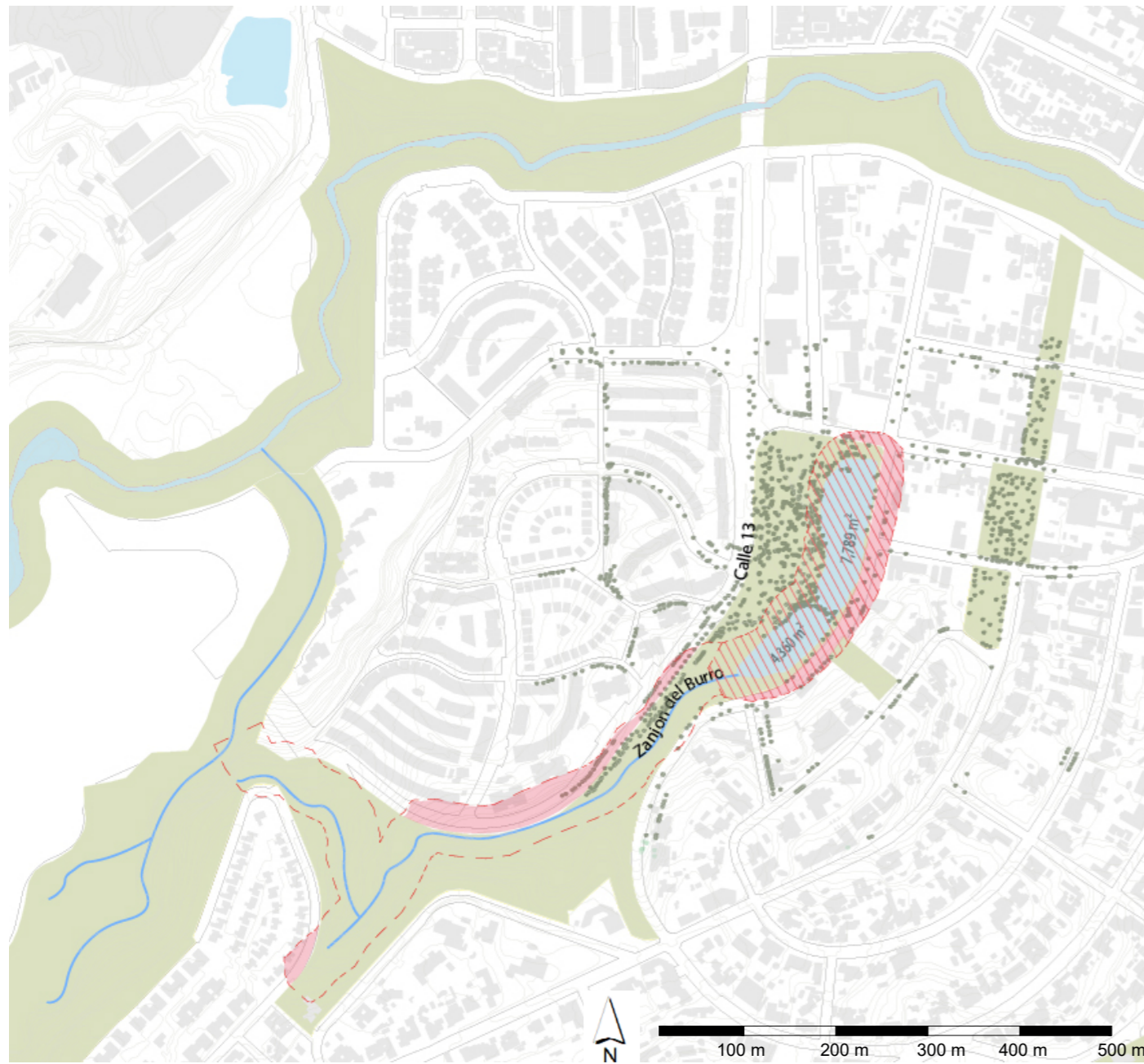


Figure11: Ecological structure La Babilla park elaborated by the author based Geo-portal IDESC cali (n.d)

Uses and activities



- Greenery
- commercial building
- Residencial building
- Residencia complex
- health building
- Void

Figure 13: Activity and uses map elaborated by the author based Geo-portal IDESC cali (n.d)

commercial activities like restaurants and shopping



Figure 14: Palmas mall Cali, taken Facebook. Palmas mall cali (septiembre de 2022) from <https://www.facebook.com/photo/?fbid=506248991505875&set=a.506249001505874>, [Fotografía].

Green areas in use and others in vacant



Figure 15: Linear Park, left tranche with paths through nature connects the pedestrian between Carrera 105 and 106. right tranche without adequations taken by the author september, 2024)

Hausing



Figure 16: Condominio Portal del Jockey II, Surce: google street view Ciudad Jardí Cali, Valle del Cauca, Colombia, 3.365508, -76.537684

Mobility

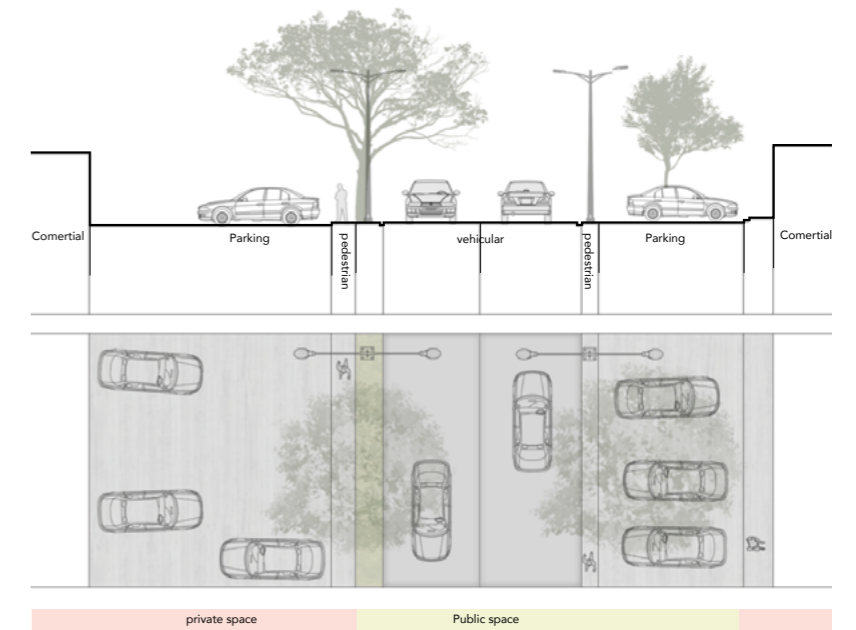


Figure 17: Mobiliy Map elaborated by the author based Geo-portal IDESC cali (n.d)

- Primiry road
- collecting road
- Pedestrian path
- Parcking areas

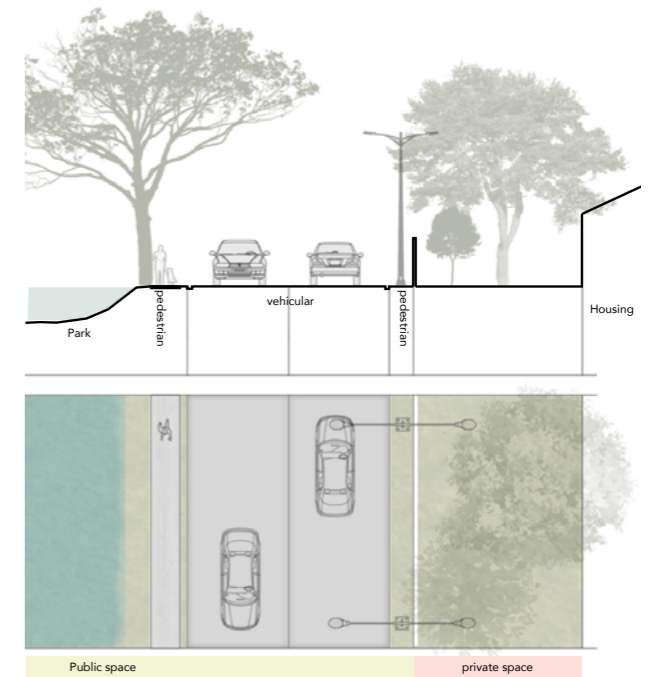
Kr 105

Carrera 105 is an attractive street in the city, known for its many restaurants and commercial establishments. This activity makes it a pole of attraction for the floating population. However, despite its potential to be a pleasant and walkable street, the predominant use of automobiles and the irregularity of the sidewalks hinder pedestrian traffic



C14

The 14th Street is built over the wetland protection area, which means that during the rainy season the wetland overflows and the street floods, damaging the ecosystem's wellbeing.



C13

The same flooding problem occurs on 13th Street because it is above the catchment basin. The residential units have pedestrian access to the park but there are no safe crossings, limiting accessibility.

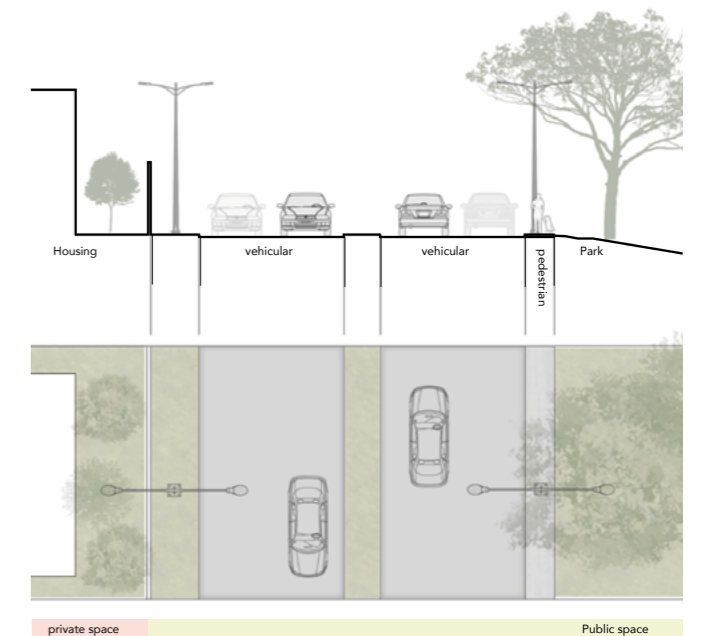


Figure 18: Road profile elaborated by the author based Geo-portal IDESC cali (n.d)

Swot

S



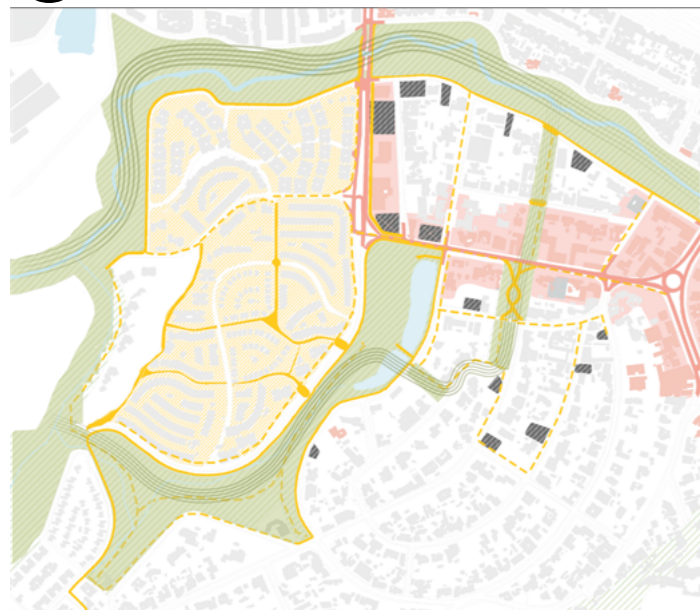
- -Axis of commercial activities
- -Rich green infrastructure, ecological corridors
- Biodiversity from Los farallones
- strata 5 zone

W



- existing sidewalk
- non-existing
- in bad condition
- -Accessibility: no continuity of pedestrian traffic (lack of sidewalks)
- ▨ -few parking areas
- ▨ -the road disrespects the wetland protection area

O



- -Enhance ecological connectivity.
- -Pedestrian circuit linked to ecological corridors
- -Pole of attraction of floating population
- -Connectivity with Residential area
- -Urban voids
- urbangrid allows redirection of car traffic

T



- -Car mobility generates physical barrier
- Road congestion due to lack of parking spaces
- Roads around the perimeter of the park get flooded

Chapter Conclusion

This approach of analysis of the La Babilla - Zanjón del Burro wetland allows us to understand both its ecological functioning and its relationship with the urban environment. Historically, indigenous communities maintained a respectful interaction with natural cycles, while the colonization stage and subsequent urban development prioritized utilitarian interests, shaping a city with greater emphasis on private and semi-public environments, instead of promoting a network of integrated public spaces.

This historical process has resulted in an urban morphology centered on road infrastructure and car priority, which, added to the lack of sidewalks and quality public areas, makes community interaction with the public spaces of ecological value as the wetland difficult.

At the ecological level, the importance of catchment basins and the protection areas lies in their capacity to preserve biodiversity, particularly in warm dry forest ecosystems. However, urban pressures - the occupation and lack of respect of this areas- fragment, polluted and degrade the wetland.

Understanding this set of historical, urban and ecological dynamics is essential to explain the current relationship between the community and the environment. The problems identified point to the need to design strategies that respond to the conservation of ecosystems as well as to urban life.

05

Reconciling Disconnection

Community and Nature

- 5.1 Urban contradictions
- 5.2 Colonization, Development and Environmental Disconnection
- 5.3 Disconnection dimensions
- 5.4 Reimagining the Relationship with Nature

Up to this point in the research, we have built a clear picture of the context in which La Babilla Park is located, its environmental value and the historical, physical and social challenges it faces that have contributed to a physical and social disconnection with natural spaces.

However, understanding these structural problems is not enough to explain why, despite having spaces like La Babilla Park, the inhabitants do not enjoy or appropriate them. A question then arises: **what socio-cultural, historical or political factors are behind the low use of green areas and public space in the neighborhood and, in particular, in this park? What approaches can help restore the connection between people and nature?**

This chapter seeks to answer this question. Through an analysis based on the literature on **environmental disconnection**, it will explore how **historical factors, urban dynamics, cultural attitudes and planning decisions have shaped the community's relationship with these spaces**. Furthermore, it will examine alternative frameworks and philosophies, such as the principles of Buen Vivir and related concepts, to propose new ways of understanding and addressing the disconnection. This approach will allow us to understand the roots of the problem and open the way for new perspectives and solutions aimed at transforming this relationship into a more aware and sensitive relationship.

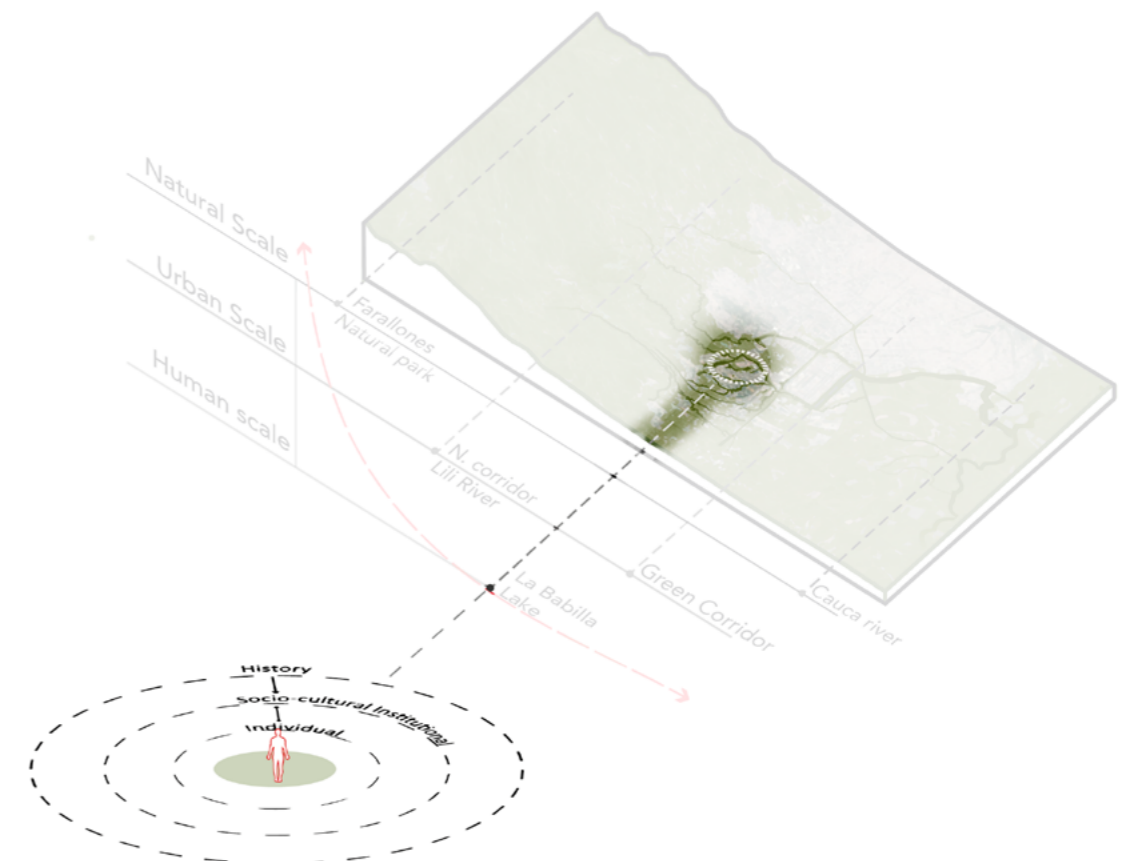


Figure II: societal-individual dimensions diagram, by the author

Urban Contradictions

The current use of La Babilla Park contrasts with its potential as an environmentally rich and well-located public space. The most common activities are limited to dog walks, occasional picnics, and event photo shoots. For many inhabitants, the park is only a visual reference point that can be seen briefly from the vehicle as they drive along the roads that delimit it. Personally, it was not until I began this research that I discovered that the park is not only the lake visible from the streets, but also a dense forest that connects with the Farallones de Cali.

This disconnection can be understood through the urban and cultural dynamics that characterize Cali. This part city has evolved under a model that **prioritizes private welfare over community**. Infrastructures designed for the private vehicle only, residential units that turn their backs on the street and recreate public space on their property, and shopping centers that recreate streets and plazas, thus replacing true public spaces and citizen interaction. In this context, **open spaces such as La Babilla lose protagonism within the urban landscape**.

On the other hand, the urban planning approach seeks two **contradictory** objectives:

“Area residential oriented towards densification with housing for high-income groups and the recovery and use of its environmental values for the enjoyment of the entire community as elements of citizen encounter.” (Alcaldía de Santiago de Cali, POT, 2014 p. 28)

In one of them underlies the defense of the private asset, and intertwines in a forced way the invitation to take advantage of the environmental values. It is not possible to expect a new attitude of the community towards spaces of citizen encounter or environmental value, if the solutions that are developed do not attack the problem from a **new perspective**. If there is to be a transformation, new directions must be established, most innovations build on previous ones, often following a trajectory that seems natural or inevitable (Mejía & Amaya-Espinel, 2022). New directions need to be explored and considered, creating alternative development paths that align with social and environmental objectives.



Figure 1: diagram of urban contradictions, elaborated by the author

Colonization, Development and Environmental Disconnection

Disconnection with nature is not a recent phenomenon, but is rooted in the philosophical, cultural and political structures that have shaped our society. This disconnection is rooted in religious and philosophical structures of European origin, where **an ontological division was established between human beings and the natural environment**. However, many indigenous and First Nations cultures around the world **maintain worldviews that integrate human beings as part of their natural environment**, without hierarchical distinctions between the two (De la Cadena, 2015; Watts, 2013).

In Latin America, this disconnection is linked to the historical processes of colonization. The imposition of **European epistemologies and ontologies neglected local knowledge and values**, promoting a development model based on modernization and westernization. According to Carretero and Baeza (2017), the dichotomy between “developed” and “underdeveloped” countries laid the foundation for the **concept of development as the adoption of cultural values from the Global North**. This was coupled with a techno-scientific and capitalist vision that perpetuates an **anthropocentric relationship with nature**, thus minimizing it to an exploitable resource.

This philosophical and cultural framework is reflected in urbanization, where “the city emerges and expands as a phenomenon that denies the natural world” (Mejía & Amaya-Espinel, 2022). Urbanity becomes the antithesis of nature, where the built landscape replaces the biodiverse landscape, perpetuating the perception of the environment as a utilitarian element. In this context, the emotional and cultural connection to the land is diluted, rather than a living system of which we are part.

The concept of “bad development” (José María Tortosa, 2009) expresses the failure of 20th century development programs that, instead of improving the living conditions to which theory aspires, in practice often lead to undesirable or negative results. Besides altering the natural landscape, it **affects human relationships with their environment**, thereby **establishing a modern way of life that ignores the interdependence between the human and the natural**.

It is perhaps the case that this legacy of cultural colonization and the influence of Westernized development have led to a **loss of connection with the territory and nature itself**. This model of modern life, centered on techno-scientific progress and consumption, perpetuates a disconnection that not only affects our relationship with the environment, but also our capacity to conceive alternatives.

What new theories, philosophies or ways of seeing the natural could guide us towards different proposals, capable of reconnecting people with their environment?

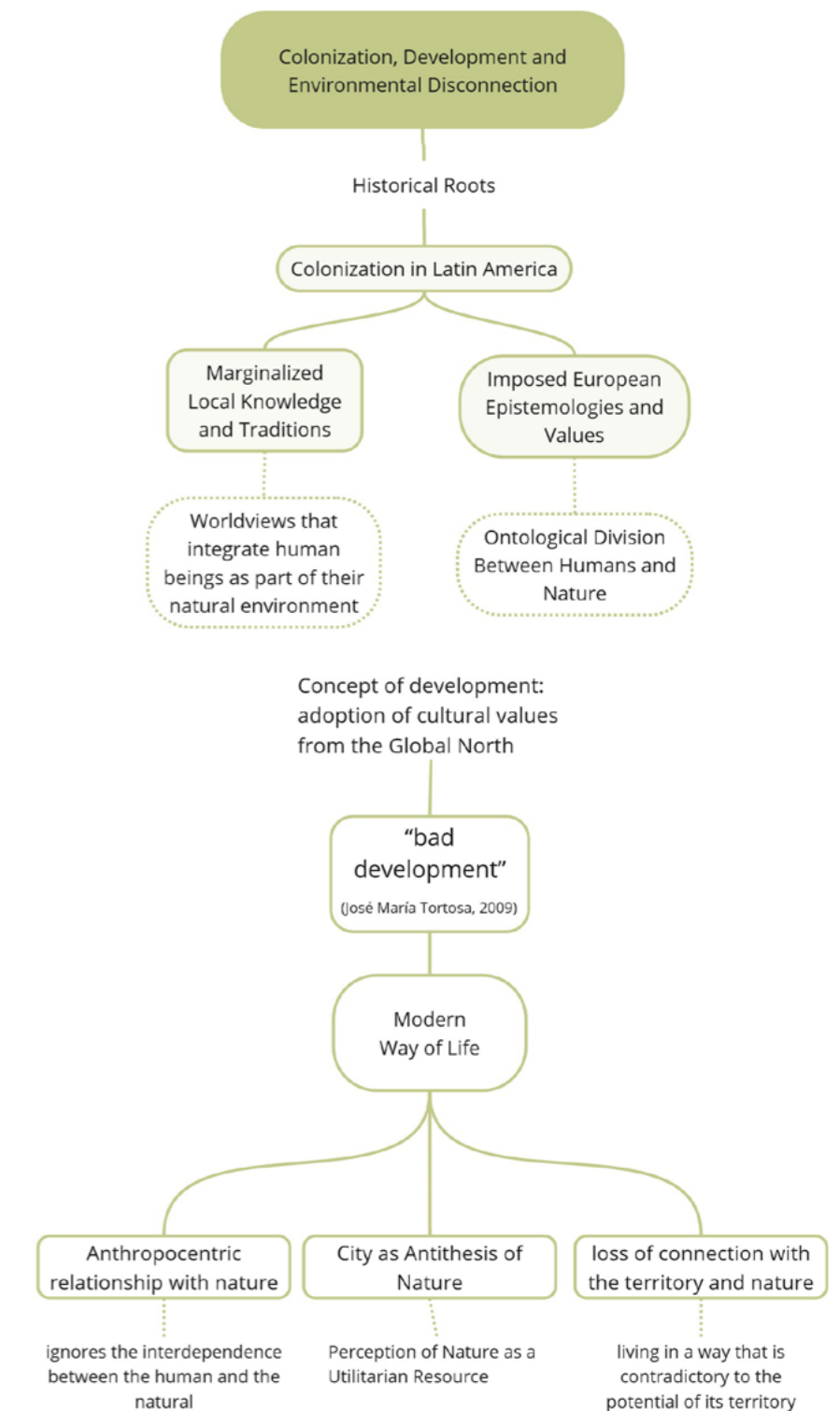


Figure 2: Mind Map: Colonization, Development and Environmental Disconnection, produced by the author

Disconnection dimensions

The historical-cultural context has contributed to the current disconnection; the legacy of colonization and the values associated with modernization have shaped the ways of living and how people relate to nature. However, to better understand this phenomenon, it is necessary to explore the multiple ways in which this disconnection manifests itself, which will make it possible to address its causes and propose effective strategies to overcome it.

According to Tortosa (2009), disconnection can (re) produce and be experienced on a spectrum that goes from the individual to the social, it is rooted in the social and institutional systems that reinforce this separation. The study “Disconnection from nature: Expanding our understanding of human-nature relations” (Beery et al., 2023) identifies a variety of dimensions that allow us to analyze this phenomenon, **Individual Environmental Disconnect Dimensions:**

1.Cognitive Dimension:

Beery et al. (2023) describe cognitive disconnection as the **loss or absence of ecological knowledge and environmental awareness**, which affects attitudes towards nature. This includes a lack of bioculture and a **lack of awareness of the opportunities offered by the environment to interact with outdoor spaces.**

2.Emotional Dimension:

Emotional disconnection manifests itself in the **lack of an affective bond with nature**, which translates into indifference towards its care and protection. **Without empathy** for ecosystems, people tend to perceive natural spaces as utilitarian or decorative elements, rather than interdependent living systems. This type of disconnection is associated with an **inability to recognize how natural environments influence personal, emotional and collective well-being.** (Beery et al., 2023).

3.Philosophical Dimension:

Philosophical disconnection, according to Beery et al. (2023), refers to how **worldviews separate humans from nature.** This is reflected in the way we think, feel and **act as if we are not an integral part of it.** Fueled by modernity and an anthropocentric vision, this disconnection has led to **everyday practices that are increasingly distanced from the natural world.**

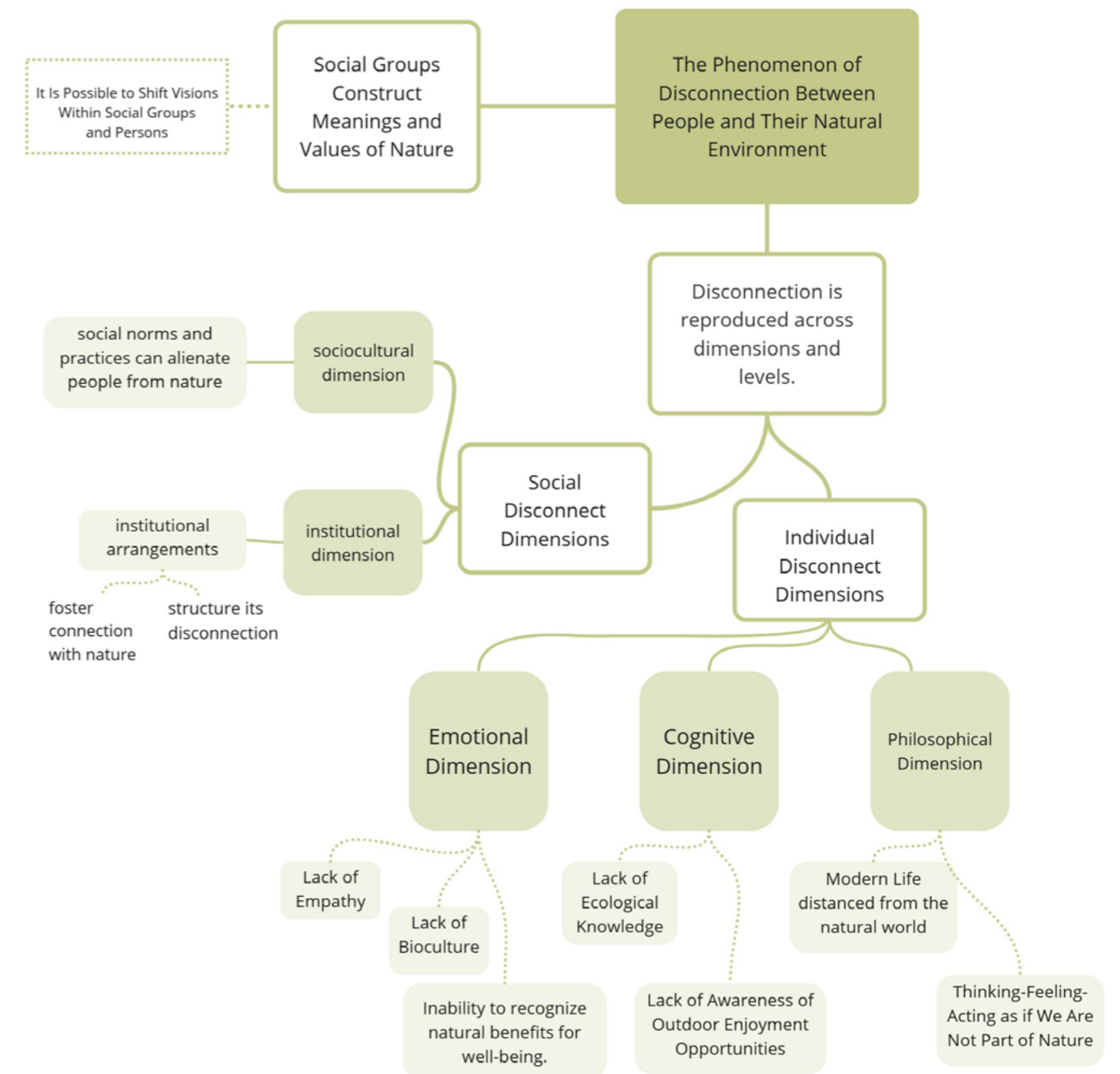


Figure 3: Mind Map: Disconnection dimensions, produced by the author

Beery et al. (2023) explore additional dimensions of disconnection, including **sociocultural, political, and institutional processes**, that influence disconnection with nature and the ways in which people perceive and value their environment. Therefore, **collective values can be transformed over time**.

For example, a social group may move from a vision of dominance, which perceives nature as something to be exploited, to a perspective of mutualism, where wildlife is recognized as part of the social community and worthy of rights. It is also possible that values shift towards individualism, prioritizing personal satisfaction and egocentrism, which reinforces disconnection: these transformations demonstrate that collective values are not static and can evolve (Beery et al., 2023).

The **sociocultural dimension** complements this perspective, referring to how **social norms and practices can alienate people from nature**. In Cali, this is reflected in the community's leisure dynamics, where the use of private spaces such as residential units, restaurants and shopping centers predominates, to the detriment of natural spaces.

The **institutional dimension** refers to **the practices and structures that organizations establish to manage the environment**. These transformations in collective values are influenced and reflected in the **institutional arrangements** that structure the relationship between society and nature. They can, on the one hand, foster connection with nature, and on the other, structure its disconnection (Marques, 2014).

An example of this is the legislative approach that seeks to protect natural spaces by isolating them from human impact, under the premise that humans represent a threat to the environment. This is the case of La Babilla Park, regulations such as the restriction of access to the Zanjón del Burro forest to preserve vegetation and wildlife habitat, or the prohibition of recreational activities such as picnics, limit the use of the park and reinforce the disconnection between the community and nature.

“The desire of architects and landscape architects to be able to integrate the natural and the urban is understandable, but moving away from that selfish and visual reality, it is necessary to understand the ecological importance of wetlands as regulators and buffers of watercourses and containers of a great floral and faunal diversity” (DAGMA,2012, P. 111).

This model of natural protected areas **is a solution for conservation but it addresses the relationship between nature and society in a fragmented manner**. It

generates tensions in the relationship between the community and the park, **creating a perception of separation that makes it difficult to appropriate the space as part of daily life**.

As Mejía and Amaya-Espinel (2022) state:

“Earth is made of interdependencies, yet we humans have built political, physical, and disciplinary barriers to make sense of our complex world” (p. 10).

Environmental sustainability is not only about protecting ecosystems, but also about integrating them into community life. Therefore, institutional arrangements and social movements are key to redefining this relationship.

Understanding these tensions is a first step in questioning current frameworks and exploring new ways of conceiving the relationship between the human and the natural. **This approach opens the door to theories and philosophies that invite us to reimagine this connection from a more integrative and sustainable perspective.**

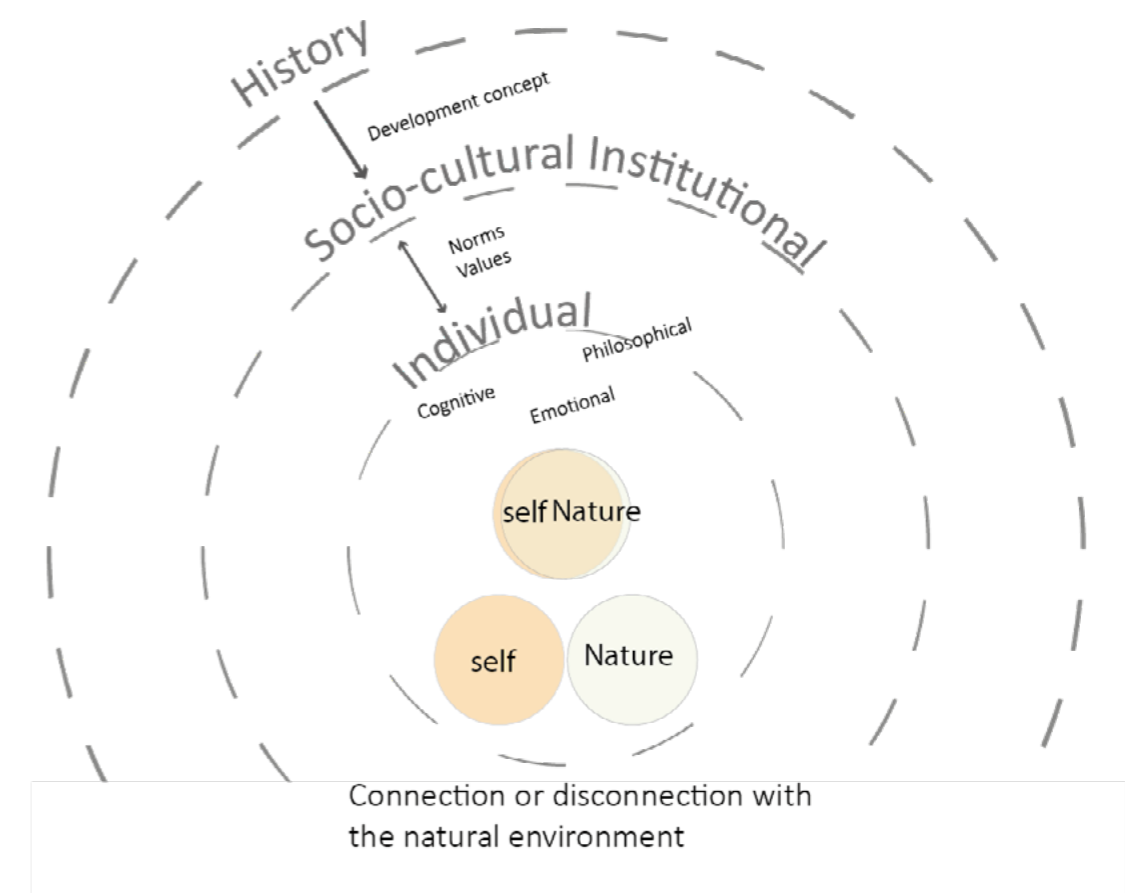


Figure 4: Conceptual diagram of disconnection with nature, produced by the author

Reimagining the Relationship with Nature

All these historical factors and dimensions of disconnection between humans and nature have resulted in an **incongruence between urban dynamics and the characteristics of our cities**, leading places like Cali to be inhabited in a way that is **inconsistent with the potential of its territory**. Despite having an exuberant nature, we continue to live as if it did not exist.

Rethinking our way of inhabiting the territory requires a **different perspective, capable of healing the relationship between people and nature**. **Biocentrism** offers a foundational ethical framework for this shift. By emphasizing the inherent rights and intrinsic value of all species, it challenges traditional anthropocentric views, arguing that human beings are not superior to other living entities and that all deserve moral consideration (Kopnina et al., 2018).

Grounded in the same ideological principles, the theories of **Good Living** rooted in indigenous worldviews, emerge as a response to this disconnection, questioning the dominant paradigms. Good Living is based on a **relationship of interdependence and mutual respect** between the human and the non-human, recognizing that **human practice is inextricably linked to the natural world** (Carretero and Baeza, 2017).

One of the foundations of Good Living is **Ayni** - broadly translated as "**reciprocity**" - which recognizes the deep qualitative interconnection between humans and the natural world, fostering a sense of community and mutual support (Carretero, AB and Baeza, CS 2017).

Reciprocity, understood as the agreement between two parties to help and provide similar benefits to each other (Cambridge Dictionary), is key to building healthier relationships. However, under the paradigm of rationalism, emotional life has been limited, although it is **precisely empathy (derived from our capacity to feel) that connects us with our environment** (Varanasi, 2020). Cultivating this empathy becomes one of the first steps to value and take care of nature, since the feeling of *interbeing* with a place promotes the joyful assumption of the responsibility to protect it (Keogh, 2010).

We need to overcome the division between Nature and humans and rethink these two concepts as part of a whole.

An example of reciprocity in practice: The hicotea man

Reciprocity in practice can be found in the work of Colombian sociologist and researcher Orlando Fals Borda, whose methodology combines the needs of the people with **ancestral knowledge**, bringing out community protagonism from a vision of solidarity and anti-capitalism.

Fals Borda conducted one of his investigations in the Momposina depression in northern Colombia. He observed how the river culture is threatened by those who privatize the territory or use it for cattle, promoting a capitalist mentality that affects local communities. However, in smaller villages north and south of Magangué, he discovered an "amphibious culture" based on techniques that integrate aquatic and terrestrial life (fishing, agriculture and hunting) and show a strong link with the environment. Fals Borda described these settlers as "integral human elements, skilled in taking advantage of the resources of their territory, intelligent people, well prepared for their rhythm of life" (Fals Borda, 2009).

In these communities, **the hicotea turtle symbolizes the ability to face adversity without losing the cultural essence**, as an act of resistance and adaptation. Fals Borda describes how hicoteas bury themselves and spend months without eating or drinking, only to emerge with the rains, renewed and ready to continue their life cycle (Fals Borda, 2009). This resilience defines the strength of riparian communities and their ability to survive in the face of external pressures.

By understanding riparian culture as having amphibious attributes, we perceive how **these inhabitants have learned from and adapted to their environment, living in harmony with the fluctuations of water and land**. Their way of "Ser" to be -which implies a permanent state of connection with the territory- and "estar" being -which alludes to temporality and fluidity- show **an example of rational thinking integrated with the environment**.

To be 'hicotea' means, in the words of one of the villagers, **to be 'sentipensante', because 'we act with our heart, but also with our head'**. This concept is based on the **merging of the emotional and the cognitive, generating empathy towards the environment and recognizing the interdependence between people and nature** (Fals Borda, 2009).

Sentir-pensar

Arturo Escobar (2014) suggests that *sentipensar* with the territory implies **thinking with the heart and the mind**. In other words, it is about reasoning intuitively with the emotions and the mind, reminding us that *corazonadas* (the word that in Spanish denotes that intuition that comes from the heart) are as valid as rational thought. Thus, **territorialized communities that learn to 'sentipensar' develop a harmonious relationship with their environment, far from the abstract concepts of 'development' and 'growth' detached from local reality.**

Sentipensar is not limited to cultural discourses but has also reached education. 'Sentipensating Education', proposes an integrating vision in which reason and emotion are combined to create complete formative processes. (De la Torre, S., & Moraes, M. C, 2005)

This approach promotes didactic strategies that encourage **cognitive-emotional learning**, creating environments with a positive emotional impact that favor motivation, creativity and the construction of **knowledge based on direct experience**.

The metaphor of the 'hicotea man' and the concept of being 'sentientipensante' show us that **reciprocity with the environment is not only a theory, but a daily practice**. By transferring these lessons to the educational sphere, **Sentipensante Education is a way to build empathetic, critical and connected individuals with their environment**. This lays the foundation for building more resilient communities that are aware of the fundamental interdependence between humans and nature.

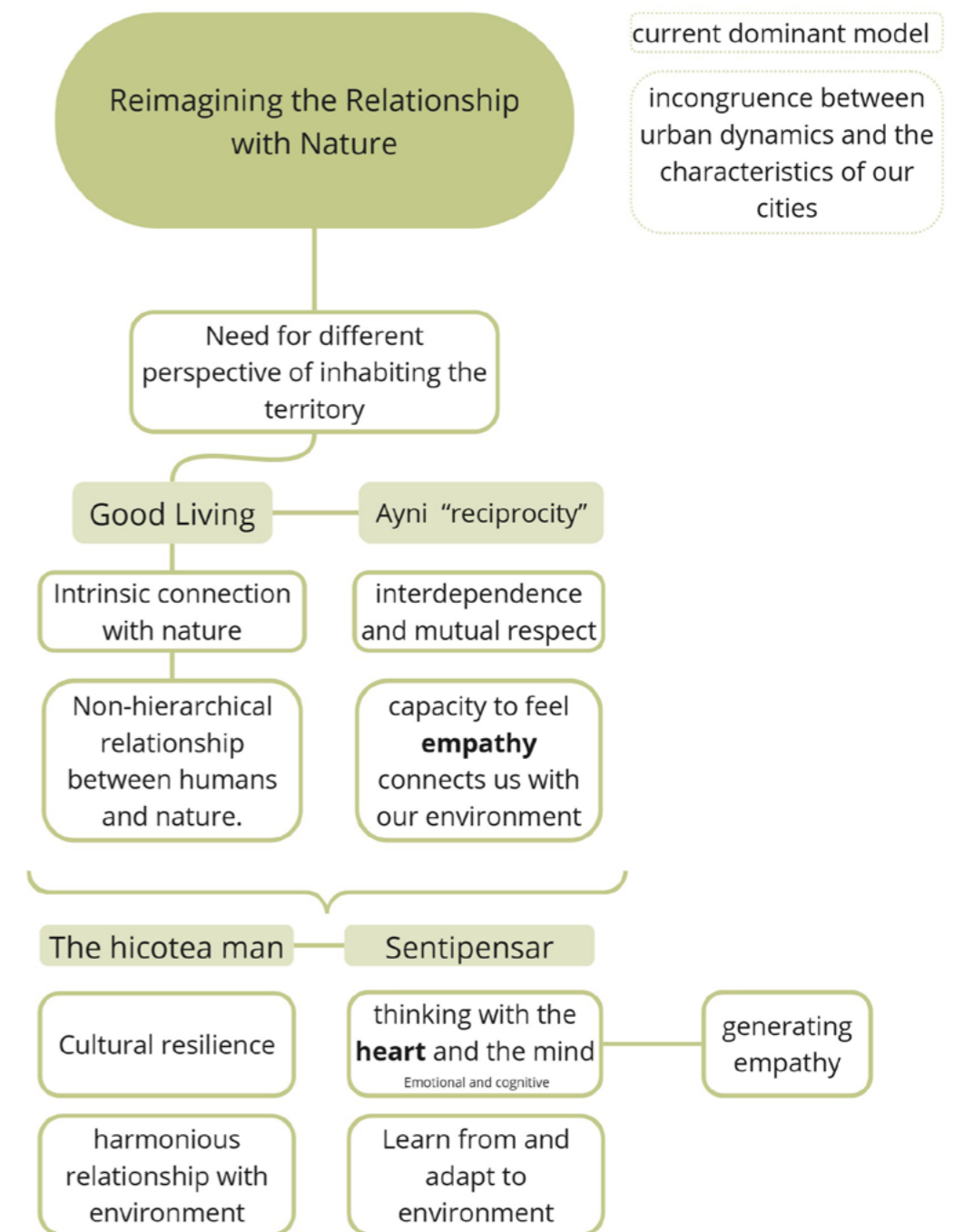


Figure 5: Mind Map: Concepts, theories and philosophies , produced by the author

Conclusion

This exploration of the problem, from an intangible and individual framework of disconnections and their dimensions, reveals the need to approach the problem from a different vision, with the intention of avoiding the perpetuation of the gap between people and nature.

The objective of learning from the models of Good Living, with concepts such as sentipensar and ayni, is to build a framework of values and guidelines that inspire the design of a space that reflects these principles. A space that, when experienced by the community, encourages its adoption and contributes to reconcile people with their natural environment, promoting a change in social perceptions and attitudes towards nature.

A space that inspires Sentipensar, creates reciprocity and reveals the interdependence between the urban and the natural.

Sentipensar results in a park that encourages experimentation, learning and reconnecting with the landscape, perceiving it through the senses and feeling part of our territory again.

aims reciprocal interactions by dignifying both the natural environment-through its conservation and respect-as well as the community, providing people with opportunities to experience the benefits of nature.

The park as a scenario of dialogue with the ecosystem, where visitors can interact with the species that coexist in the urban environment, awakening environmental awareness and a sense of belonging through the experiences of walking and exploring.

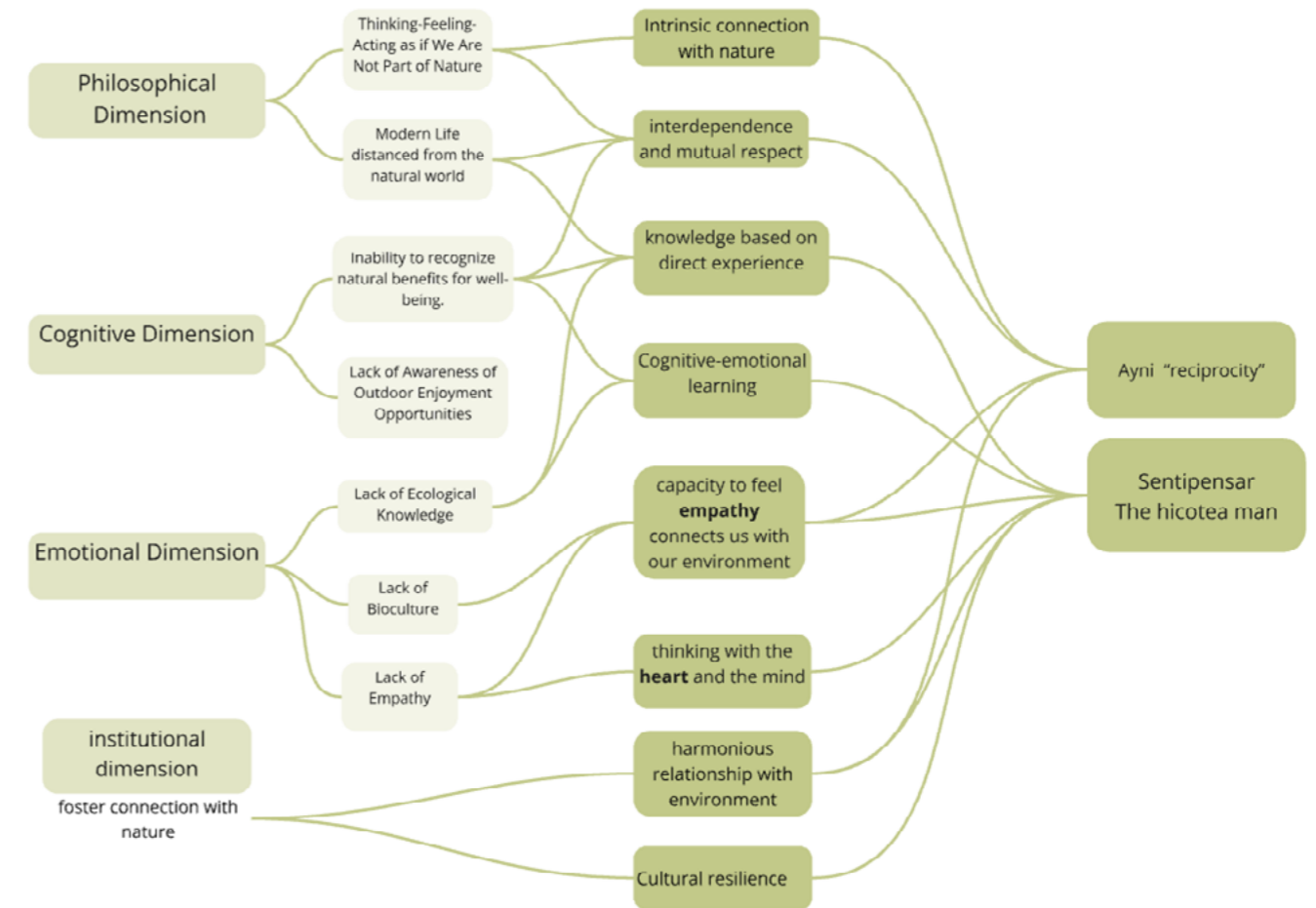


Figure 6: Mind Map:Relationship of the problem and the solution , produced by the author

06

Case Studies

6.1 Parque Martin Luther King

6.2 Co-habiting

This chapter presents two design case studies that show ways of integrating the anthropic and the natural in urban spaces. Both cases offer perspectives, illustrating how the theories and principles guiding this project can be materialized into design strategies

The first reference I selected is a park located in Paris, France. This park stands out for its landscape design, through which it achieves objectives that I also pursue in my own design: the creation of areas that encourage interaction and raise public awareness of ecological issues. In addition, the park associates nature with well-being and quality of life, key aspects that I seek to integrate into my proposal.

The study of the design of this park, in particular how it integrates with the city through formal gestures in the configuration of paths and areas, directly influenced my design decisions for La Babilla Park, defining its main structures. This case study also enriched my understanding of water management, an aspect that is reflected in my proposal from both an aesthetic and functional perspective.

For the second case study, my aim was to find a design approach that values and acknowledges wildlife and nature. In this context, I discovered a trend that explores and experiments with elements designed for “everyone,” both human and non-human. These explorations are very valuable, as they go beyond traditional thinking focused exclusively on functionality for people, integrating elements that respond to the needs of other species. Through materials and forms, spaces are created that allow the coexistence of human functions and habitats for other species in the same environment. These elements will be included in my design.

6.1

Martin Luther King Park

An ecological park that links neighbourhoods

The Martin Luther King Park Case Study (ZAC Clichy-Batignolles) in Paris is an example of how to integrate the biological with the anthropogenic in a landscape design that connects human, animal and plant flows in a balanced way. This project reflects the principles of reciprocity between nature and urbanization, demonstrating that it is possible to work with nature and not at its expense, achieving mutual and interdependent benefits.

By connecting neighborhoods, providing recreational spaces and demonstrating how sustainable design principles can be materialized in functional and educational solutions (ArchDaily, 2015; Favre, n.d.). The project understands and respects the natural cycles of the territory, valuing water, biodiversity and social interaction in an environment that promotes ecological and urban integration.



Figure 0: Overview of Martin Luther King Park in Paris, (Source: Guignard, n.d.).

Architects: Atelier Jacqueline Osty & associates

Location: Paris, Francia

Site area: 10 hectares. 4.3 (first phase) and 5.7 (second phase).

(ArchDaily, 2015)



Figure 1: Gardens of Martin Luther King Park in Paris, (Source: Martin Argyroglo, n.d.).

The park's design seeks to integrate with the surrounding urban environment, generating accesses aligned with the streets and avenues through internal paths and trails. This approach softens the transition between the built (buildings, streets) and the natural (plants, trees, water), creating a network of visual and physical connections that invite exploration of the space.

Main Diagonal: Acts as a structuring axis, crossing the park and distributing high intensity activities such as sports areas, playgrounds and rest areas. Transversal Connections: Paths that link urban streets and connect with secondary paths leading to shared gardens, sports areas and recreational spaces.

The park is structured as a “green network”, connecting fragmented spaces of nature in the city. Through specific zones, such as wooded areas, biotopes and planted ditches, the design promotes the creation of microhabitats that facilitate the movement of species and educate visitors about biodiversity. Spaces such as shared gardens and biotopic areas encourage interaction and ecological awareness, associating nature with well-being and quality of life.

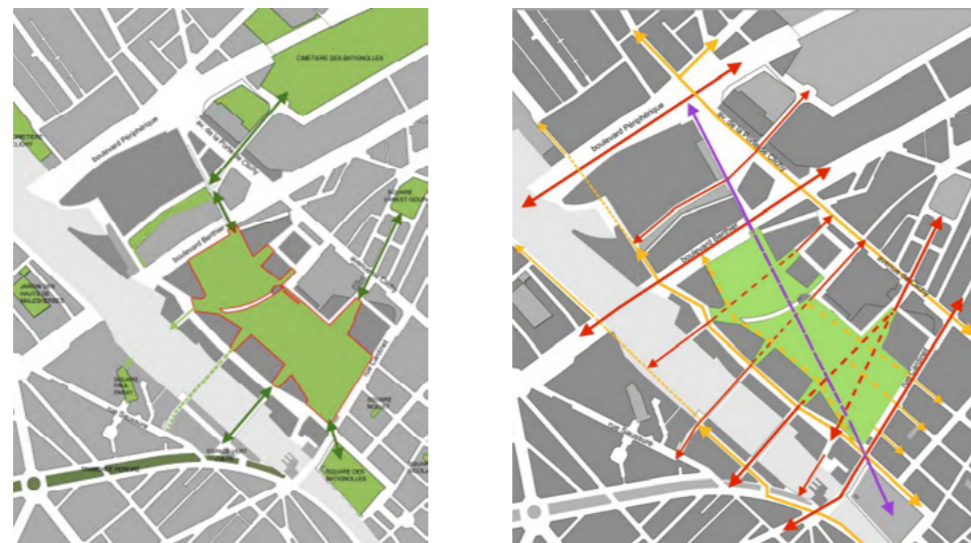


Figure 2: Schematic representation of the urban connections and green integration in Martin Luther King Park, Paris (Source: Favre, n.d.).

Water management is an important component of the design, based on the capture, filtration, and reuse of rainwater through an integrated sustainable drainage system (Jóźwik, 2020):

- Wet ditches and permeable surfaces: Retain and filter water with the help of hydrophilic plants.
- Biotopic Reservoir System: Four connected reservoirs purify water in stages, from initial sedimentation to final filtration.
- Subway Storage and Irrigation: Part of the filtered water is stored in a 1,500 m³ subway reservoir and distributed using energy from a wind turbine.

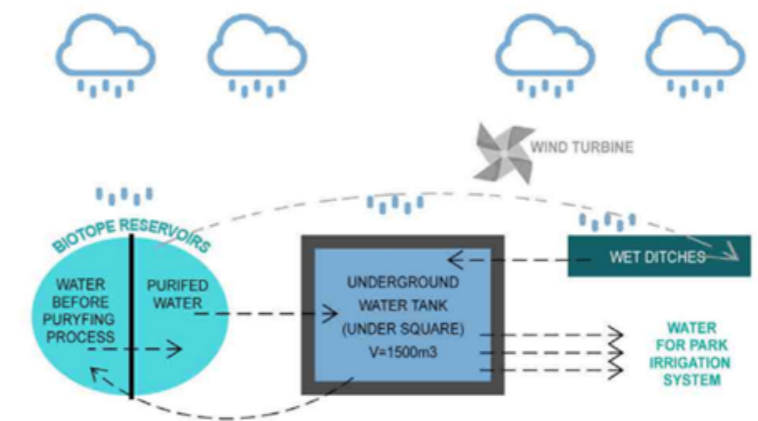


Figure 3: Schematic representation of the rainwater management system at ZAC Clichy-Batignolles source: (Adapted from Jóźwik, 2020, p. 7)



Figure 4: Biotipe water management and ecological design (Source: Lemoniteur, n.d.).

Co-habiting

Within the field of design, experimental proposals have emerged that explore new forms of interaction between humans and other species. They combine furniture and designed spaces that recognize non-human species as active participants in the built environment, integrating habitats, furniture and landscapes.

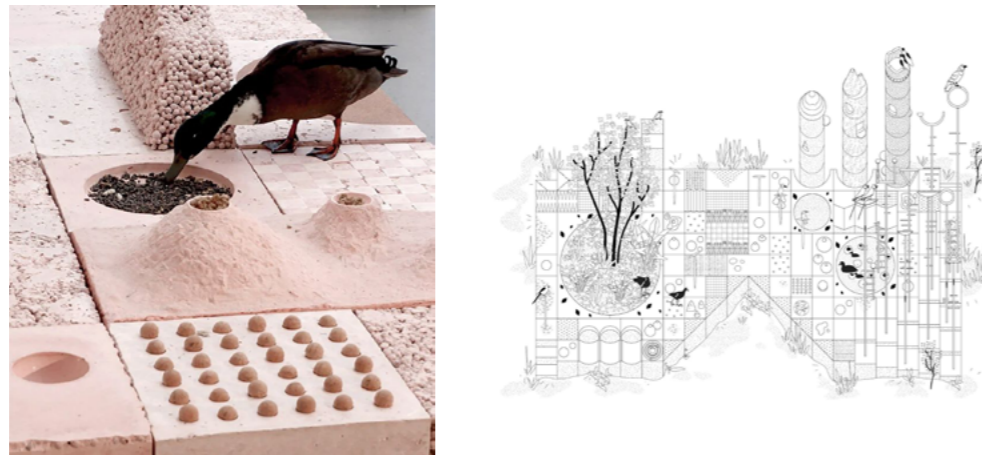


Figure 5. Platform for Humans and Birds: A modular landscape fostering interaction between humans and birds, presented at La Biennale di Architettura di Venezia, Italy, 2021 (Source: Studio Ossidiana, n.d.).

“Is a modular, cast landscape, rich in affordances and possibilities of action: a place to eat, play, touch, and negotiate boundaries between our specie and others” (Studio Ossidiana, n.d.).



Figure 6. The Birds' Palace: A multispecies installation promoting ecological cycles and interactions (Source: Studio Ossidiana, n.d.).

“As birds feed, play, and deposit guano on the heap, they disperse seeds, fertilize the ground, and become the gardeners” (Studio Ossidiana, n.d.).



Figure 7. The Garden Table by Studio Ossidiana, Chicago, USA, 2021 (Source: Studio Ossidiana, n.d.).

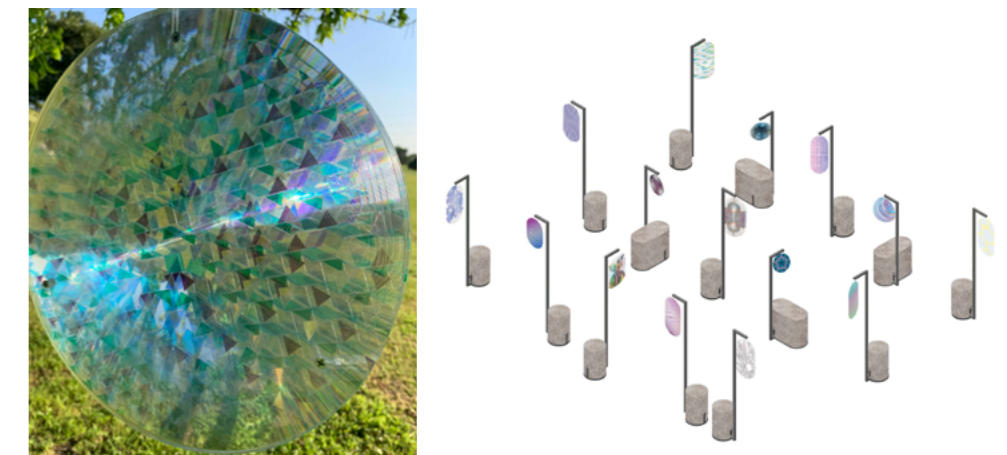


Figure 8. Bug Filter: To see the environment like insects (Source: Feliz, 2020).



Figure 9. Multi-species Lounge, located at The Bentway Studio, Toronto (Source: Feliz & Hwang, n.d.).

“...aims to make visible under-acknowledged non-human populations, that are active participants of urban life (...) by attracting them and bringing attention to their presence. (...) shared co-occupation, where a series of multispecies urban furnishings integrate bird houses, insect habitats, hibernacula for smaller terrestrial animals, and seating for humans” (Feliz & Hwang, n.d.).

07

The project

7.1 Master Plan

7.1.1 Objectives

7.1.2 Approaches

7.1.3 Strategies

7.2 The Design of the park

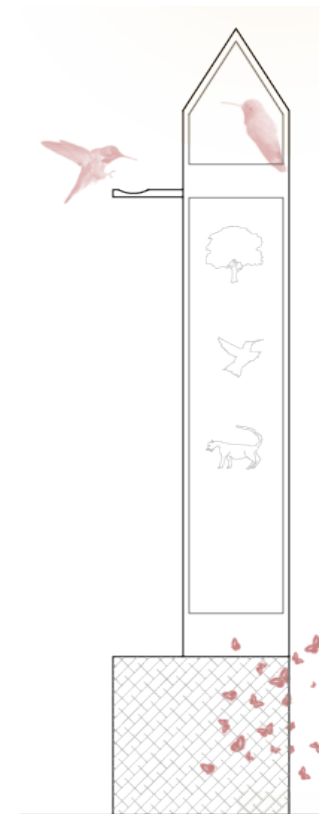
7.2.1 Action objectives

7.2.2 General Plan

7.2.3 Activity bands

7.2.4 Development of the tranches

The foundation of my design process lies in adopting biocentric values, where humans, animals, and vegetation are equally considered as integral components of the intervention. This perspective shaped every stage of the project, from the master plan to the detailed park design, ensuring that all decisions aligned with the principle of coexistence and mutual benefit.



Master plan

Urban Objective

(Re)Connection

Non-hierarchical relationship between humans and nature.

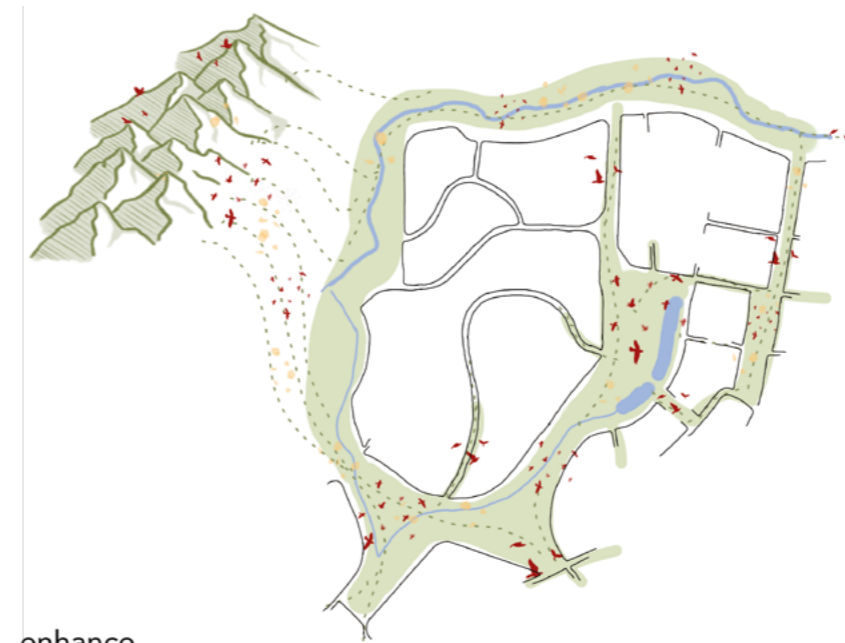
The master plan proposal in relation to the Babilla Park is centered around the **environmental and anthropic connection**. In order for the relationship between people and the natural environment to be healed, first of all, any physical limits that may be an obstacle to the connection must be fixed.



Figure 1 : Human-nature reconciliation , produced by the author

Approaches

This connection is carried out with two approaches :



enhance
Environmental conectivity

Environmental connection: consolidate and enhance the ecological continuity of the ecosystemic wealth from the Farallones to the interior of the city, providing a wild habitat to preserve and increase biodiversity, crucial for both ecological and urban sustainability.



establish
Public space network

Anthropic (re)connection: establish a network of public spaces that, taking advantage of the ecological structure, links urban life with its natural landscape, allowing people to walk around the city, enjoy the green areas and natural spaces.

Figure 2: Approches for reconnection , produced by the author

Strategies

It is important to understand that the two approaches are intertwined, thus giving value to the inhabitants' own ecosystems by relating them directly, therefore blurring the boundary between the built and the natural. For this reason, the strategies implemented are related to both approaches.

Learn from and adapt to environment

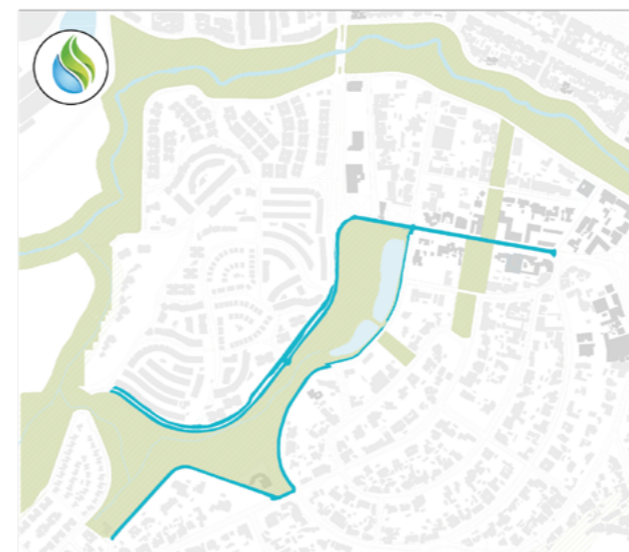
interdependence and mutual respect

Modern Life ~~distanced~~ from the natural world



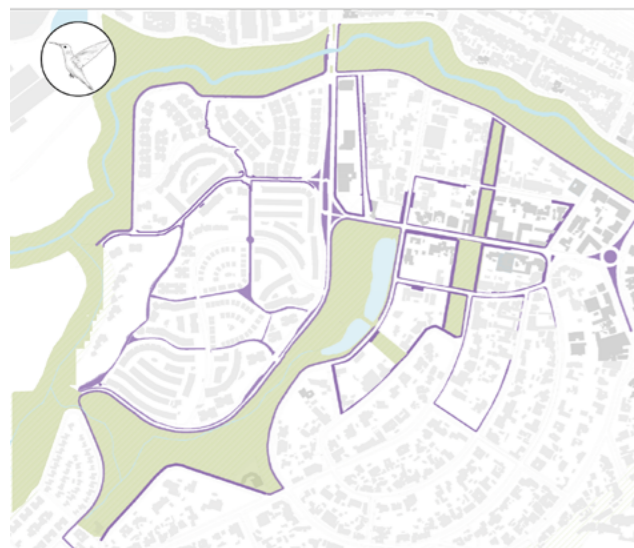
1. Recover the wetland protection area: to ensure that the La Babilla wetland can continue to fulfill its ecological function within an urban environment. Through the planting of trees and native species.

Figure 3: strategy Recover the wetland protection area , produced by the author



2.Suds:the topography and catch basins make que area more susceptible to flooding. SuDS manage rainwater, reduce flooding by retaining and gradually releasing water, and promote infiltration. They support vegetation and allow retained water to be used for irrigation in the park, maintaining the urban water balance.

Figure 5: Strategy Suds , produced by the author



3.Polinizator gardens: Gardens to attract species such as hummingbirds, beetles, butterflies or bees that maintain plant populations and their genetic variability. They are in road dividers, front gardens and street furniture. In a geometrical shape representing the wings of these species. crating a distinctive landscape image that guides the pedestrian, fauna and flora to the park.

Figure 4: Strategy Pollinator connections , produced by the author



4.Adaptation of sidewalks and pedestrian areas: create desirable conditions to encourage slow mobility. By placing sidewalks where missing and dimensions and continuity of the existing ones improved. Implementing raised crosswalk in crossings between public spaces, linear parks or pedestrian zones in residential areas, shared street in the comital axis on Carrera 105. And proposing parking lots.

5.Adaptation of parks and implementation of urban furniture: the green areas of the linear park are not adapted for human use, to adapt them in order to create a fluid circuit between these spaces.

Figure 6: Strategy Pedestrian connections, produced by the author

Master plan esc 1:5000

By implementing these strategies in the context of the park, it consolidates a network that integrates surrounding public spaces and ecological structure. This ensures both pedestrian accessibility (effective sidewalks and crossings) and biological accessibility (pollinator gardens) to the park and the rest of the area. By recovering the wetland protection areas, it discourages the use of vehicles, allowing the change to pedestrian mobility through parking facilities. This gesture, together with the Suds strategy, solves flooding problems generated by disrespecting these areas with vehicular infrastructure. Integrating anthropic structures with natural structures allows the creation of a city that ensures regional ecological continuities while improving the quality of life of citizens.

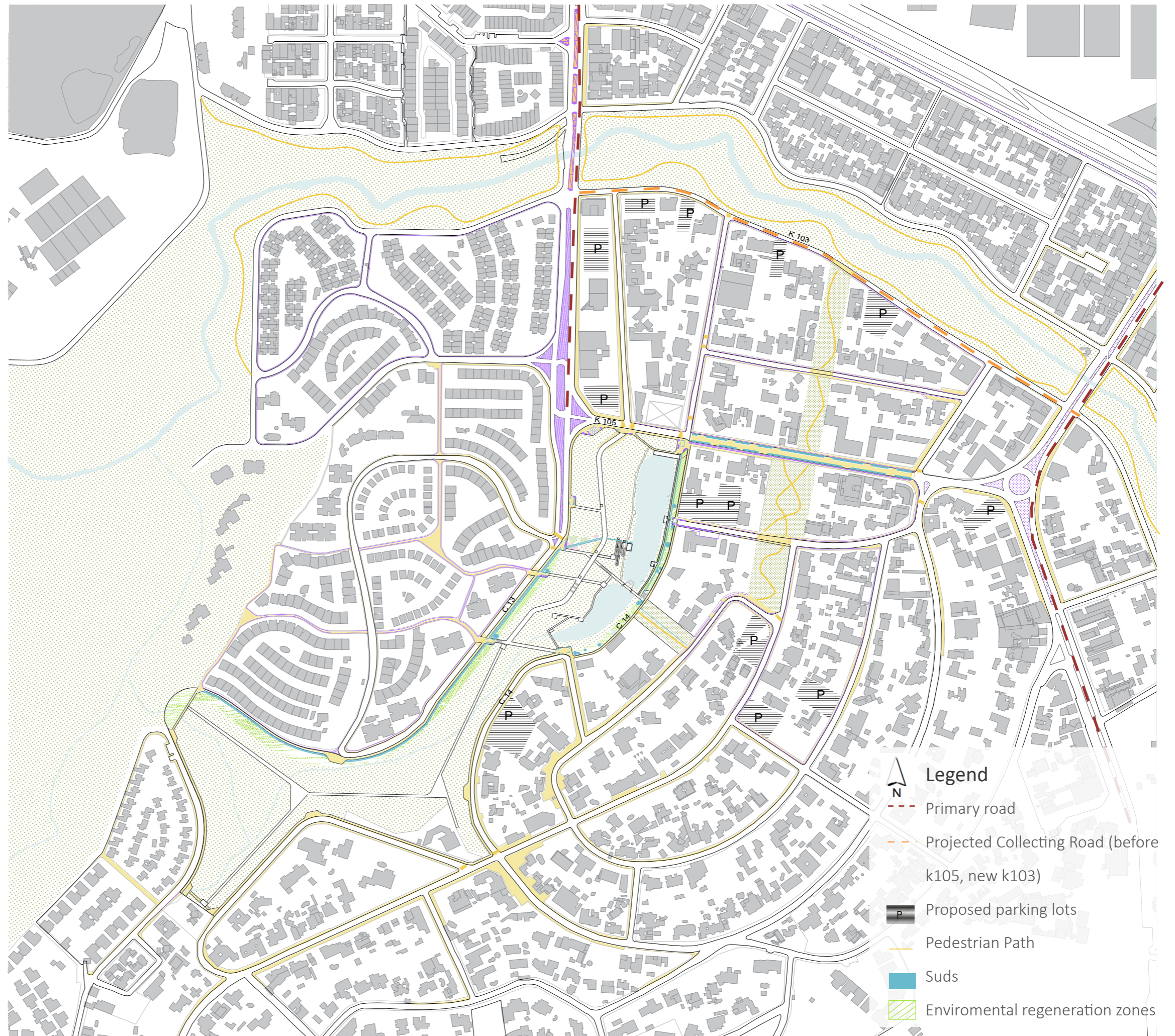


Figure 0: Master Plan , produced by the author

- Safe walkways connecting the residential units to the park.
- Suds that buffer flooding in the catchment area of the ditch.
- Pollinator gardens that ensure biological variety and biodiversity within the city and provide a landscaped image that guides visitors to the park.
- Recovery of a part of the environmental protection zone disrespected by vehicular infrastructure.

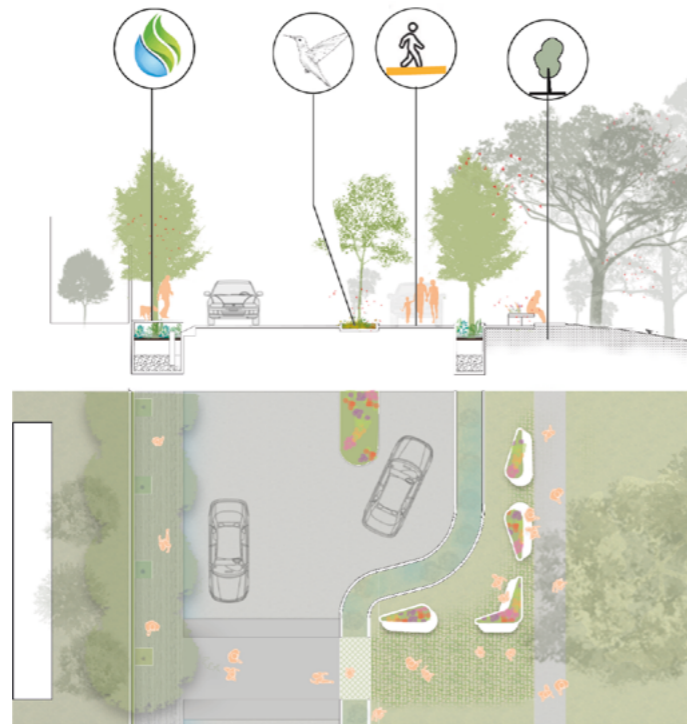


Figure 7: road profile 13th street strategies implemented, produced by the author

- k105 becomes a shared street to make the most of its commercial character.
- Suds that organize parking spaces and areas of permanence for the people
- Pollinator gardens that ensure biological variety and biodiversity within the city and provide a landscape image that guides visitors to the park.

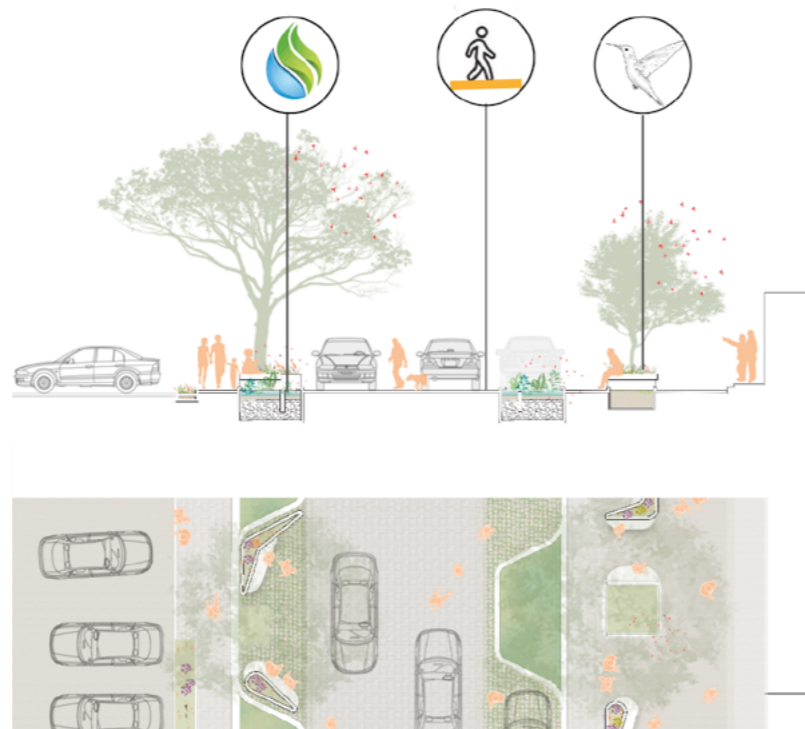


Figure 8: road profile 105 Carrera strategies implemented, produced by the author

- Recovery of the environmental protection zone disrespected by vehicular infrastructure.
- Suds and modification of topography to prevent flooding in the catchment area of the wetland.

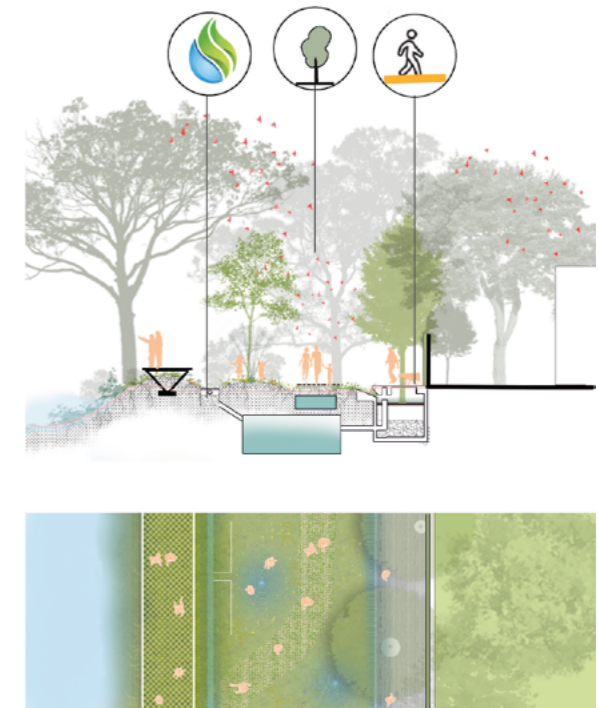


Figure 9: road profile 14th street strategies implemented, produced by the author



Figure 10: Sidewalks strategies, produced by the author

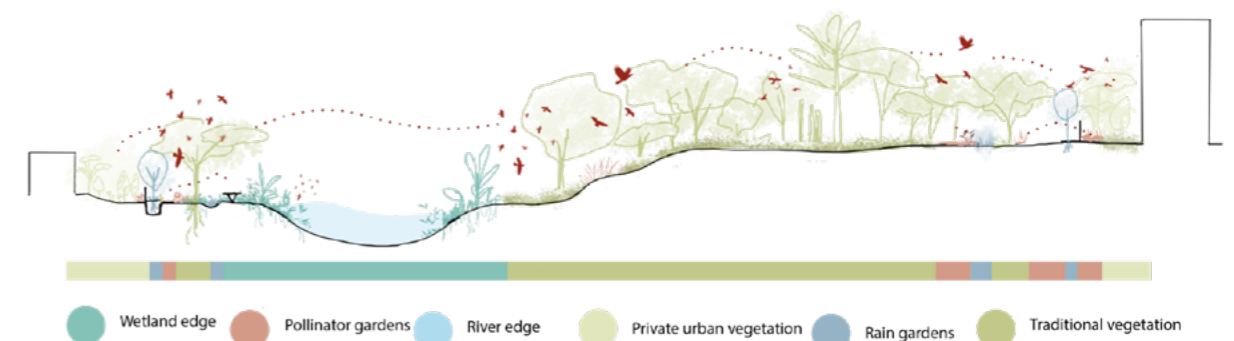
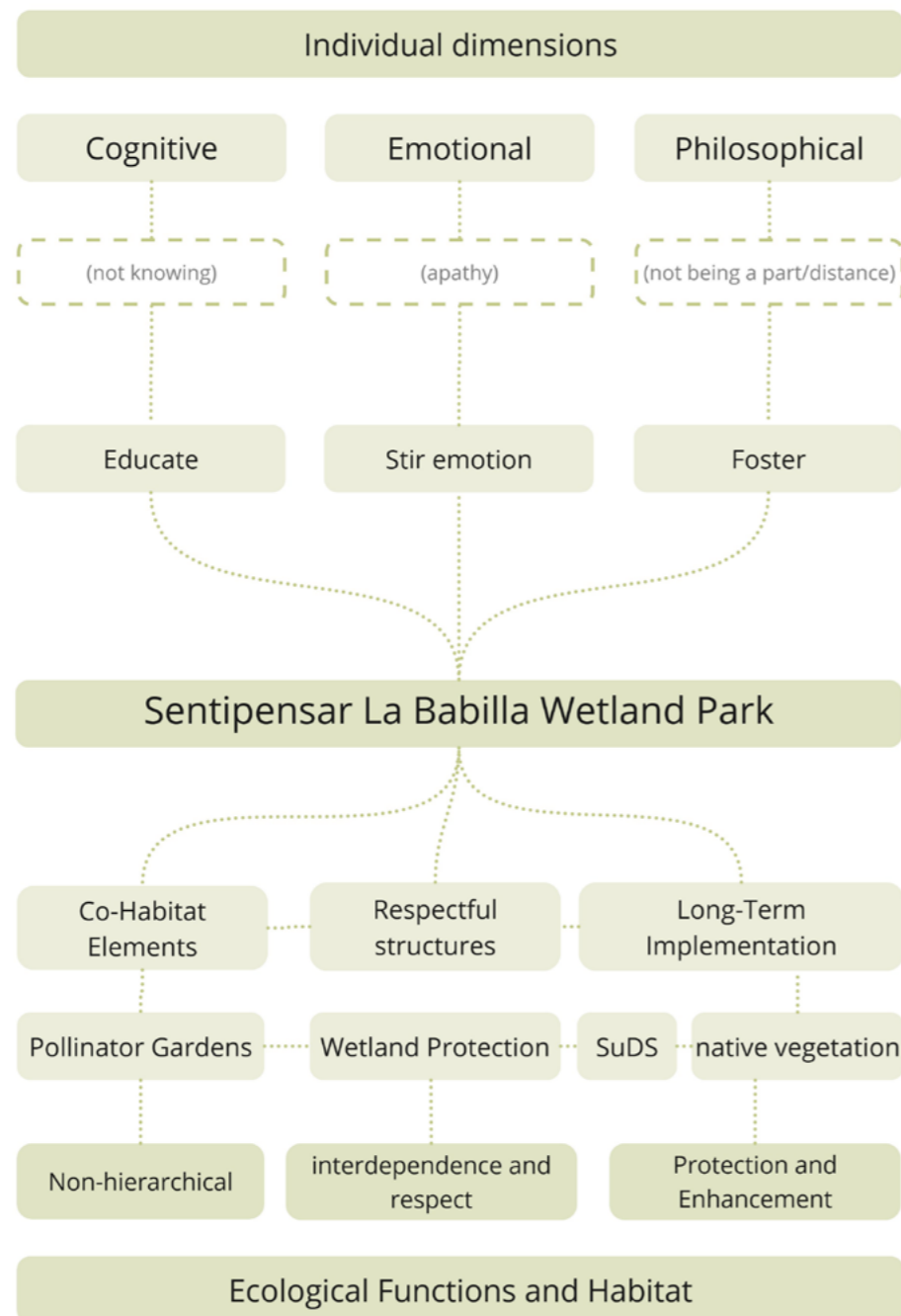


Figure 11: Schematic section of the park strategies and vegetation, produced by the author

The Design of the park

Once addressed the physical connection, assured anthropic and biological connectivity between the park and the city, **how to address the intangible disconnection, which occurs at the individual and psychological level? How to trigger a new meaning making process in each person to shift cultural values?**

The factors identified in Chapter 5 provide a framework for understanding the roots of this disconnection. It manifests itself in three dimensions at a personal level, from which the **specific objectives** of the proposal (always grounded in bio-centric values) are born:



Educate

Through information and experience, learn about natural processes, local fauna and flora, and opportunities for aware and thoughtful interaction with the environment.



Stir emotion

Cultivate empathy and a sense of reciprocity towards nature, generate an emotional bond with the environment, realizing it as a living system that enriches our life, awakening gratitude and the desire to protect it.



Foster

Create the space to inhabit and cohabit the natural environment, a place that hosts urban life, inviting to walk, sit, admire, meet and play, thus integrating it into the daily routine.

Action objectives



Structure:

The protection boundary of the water bodies as the structuring axis of the project

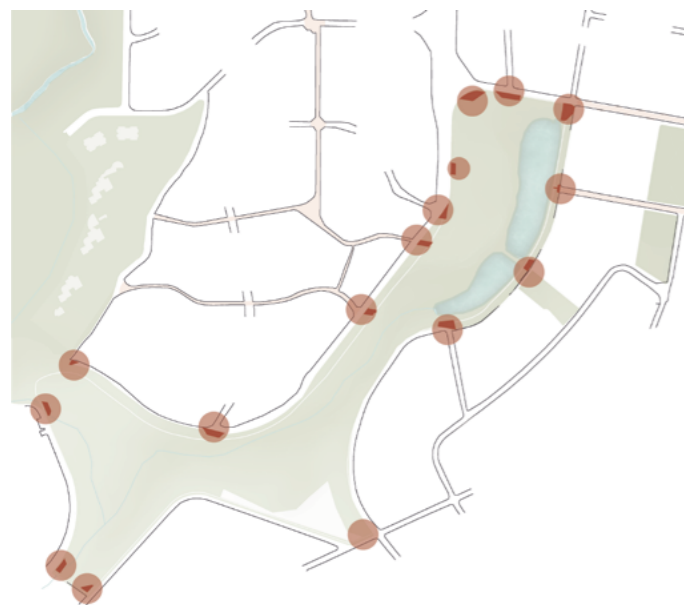
- ~~Lack of Ecological Knowledge~~
- Modern Life ~~distanced~~ from the natural world
- Cognitive-emotional learning



Articulate:

Physically and visually the designed elements and the natural landscape.

- Sentipensar The hicotea man



Integrate:

The accesses communicating with the immediate context by welcoming plazas.

- ~~Lack of Awareness of Outdoor Enjoyment Opportunities~~
- Cognitive-emotional learning



Programming:

Defining bands where the activities dialogue with the environment.

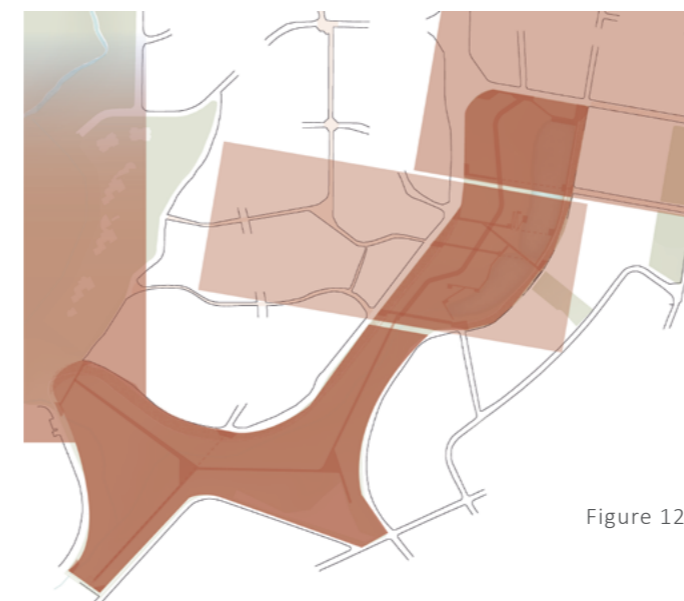
- Cognitive-emotional learning
- knowledge based on direct experience
- capacity to feel **empathy** connects us with our environment



Recognize:

Confront man with the value of the wetland and the forest in a respectful way.

- ~~Inability to recognize natural benefits for well-being.~~
- Ayni "reciprocity"
- capacity to feel **empathy** connects us with our environment



Encourage:

Define tranches of the project implemented progressively over time, according to the cultural change generated.

- institutional dimension foster connection with nature
- Sentipensar The hicotea man
- harmonious relationship with environment
- Cultural resilience

Figure 12: Action objectives, produced by the author

General Plan

The park design is structured around a main path, “the Woods path” that crosses the park longitudinally, while marking the protection boundary of the wetland. Its course is intersected by transversal connections which articulate the entrances marked by **access plazas**.

The Woods path and its branches act as the arteries that introduce people to the park, guiding them through the “**activity bands**”, spaces where interaction with nature is explorative and ephemeral. Crossing the other side of the protection zone, visitors connect with the **elevated walkways of the “Ayni trail”**. These structures, designed for respectful walking, border the wetland and offer different perspectives of the landscape, bringing visitors closer to the lake or framing views while learning through informative elements distributed along the path.

Legend

- buildings
- rivers
- lakes
- contour lines (1 m)
- Polinator gardens
- existing palm and trees
- proposed trees
- grass
- dense vegetation
- aquatic vegetation
- Environmental regeneration zones
- wet ditch and rain gardens
- underground reservoir tanks
- activity bands
- gardens and landscaping
- Woods path
- Ayni trail Elevated catwalk and piers



Figure 13a: General plan, scale 1:5000, produced by the author



Figure 13b: General plan, scale 1:1500 produced by the author



The woods path

Walk. Contemplate. Learn and be moved



Figure 14: Visualization of The woods path, produced by the author

The woods path, slightly elevated above the ground, is designed to preserve the natural flows of wildlife and protect the structure from the humidity of the terrain. Constructed with Zapán wood, a local Cali resource, it is 6 meters wide and allows for a variety of activities: running, walking, sitting and contemplating the environment, or going down and exploring the surrounding forest.

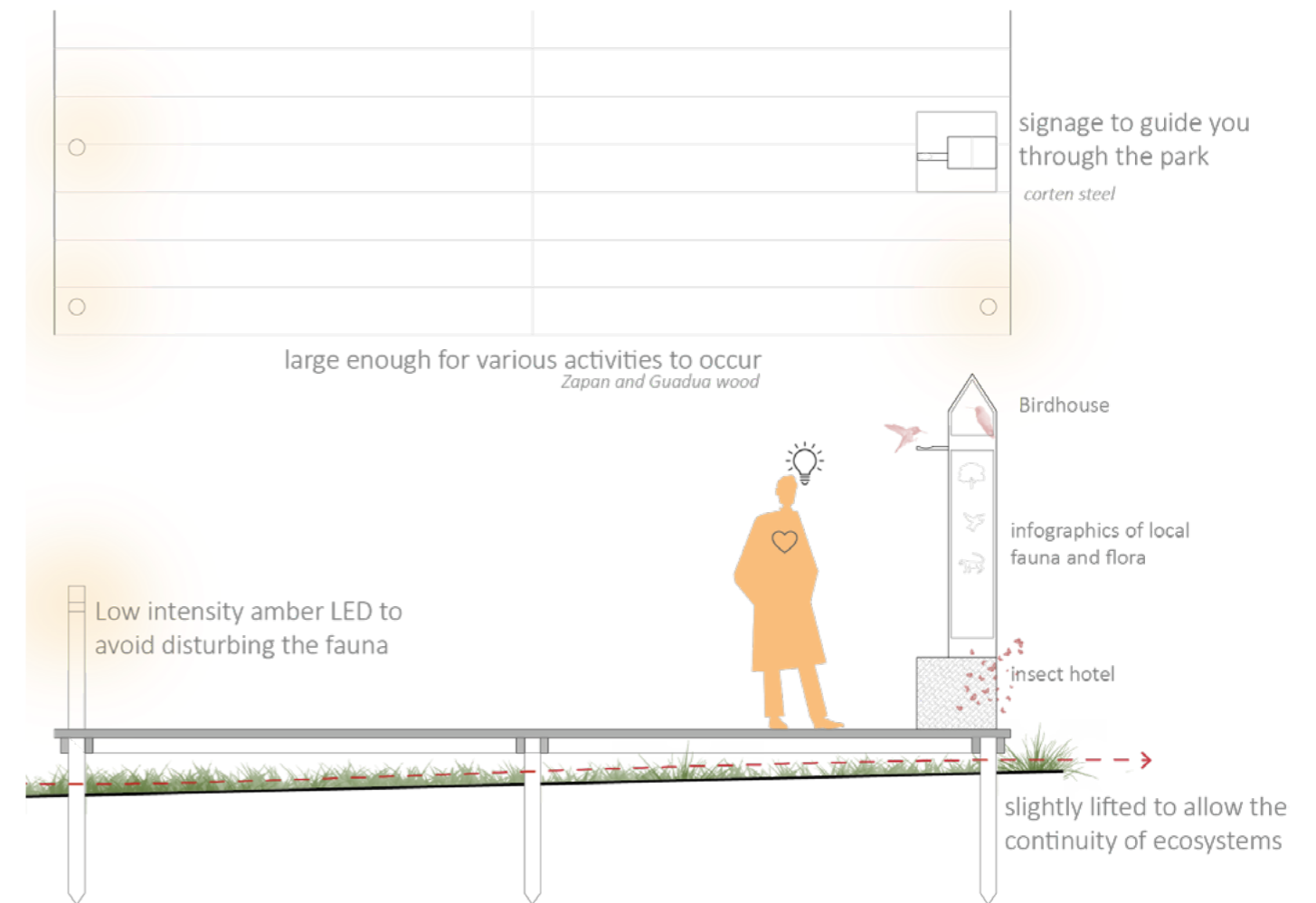


Figure 15: Drawing of The woods path, produced by the author

It is illuminated with low poles that integrate amber LED lights, minimizing the impact on nocturnal wildlife and maintaining the tranquil atmosphere.

Along the trail, signage guides visitors to different activity zones. They use infographics to teach about the local flora and fauna and are constructed with bases that function as insect hotels and roofs that act as bird houses, encouraging interaction with local species and promoting passive learning about biodiversity.



Ayni trail



Figure 16: Visualization of Ayni path, produced by the author

Ayni, means reciprocity, and symbolizes the interdependence between natural space and urban life. This elevated walkway promotes Reciprocal Dignification, creating a symbiotic relationship where nature and people benefit from each other.

The elevated walkways protect water bodies and vulnerable areas, and at the same time offer an accessible space for the physical and mental well-being of its

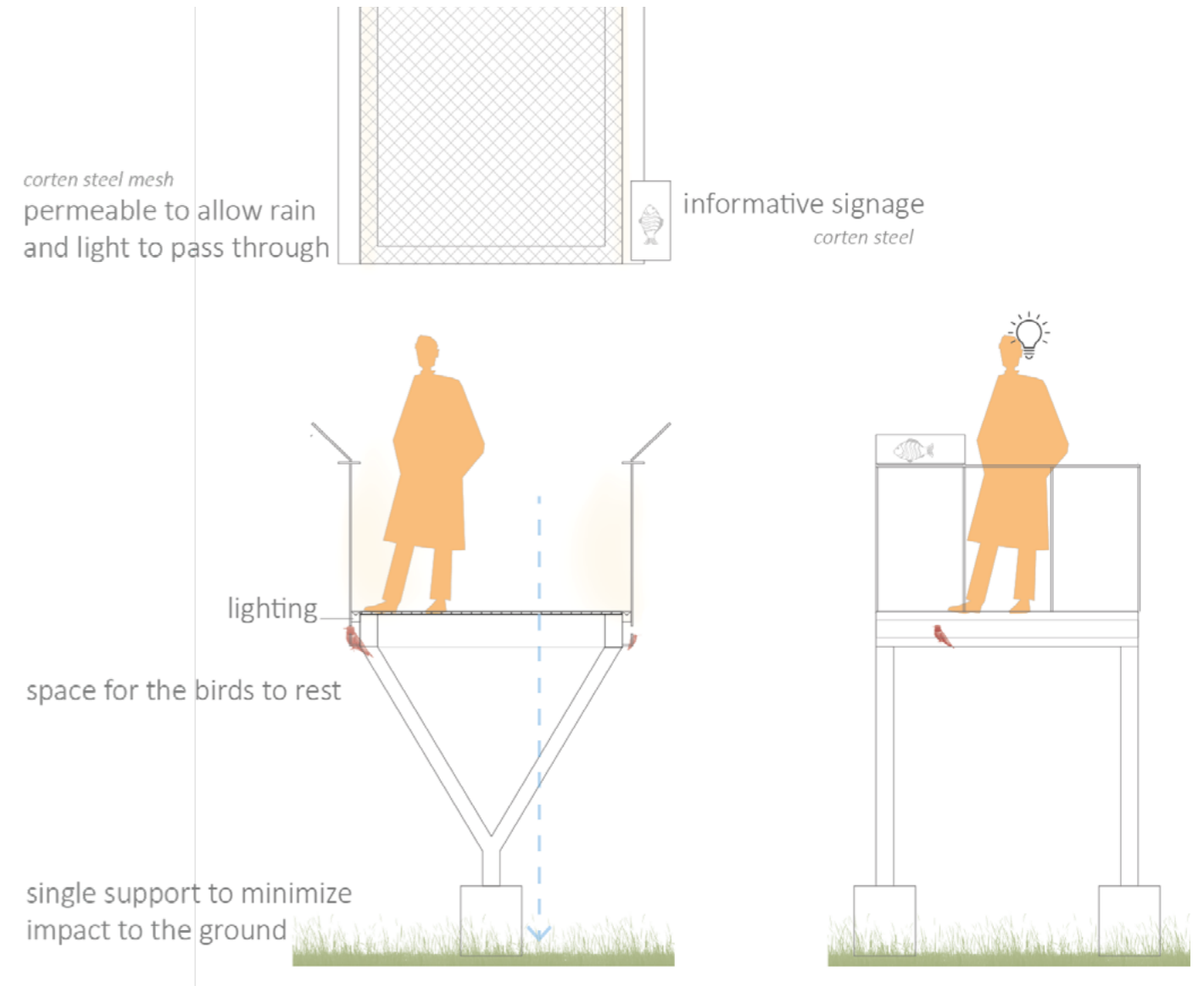
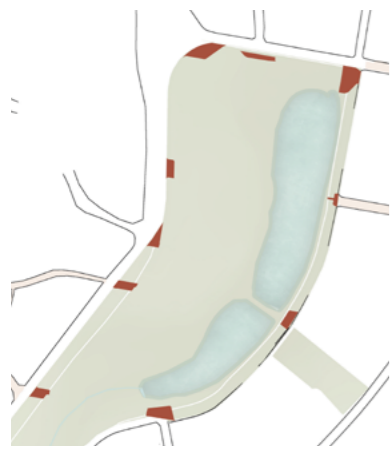


Figure 17: Drawing of Ayni path, produced by the author

visitors, improving their quality of life by connecting them with nature, while informative elements distributed along the route enrich their experience.

Built with Corten steel and perforated mesh, the trail is supported at a single point to minimize its environmental impact. The mesh allows sunlight and rain to reach the vegetation, keeping the ecosystem intact and providing views of the natural surroundings. In addition, a “C” profile borders the path, serving as a space for birds to perch.



Socio-ecological access plazas

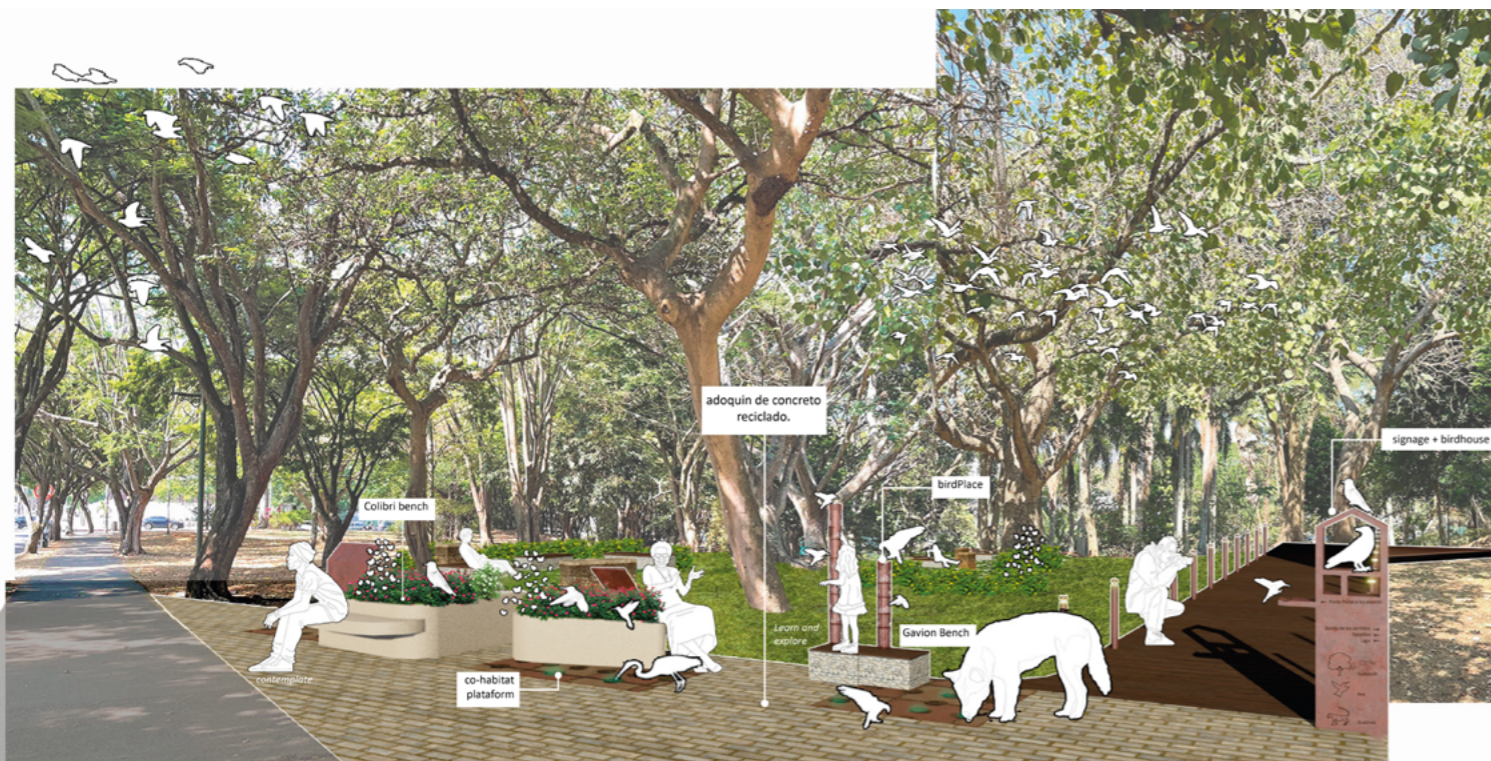


Figure 18: Visualization of Welcomig Plazas, produced by the author

They act as articulating elements, generating accesses that are aligned with the city's streets. They are scenarios of first encounter with the ecosystem, where visitors can experience the interaction with other species that coexist in the urban environment, through furniture elements such as "Colibrí Benches" and Co-habitad Plataforma that attract local fauna, generating awareness in visitors about their

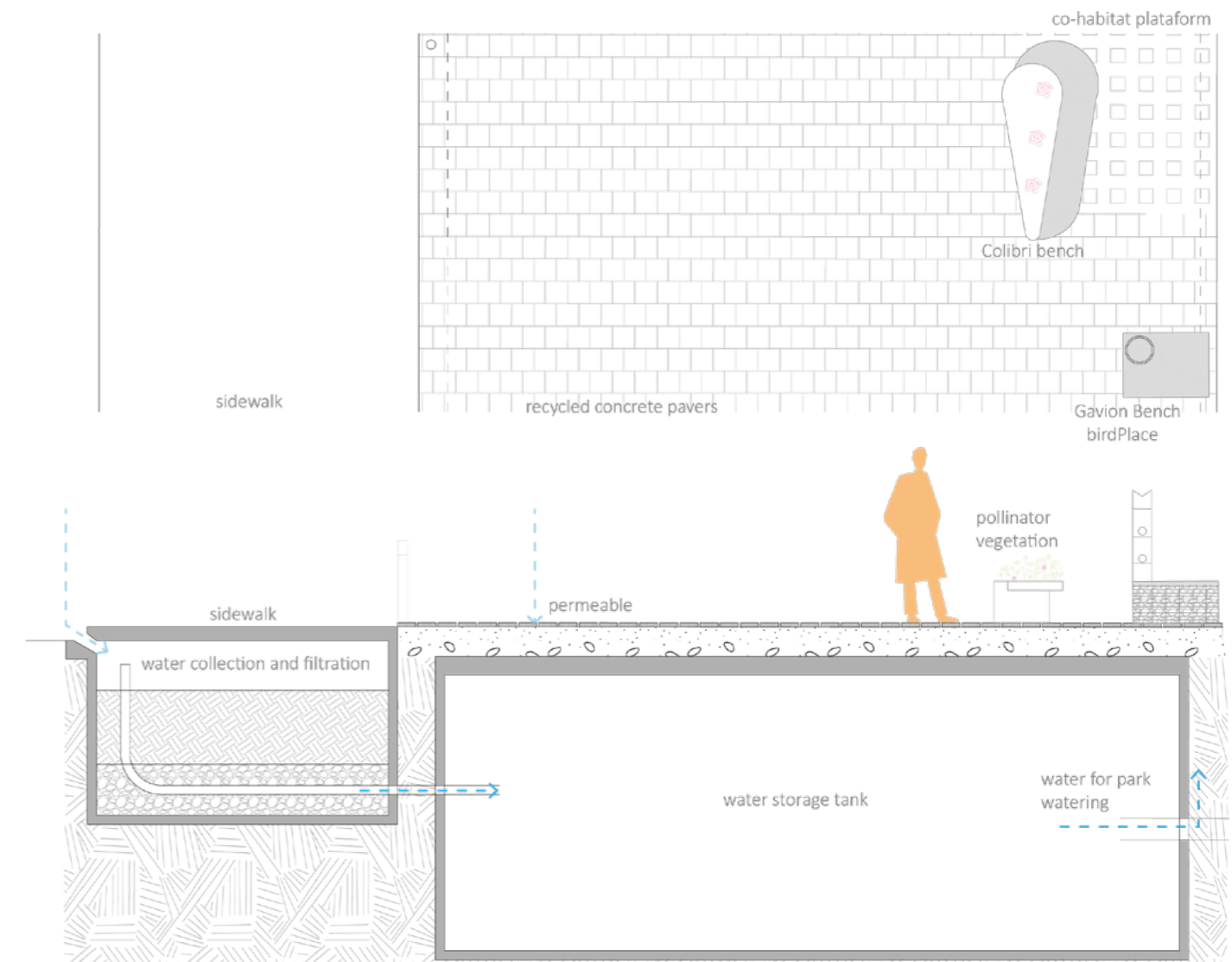


Figure 19: Drawing of Welcomig Plazas, produced by the author

presence and the importance of coexisting with them.

the plazas are built with recycled and permeable concrete pavers, which allow for the natural infiltration of rainwater. Underneath the surfaces are water collection tanks fed by the surrounding rain gardens. This sustainable system stores water that is then used to irrigate the park during times of drought.



The Piers

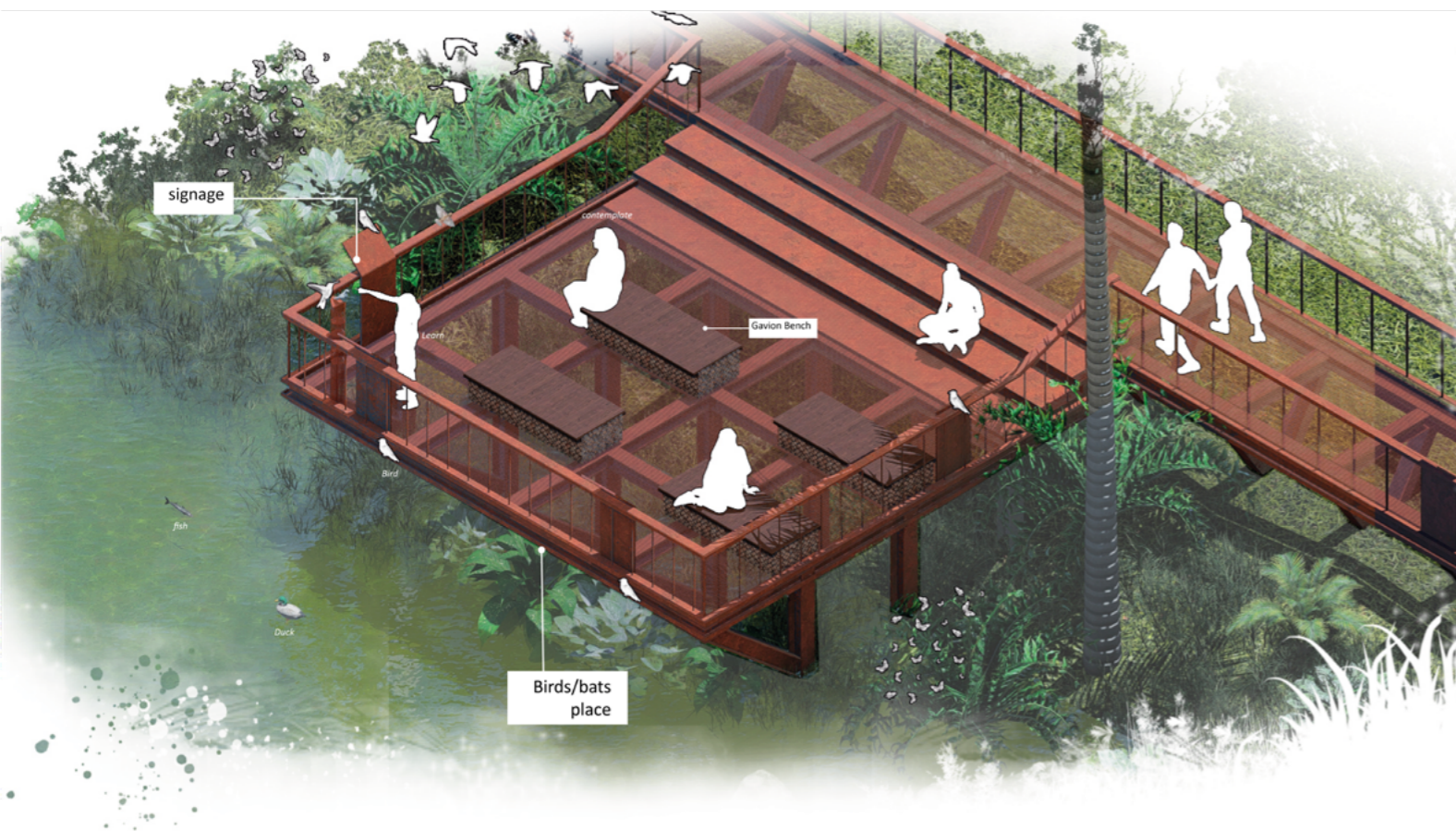


Figure 20: Visualization of the piers, produced by the author

The piers, part of the Ayni Trail, allow visitors to approach the wetland and enjoy a space designed for sitting and contemplating the landscape. Built on the same principles as the elevated platforms, they use Corten steel and a perforated mesh floor that allows sunlight and water to pass through, allowing vegetation to grow underneath the structure and integrate naturally into the design over time.

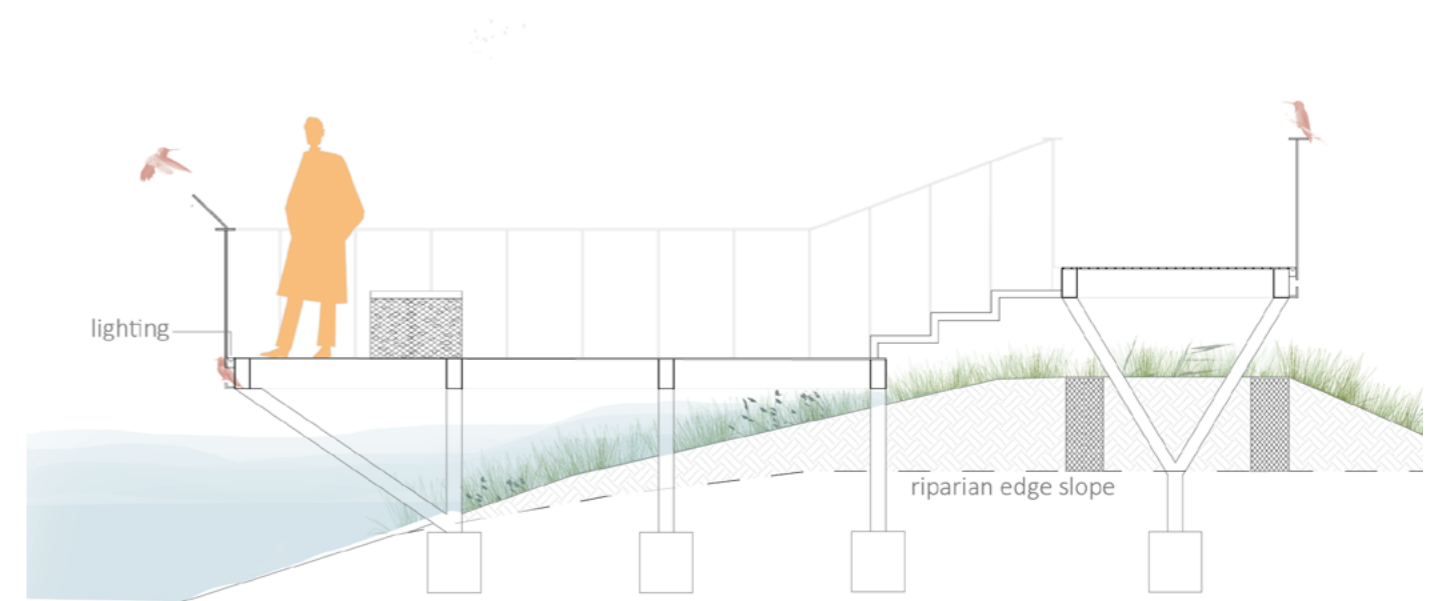


Figure 21: Drawing of the piers, produced by the author

The design also includes elements such as gabion benches filled with local river stone and wood and informative signage that invites visitors to learn about the wetland's biodiversity and its importance. In addition, a 'C' shaped profile surrounds its structure, serving as a design detail and a space for birds to perch.



The pavillions

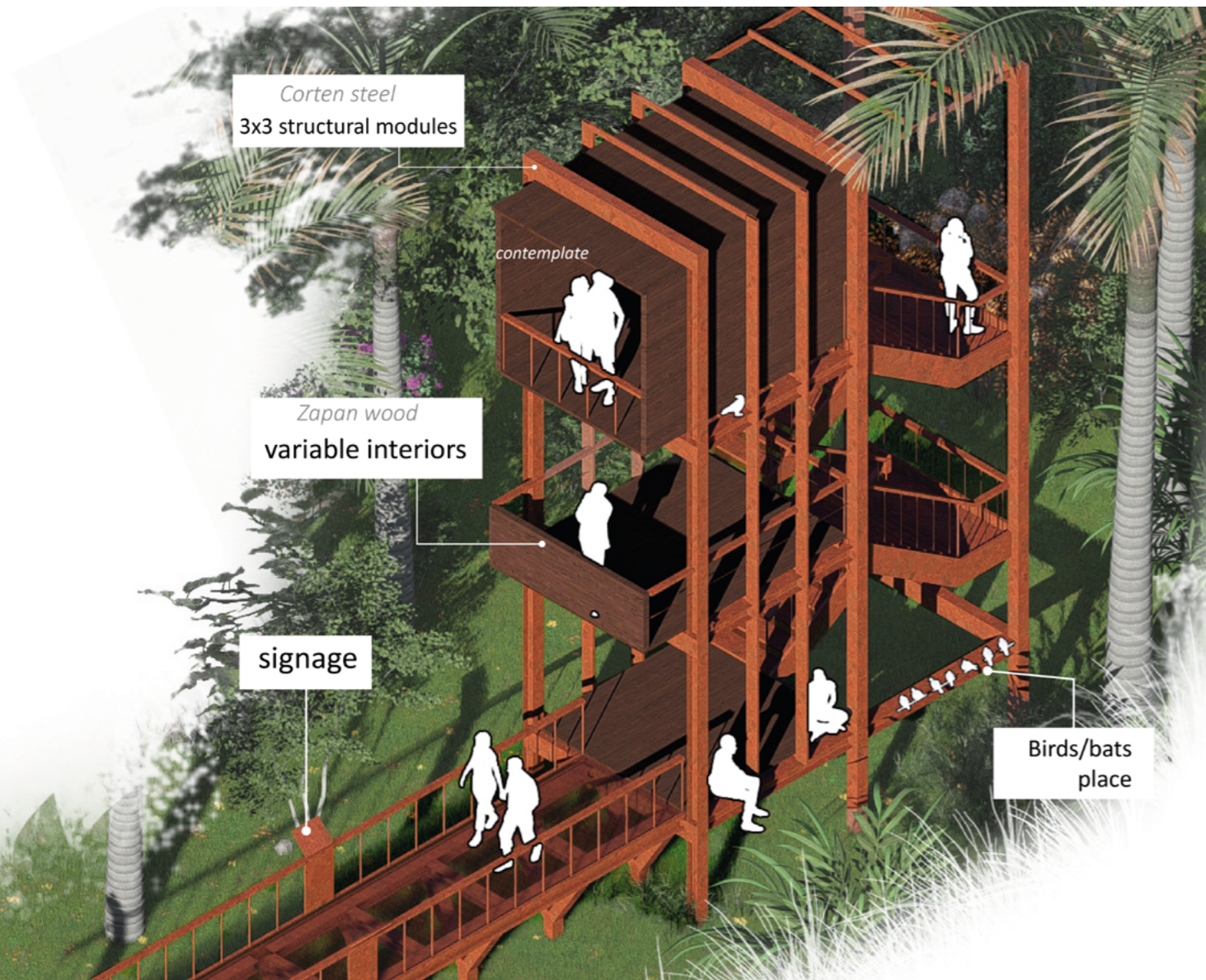


Figure 22: Visualization of the pavillions, produced by the author

The pavilions, designed as 3x3 meter modular structures with a Corten steel exterior structure, containing a wooden core inside, which varies according to the specific use of each pavilion. This wooden element appears to float inside the frame thanks to its support on steel joists. The modules are versatile and can incorporate different internal configurations, such as staircases that connect levels or verandas that extend outward, creating balconies that offer new perspectives of the surroundings.

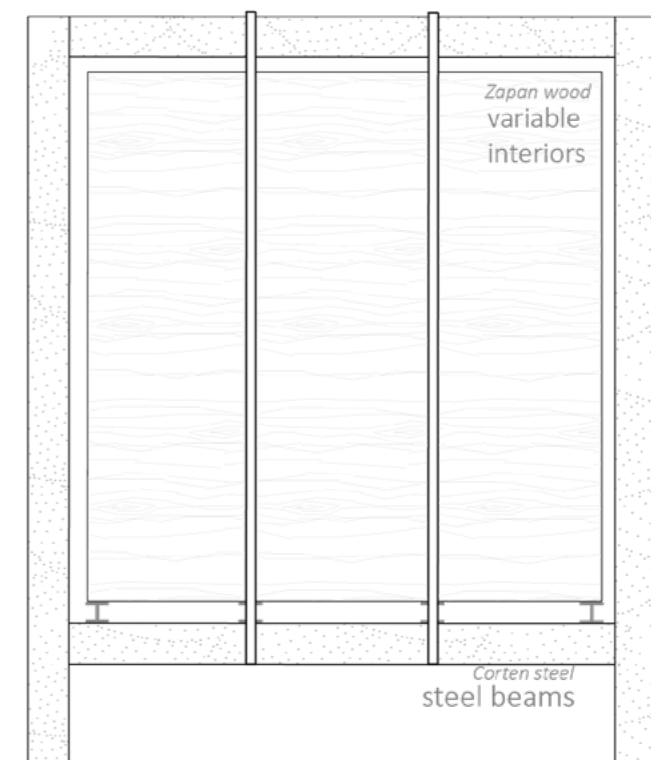
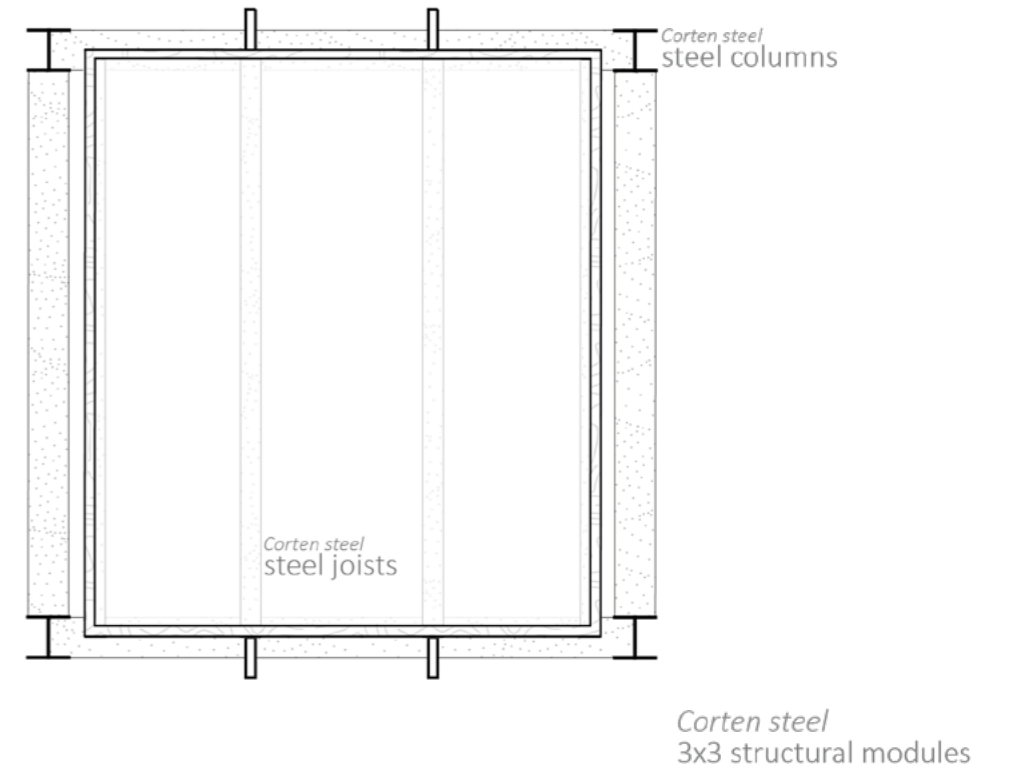


Figure 23: Drawing of the pavillions, produced by the author



Environmental regeneration zones

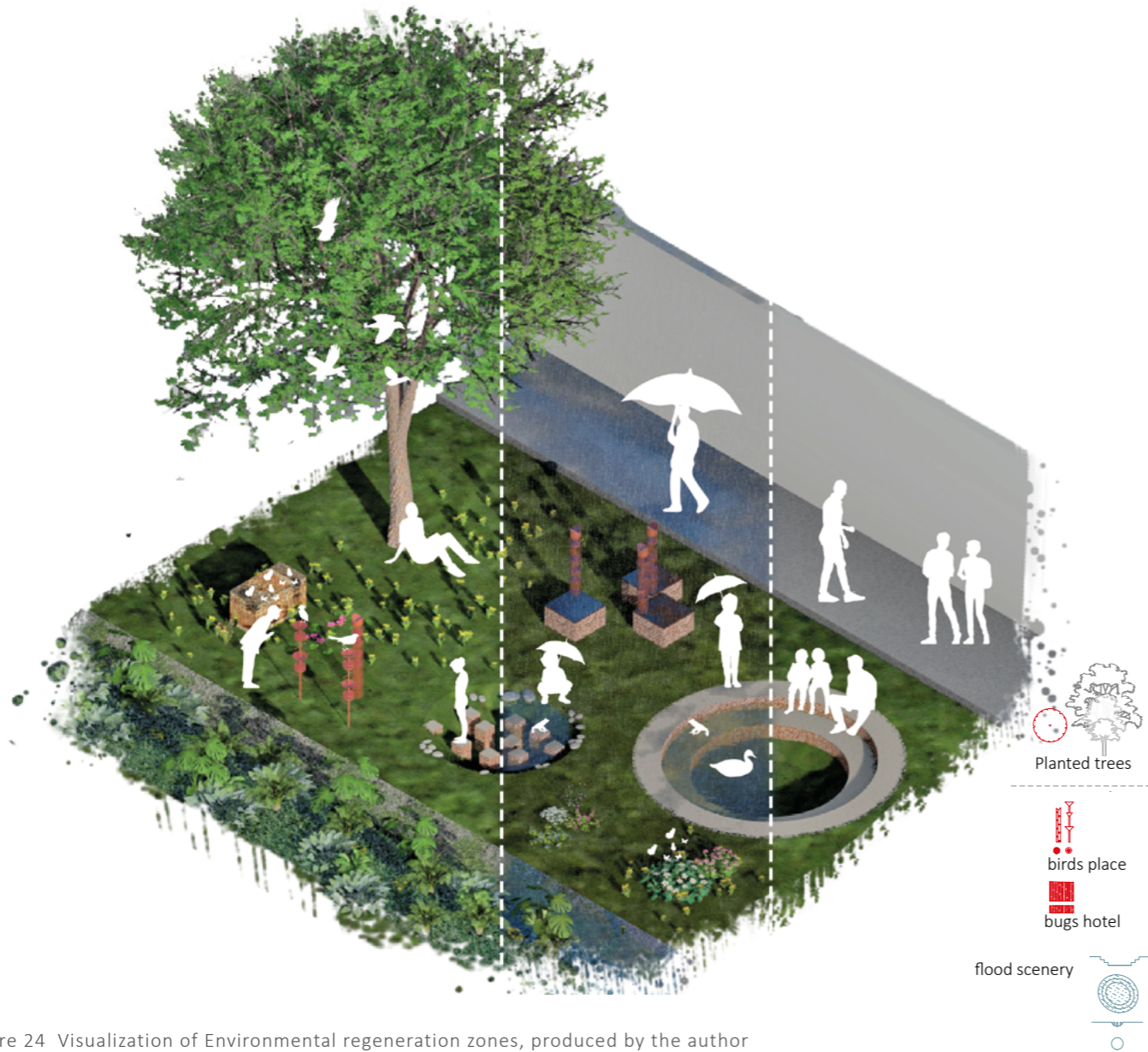


Figure 24 Visualization of Environmental regeneration zones, produced by the author

They change from being vehicular roads (disrespecting the wetland protection area) to becoming regeneration scenarios and itinerant landscapes and a visible and participatory act (of animals and humans).

It is a meeting place for birds, mempolinas bees, butterflies and people, with flooded landscapes that transform with the rains and droughts showing the water cycles and a changing landscape. Where you can learn passively and actively by

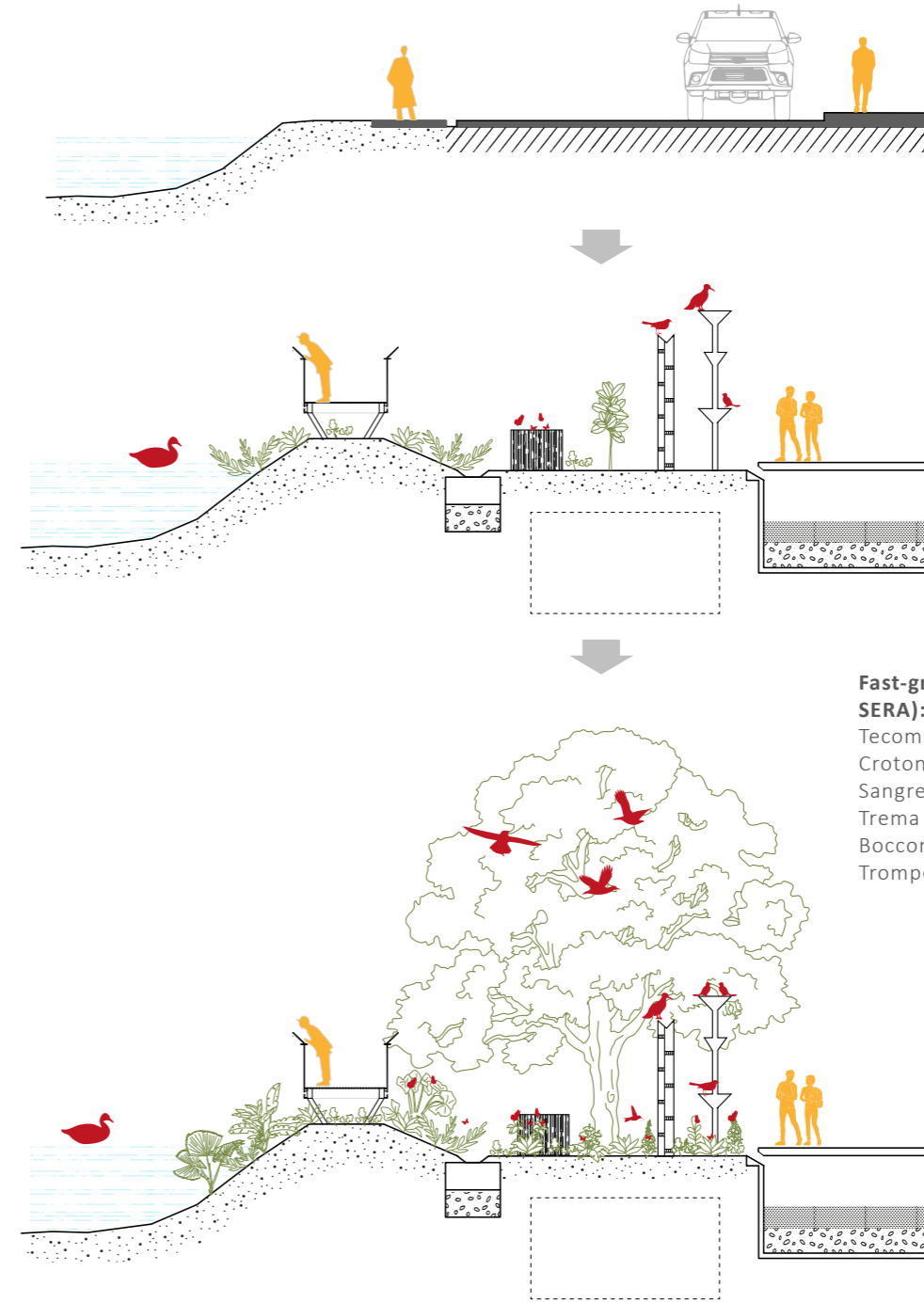


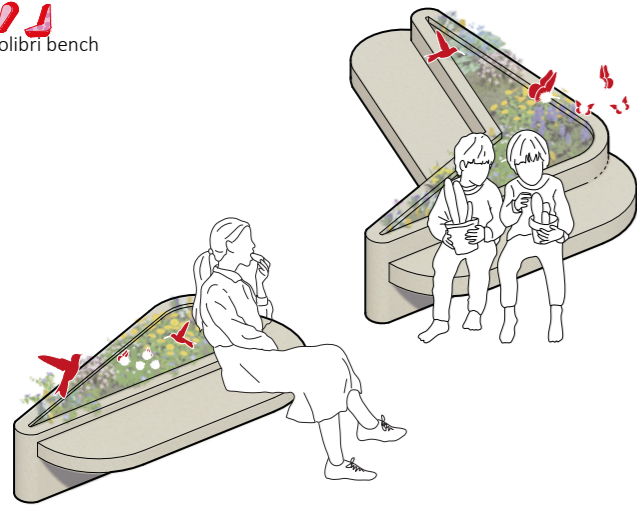
Figure 25 Drowing of Environmental regeneration zones, produced by the author

witnessing landscape changes, through the role of species, climate, and vegetation.

The regeneration process begins with fertile soil and planting of native trees, pollinator gardens and elements for birds (accompanied by the irrigation system in the dry season). As the trees grow and birds and other pollinators feed and spread seeds, they naturally contribute to the restoration of the ecosystem, favoring the germination of vegetation and the recovery of nutrients.

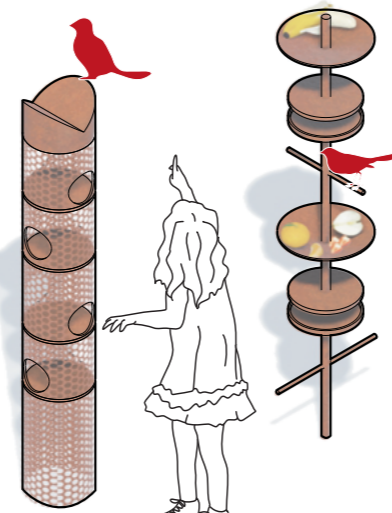
Urban furniture elements inventory

Colibri bench



Colibri bench: Planter bench that adopts a shape inspired by the wings of hummingbirds, with plants that favor the attraction of pollinators, such as these small birds

birds place



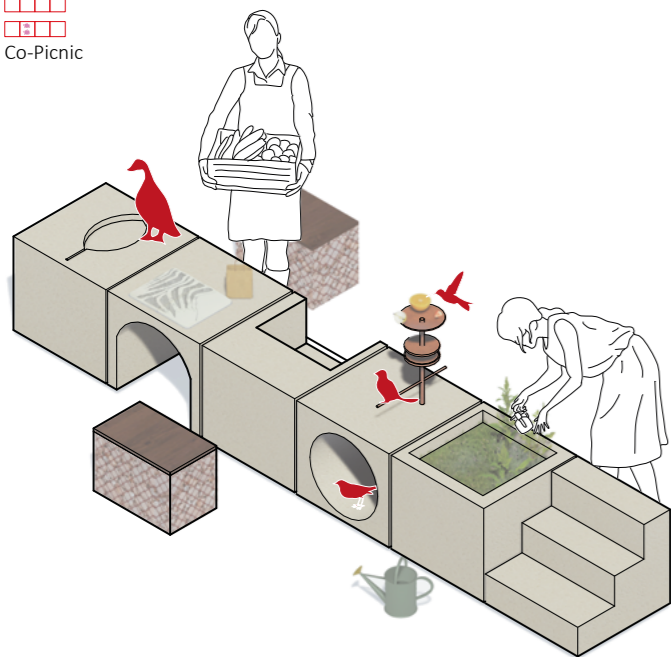
Birds Place¹: elements designed as columns or towers for the local birdlife, safe and attractive spaces for different species where they can nest and perch.

co-habit platform



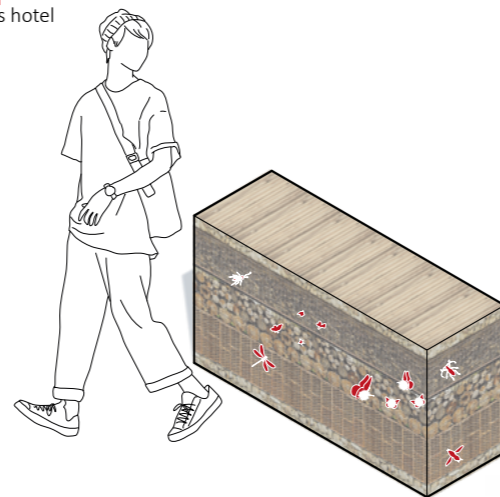
Co-habitad plataform¹: a proposal of paving, designed with shapes and textures inspired by nature. Patterns of tree leaves, reliefs that allow the collection of water and spaces to deposit food for other animals, openings for the growth of vegetation and support surfaces where birds can perch and rest.

Co-Picnic



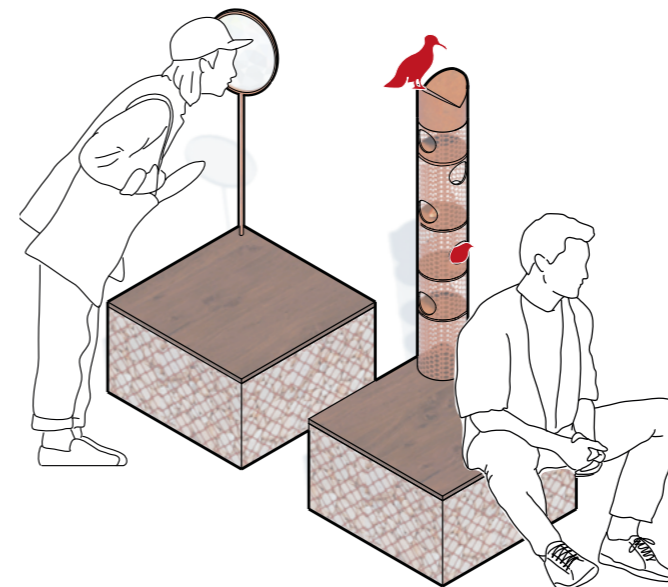
Co-Picnic¹: picnic tables for all species to eat, play, and gather. Where aromatic or fruit species can be harvested.

bugs hotel



Bug's hotel: is a gabion structure that recreates in its interior habitats that attract beneficial insects, using materials such as wood, branches, bark, bamboo or recycled bricks.

Fauna bench



Fauna bench ²: is a bench designed with river stone gabions and a wooden structure, for a place to sit or stand and observe the element it incorporates. This bench can include a bird house or a Bug Filter (Feliz, 2020), a device that allows you to see the world from the perspective of insects (which can be made in community workshops for environmental education).

The elements combine functional and socio-ecological purposes, distributed in different areas of the park. They act as urban furniture for sitting, gathering or playing, while attracting local fauna, encouraging interaction with other species that coexist in the urban environment. In this way they generate awareness in visitors about the importance of coexisting with biodiversity, while performing ecological functions and contributing to urban comfort.

Figure 26: urban furniture elements inventory, produced by the author

1: Design adaptation of (Studio Ossidiana, n.d.)2: Design adaptation of (Feliz, 2020)

Activity bands esc 1:500



Band 1 : Los Samanes

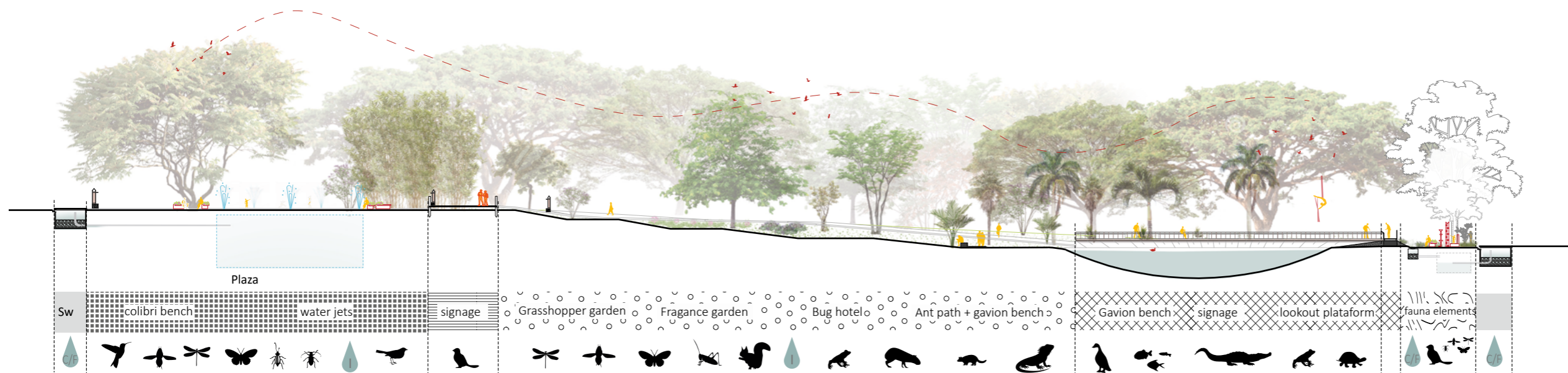
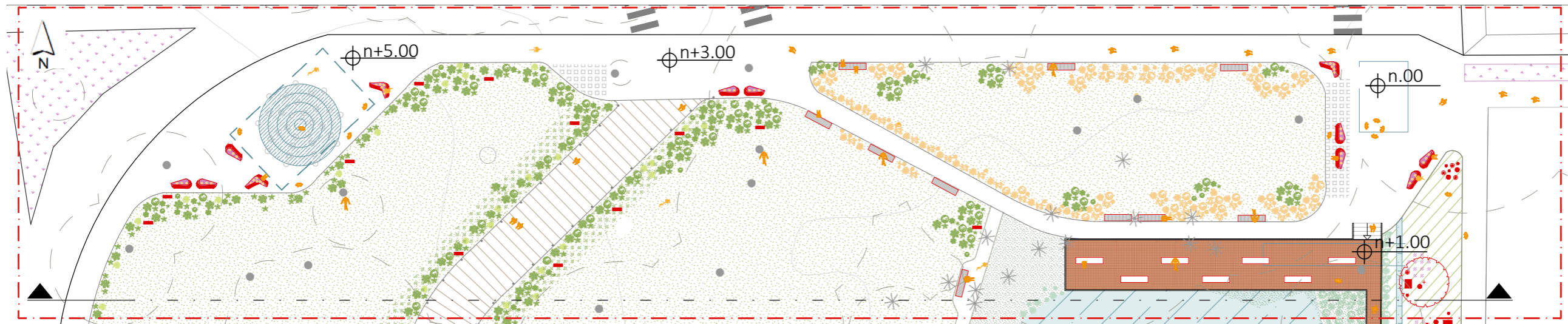


Figure 27: Los Samanes Activity band Plan and section 1:500 scale, produced by the author

Areas	Water management	Fauna elements / bench	Sensory gardens	Contemplation	Recreational
Plaza	Collection and filtration	co-habit plataform	Grasshopper garden	slopes	
Woods Path	storage	Colibri bench	Emblematic species garden	Sun lounger Amphiteater	slides and clibers
Activity band	irrigation	birds place	Fragance garden	trees	
Ayni Trail	flood scenery	bugs hotel	Polinator garden	Tree pataform Hanging lunge	swings and nets
Environmental regeneration zones		Co-Picnic			
Sidewalk		Planted trees			

Located on Carrera 105, represents the image facade of the park towards the city, welcoming the visiting populations that frequent the restaurants and commercial establishments of the sector. The jets plaza on the west corner, where visitors can enjoy the water, interact with the gardens, meet, or enjoy artistic expressions.

The east plaza, for a socio-ecological encounter, co-habitation elements present citizen with wildlife inhabitants. The observation platform frames panoramic views of the lake, the landscape and the mountains in the background, visually and emotionally integrating people with the natural space.

Activity bands esc 1:500



Band 2 : Among Palm Trees

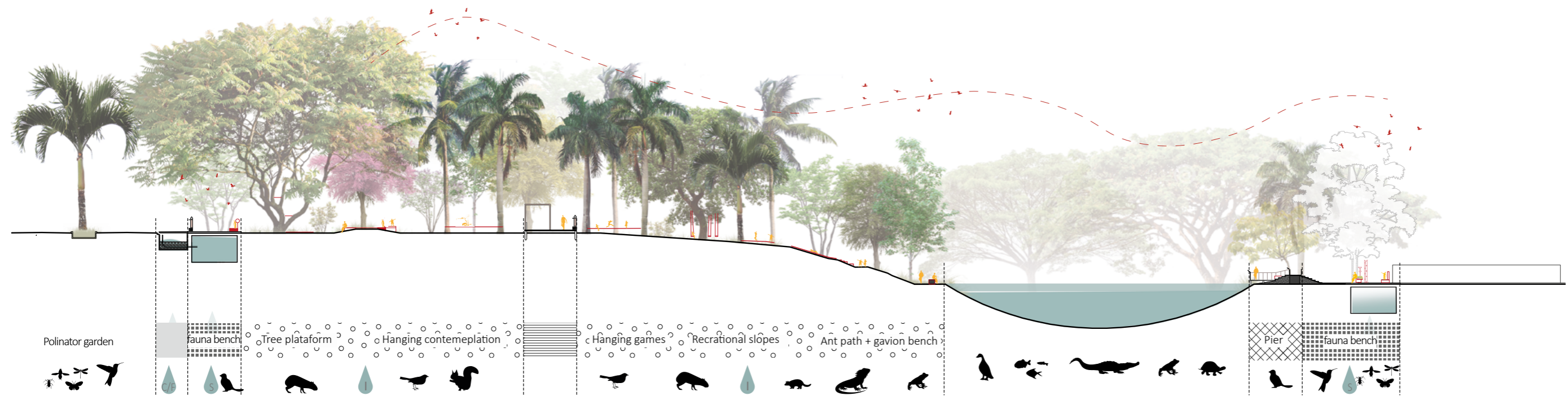
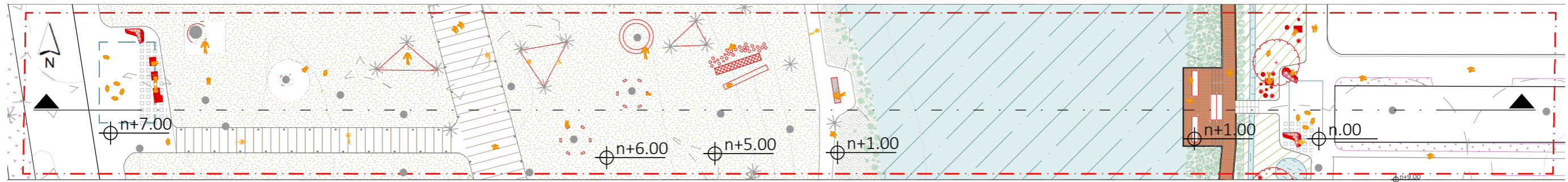


Figure 28: Among Palm Trees Activity band Plan and section 1:500 scale, produced by the author

Areas	Water management	Fauna elements / bench	Sensory gardens	Contemplation	Recreational
Plaza	Collection and filtration	co-habit platform	Grasshopper garden	slopes	slides and climbers
Woods Path	storage	Colibri bench	Emblematic species garden	Sun lounger Amphiteater	
Activity band	irrigation	Fauna bench	Fragrance garden	trees	
Ayni Trail	flood scenery	Planted trees	Polinator garden	Tree pataform Hanging lunge	swings and nets
Environmental regeneration zones					
Sidewalk					

The forest area becomes an explorative interaction with nature. Under the shade of palms and leafy trees, platforms for resting, nets in the tree trunks, and swings invite to a Playful and intuitive connection with the landscape. The slopes of the terrain as spaces for sliding and climbing, creating an experience of dialogue with the topographic features of the park.

In the wetland area, the Ayni Trail, along with a riparian slope, borders the body of water and extends with a pier that allows direct contemplation of the wetland, protecting the ecosystem Where it is as important to be as it is to pass by.

Activity bands esc 1:500



Band 3 : Sensorial experiences

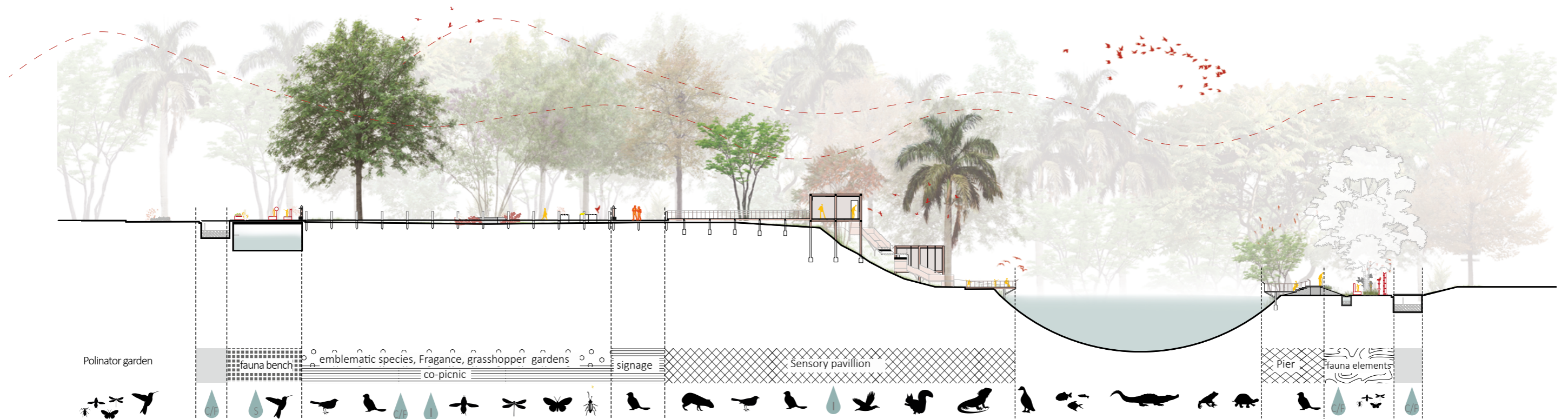
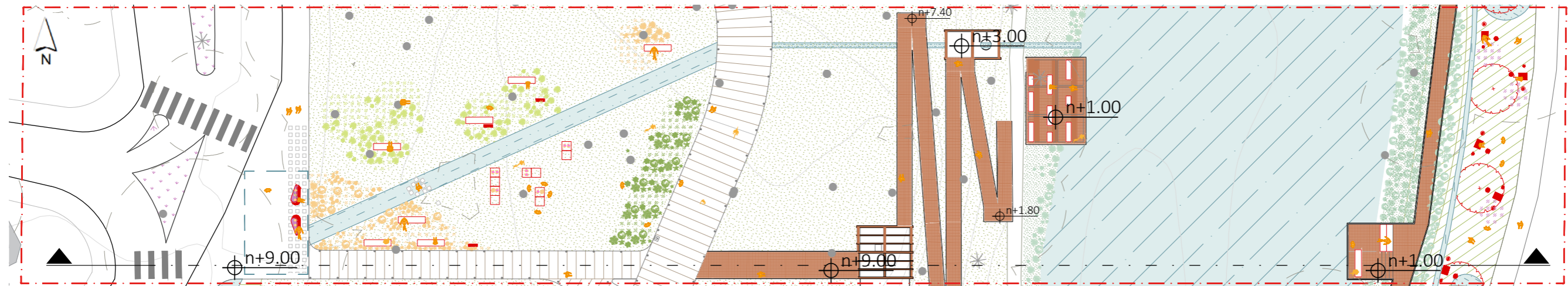


Figure 29: Sensorial experiences Activity band Plan and section 1:500 scale, produced by the author

Areas	Water managment	Fauna elements / bench	Sensory gardens	Contemplation	Recreational
Plaza	Collection and filtration	co-habit platform	Grasshopper garden	slopes	slides and clibers
Woods Path	storage	Colibri bench	Emblematic species garden	Sun lounger Amphiteater	
Activity band	irrigation	Fauna bench	Fragance garden	trees	swings and nets
Ayni Trail	flood scenery	birds place	Polinator garden	Tree pataform Hanging lunge	
Environmental regeneration zones		bugs hotel			
Sidewalk		Co-Picnic			
		Planted trees			

Spaces to enjoy through the five senses: gardens to sit or lie down, feel the textures of the vegetation and watch the grasshoppers that they attract. Or close your eyes and breathe in the natural scents of jasmine, lavender or limonero trees. Discover the local flora and its endemic species.

Having picnics at shared tables with vegetation and birds.

Ayni Trail, takes you to its pavilions where you can discover new details of the landscape, the resonating voices of the water and the breeze. And get close to the wetland siting at side of the riparian vegetation .

Sensory pavilion



Figure 30: Visualization of the Vision pavillion showing framed views of the lake, produced by the author



Figure 31: Visualization of the Vision pavillion showing framed views of the Forest and educating elements, produced by the author



Figure 32: Visualization of the Vision pavillion, showing how it integrates nature to teach, produced by the author



Figure 33: Visualization of the hearing pavillion, showing how it captures the sounds of rushing water and wind to stir people's emotions

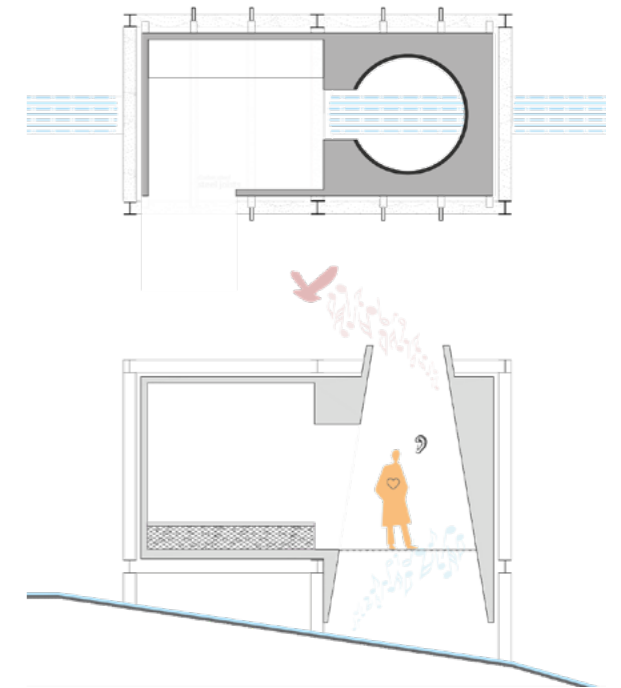


Figure 33b: drawing of the hearing pavillion, by the author



Figure 34: Visualization of the contact pier, showing how it lets nature grow to bring people closer to its textures

Activity bands esc 1:500



Band 4 : "Paisajando"

Is the word in spanish for looking at the landscape
Actually the correct word is Paisajeando but in cali we say it like that

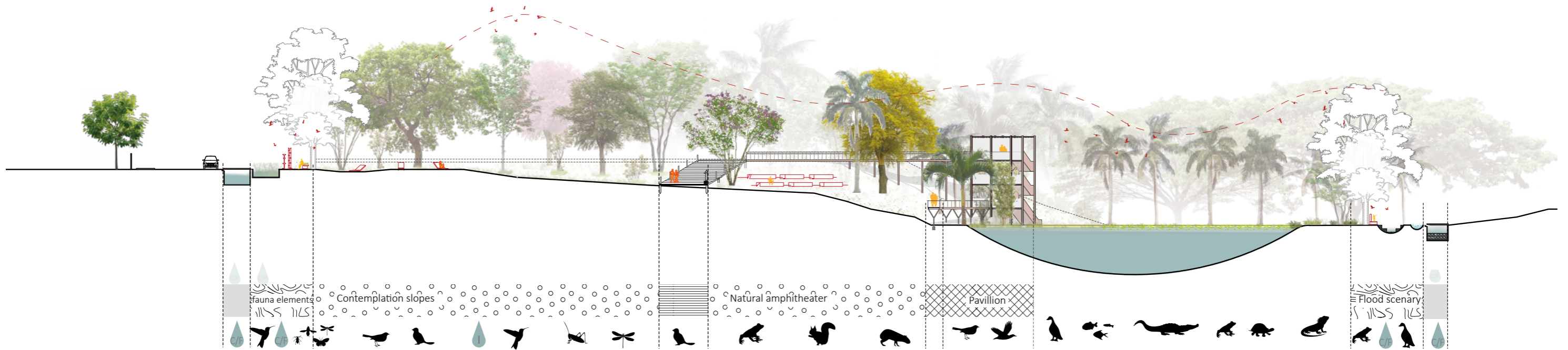
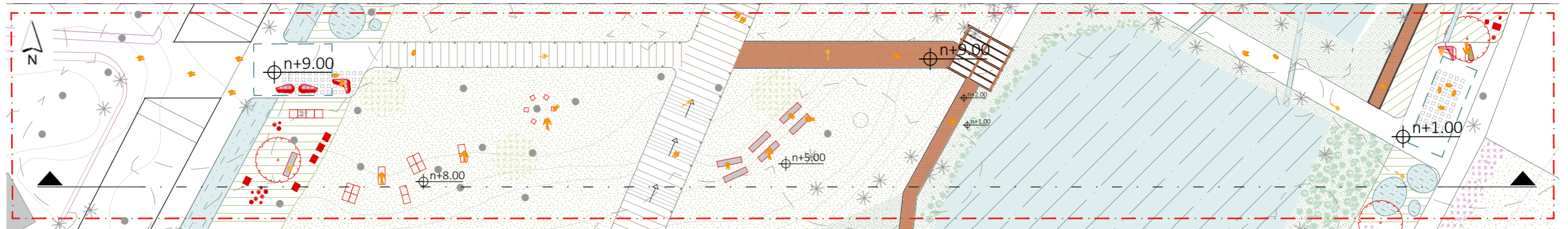


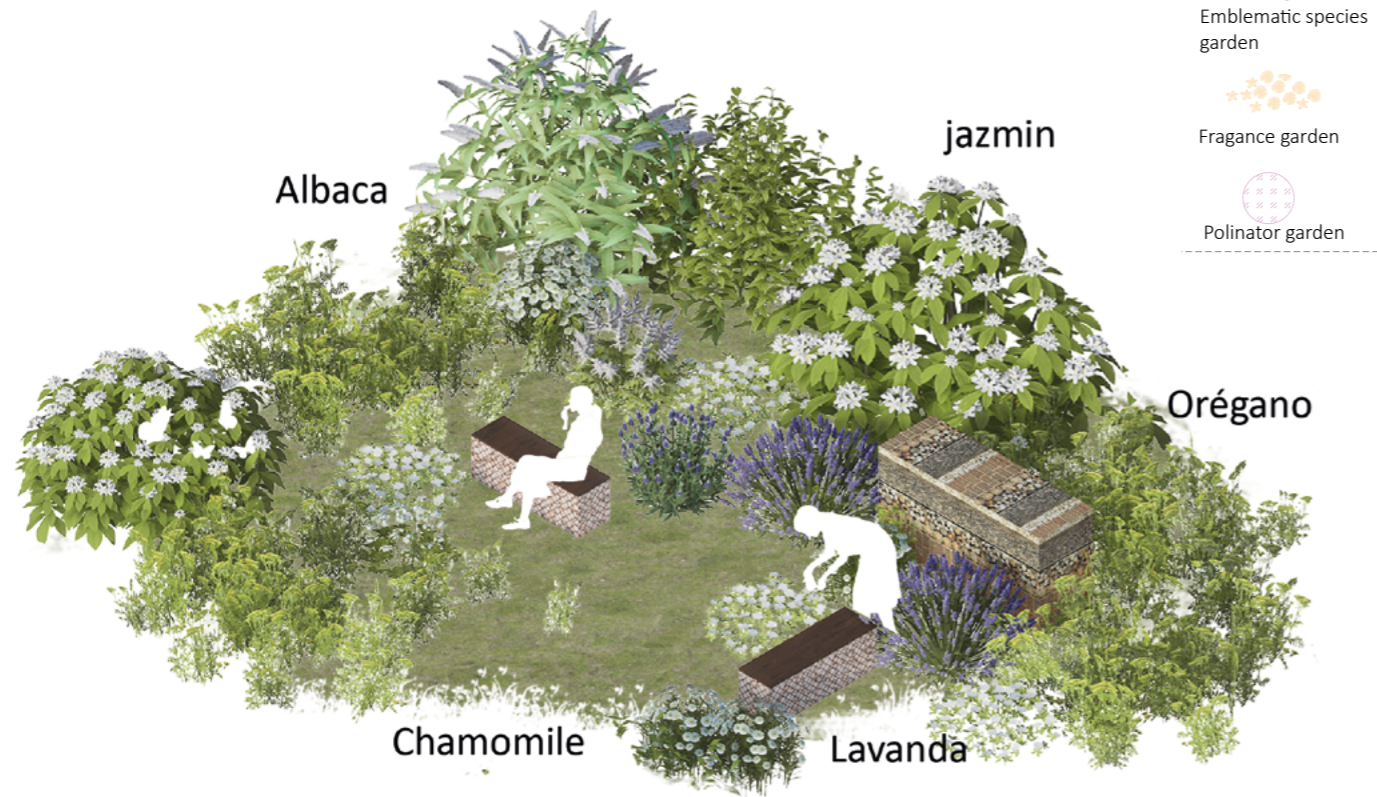
Figure 35: Paisajeando Activity band Plan and section 1:500 scale, produced by the author

Areas	Water management	Fauna elements / bench	Sensory gardens	Contemplation	Recreational
Plaza	Collection and filtration	co-habit platform	Grasshopper garden	slopes	slides and climbers
Woods Path	storage	Colibri bench	Emblematic species garden	Sun lounger Amphiteater	
Activity band	irrigation	Fauna bench	Fragrance garden	trees	
Ayni Trail	flood scenery	birds place	Polinator garden	Tree pataform Hanging lunge	swings and nets
Environmental regeneration zones		bugs hotel			
Sidewalk		Co-Picnic			
		Planted trees			

The landscape invites to interact with the landforms, with spaces to stay and contemplate, the natural slopes become terraces to sit or lie down, looking towards the second wetland or letting the sun's rays filter gently through the foliage, creating a changing play of light. The pavilion connects as an guiding element of vertical circulation, leading the visitor to the wetland, where they follow the path of new perspectives and learn through interpretive panels that narrate the history and ecological value of the site. The recovery area, with floodable scenery transforms with the rains and droughts showing a changing water cycles and landscape.

Scenarios of interaction exploration

Fragrance garden



- Sensory gardens
- Grasshopper garden
- Emblematic species garden
- Fragrance garden
- Polinator garden

Grasshopper garden



Figure 36: Visualization of the sensory gardens, by the author



Anphiteater

Contemplation		Recreational
slopes		
Sun lounger	Anphiteater	slides and clibers
trees		
Tree pataform	Hanging lunge	swings and nets

Sun Lunger



Figure 38: Visualization of the las activities in the slopes, by the author



Figure 37: Visualization of the las activities in the trees, by the author

Development of the tranches

in relation to cultural shift

The park is divided into 3 phases, according to the characteristics of its surrounding context, the relationship with user types -from occasional visitors or nearby resident community- and the level of interaction with the environment.



Figure 39: Thanches in time, by the author

Phase 1: being related to the commercial axis of Carrera 105 and being the first image from 13th Street, the main access road to the entire city. It will be associated with floating population users such as visitors, who go to restaurants or businesses in the sector, those who work in the area, or simply passing by car. Is therefore a meeting point between the park and the city, with activities designed to attract and familiarize visitors with the natural environment.

Phase 2: related to residential units, the community, and families. It is an area oriented to shared use spaces that integrate residential life with nature, learning activities and coexistence with and in a natural environment.

Phase 3: is the area that is currently not accessible to people, where the church and the stream that feeds the wetland are located.

It maintains its preserved character, integrating and allowing access from controlled spots. It is a respectful intervention, which allows a botanical expedition through the forest. Offering the opportunity to contemplate the natural life.

Tranches and time: reconnecting with nature is a path that requires time, learning and transformation, both personal and collective.

Biocentric shift

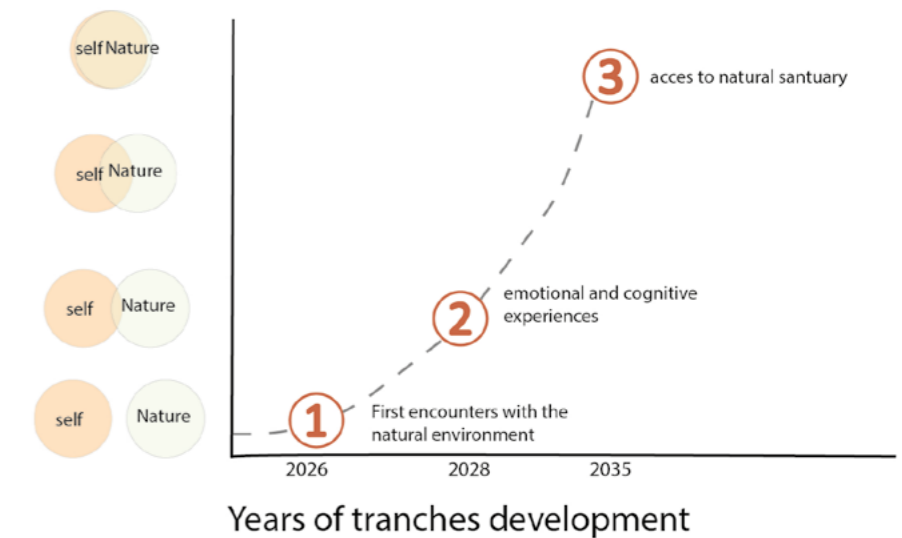


Figure 40: Thanches in time diagram, by the author

The design of the project is meant to be a progressive process where the phases are implemented and made available to the public in a progressive way. As people interact with the initial spaces, they will develop a biocentric culture and heal their disconnection with nature.

The experiences designed in the first phases have the purpose of educating, sensitizing and transforming the perception and behavior of the users. Thus the last stage is "unlocked" when people have reached an appropriate mentality to inhabit it respectfully and in harmony with nature.

Conclusions

This thesis was born out of the experience of how natural spaces are enjoyed here in Europe, while in Cali, the natural richness that surrounds us is not experienced or appreciated as it could be. From this arose the motivation to understand this phenomenon of disconnection and thus seek a possible solution through landscape design. La Babilla Park, located in Comuna 22 of Cali, Colombia, exemplifies the city's extraordinary biodiversity but remains underutilized. This context frames La Babilla as a symbol of ecological potential and a focal point for addressing the disconnection between residents and their environment.

Since the disconnection between inhabitants and the natural environment is a complex and multifaceted problem, rooted in historical, cultural and social structures. The methodology adopted was key to building a comprehensive view of the problem and providing a solid basis for developing solutions.

This methodology relates ecological, urban and historical analyses with a theoretical review and exploration of intangible factors. The combination of multi-scale site-specific and ecological analyses and the theoretical on the dimensions of disconnection and biocentric theories review was fundamental to addressing the complexity of the problem.

The multiscale ecological and urban analysis provided a tangible understanding of the park's physical, urban, and environmental dynamics, identifying key factors that highlight both the ecological importance of La Babilla Park and the dynamics that perpetuate human-nature disconnection:

At the regional level, Cali was found to play a key role as a focal point within a broader ecological network, connecting the Farallones de Cali and the Cauca River through environmental corridors that cross the city. However, this responsibility implies ensuring that these connections are not fragmented or degraded, a task that requires both effective enforcement of the existing legal framework and a change in public perception of the natural environment.

At the urban level, the analysis of Comuna 22 pointed out that, although the area has privileged environmental conditions, its disorganized development prioritized road infrastructure and private spaces over a network of accessible public spaces. This dynamic not only fragments natural ecosystems but also limits community interactions. Despite these tensions, La Babilla Park has the potential to reach beyond its immediate surroundings by becoming a focal point that attracts and connects diverse users.

At the local scale, the characteristics of the park and its relationship with the urban environment were assessed. Urban pressures were identified, such as the occupation of catch basins and protection areas, pollution, and the lack of pedestrian infrastructure, which reinforces fragmentation and complicates community appropriation of the space. These dynamics reflect a historical development that prioritized private and semi-public environments, neglecting the creation of a coherent network of integrated public spaces.

These findings grounded the project in measurable, actionable realities. By addressing

physical barriers and ecological degradation in the design of the masterplan. Through strategies that integrate the anthropic and natural:

The reforestation of buffer zones and the implementation of SuDS to mitigate contamination and maintain ecological functions. Adaptation of sidewalks and pedestrian areas (Missing sidewalks, existing ones are improved, raised crosswalks and shared streets) to create desirable conditions to encourage slow mobility, enhance connectivity and accessibility. Alongside the creation of pollinator gardens to sustain plant diversity and create a distinctive landscape, guiding pedestrians, fauna, and flora to the park. Together, these measures establish a network of green and public spaces that integrate La Babilla Park with its surrounding community.

While these analyses laid the groundwork for designing a physical intervention to address ecological and urban barriers, the research revealed that the underlying cultural problem is rooted in historical values and social practices that structure our perception of nature.

This problem has its roots in colonization, which imposed Western values that marginalized local knowledge and promoted an anthropocentric and exploitative relationship with nature. This adoption of a Westernized concept of development led to an incongruence between urban dynamics and the potential of the territory, perpetuating the disconnection and our capacity to conceive alternatives. Addressing this disconnection requires a new perspective that embraces alternative development paths.

The exploration of a model of coexistence and alternative biocentric perspectives, such as the principles of Good Living and the teachings of *sentipensar*, provided a framework of values to reimagine the relationship between the inhabitants and their natural environment. This perspective shaped every decision of the project, where humans, animals and vegetation were considered equally integral components of the intervention, ensuring that all decisions were aligned with the principles of coexistence and mutual benefit.

Under this framework, the causes of disconnection at the individual and social level identified in the theoretical review were addressed, which allowed us to explore the intangible factors of this problem. This disconnection is not static, but manifests itself through various individual dimensions -cognitive, emotional and philosophical- and is also shaped by collective values and social practices, which implies that these values can evolve.

These dimensions informed the main design goals: educating about natural processes, stirring emotions to cultivate empathy and gratitude, and fostering opportunities to integrate nature into everyday urban life.

The result is a park that, with a non-hierarchical approach, respectful interventions and cohabitative elements, enhances habitats and ecological functions while fostering a deeper understanding of humans as integral parts of the ecosystem. By addressing the problem through protection and integration, the park creates a space where biodiversity is preserved, community life is strengthened, and perceptions of nature are transformed.

Benefits of the Proposal

This proposal brings benefits to the community thanks to its new approach, which breaks with traditional dynamics that perpetuate the disconnection with the territory. Through functional and social components, it not only protects urban ecosystems, providing habitats for local fauna and strengthening biodiversity, but also actively integrates them into community life, transforming perceptions and attitudes towards a more conscious and interdependent model.

The design is conceived as a catalyst for cultural change, fostering a biocentric revolution that allows inhabitants to feel part of their territory. It redefines the relationship with the landscape, inviting to experience, learn and reconnect through the senses. By enhancing the value of local ecosystems, the park becomes a space where users interact with nature in a contemplative, playful and educational way, blurring the boundaries between the built and the natural.

Main Impacts:

- **Revitalization of Public Space:** The design reclaims streets and public spaces back to the pedestrian, reducing the perception of insecurity by encouraging their use and appropriation. It creates an accessible and attractive space for community activities, overcoming dependence on private environments and encouraging social interaction.
- **Strengthening Local Identity:** Taking advantage of the attractiveness of the commercial area to draw attention to the natural value of the surrounding area, transforming the park into a unique destination that combines commerce, nature and community.
- **Reconstruction of the Social Fabric:** Promotes a new way of inhabiting the city, facilitating the connection between citizens and their environment through sensory and experiential experiences. It fosters a sense of ownership and community pride, reinforcing Cali's cultural and social fabric.
- **Environmental Resilience:** Integrates sustainable strategies such as pollinator gardens and Sustainable Urban Drainage Systems (SuDS), ensuring the conservation of biodiversity and the ecological functionality of the park. It provides a safe habitat for local wildlife while preserving urban ecosystem connections.

This park is a stage to inspire a new way of relating to the city and to nature. By promoting community ownership and reconfiguring the relationship between inhabitants and the natural environment, the proposal contributes to restoring vitality and a sense of belonging to Cali's public spaces, making the city an example of successful coexistence between the human and the natural.

Suggestions for Future Research and Reflections

Addressing the human-nature disconnect requires not only the protection of ecosystems, but also their active integration into community life, inspiring a cultural shift towards interdependence and environmental stewardship. It should be clarified that this project requires an interdisciplinary approach to ensure its successful implementation. The participation of biologists is essential to ensure the well-being of the ecosystem, while sociologists and anthropologists provide tools and strategies to effectively connect with people and encourage their active participation. While environmental management efforts to protect ecosystems are valuable, continuing to view humans as a threat perpetuates disconnection and increases the risk of damage to these spaces. Instead, it is imperative to integrate the community into the management and conservation of these environments.

Community participation should be a central axis of the project. Workshops involving the inhabitants and educational activities in educational institutions could play a crucial role, raising awareness among the new generations and fostering a sense of belonging to the park. Likewise, integrating local economic actors, such as businesses in the sector, would not only benefit the park's development, but would also bring them direct advantages by increasing the vitality and attractiveness of the area.

Finally, the implementation of project phases should be carried out in a controlled manner, with constant monitoring of social and ecological impacts to ensure long-term sustainability. Future research should explore innovative frameworks for integrating human-nature relationships in protected area management, emphasizing coexistence rather than isolation. In addition, expanding biocentric principles to other urban infrastructures and fostering educational initiatives can further strengthen the cultural transformation necessary for sustainable coexistence.

In essence, this thesis demonstrates that addressing the human-nature disconnect through landscape architecture is feasible by integrating ecological preservation with community engagement and cultural transformation. La Babilla Park stands as a demonstration of the potential of interdisciplinary collaboration and biocentric design to create sustainable urban ecosystems that honor and integrate Cali's natural richness.

References

Alcaldía de Santiago de Cali & Universidad del Valle, Grupo de Investigación en Tránsito, Transporte y Vías (GITTV). (2017). Análisis integral de la red de infraestructura vial para la movilidad motorizada en el municipio de Santiago de Cali: Contrato interadministrativo 4132.0.27.1.03. Santiago de Cali, Colombia. Retrieved from https://idesc.cali.gov.co/download/movilidad/documento_tecnico_comportamiento_vial.pdf

Alcaldía de Santiago de Cali. (2014). Plan de Ordenamiento Territorial (POT). Alcaldía de Santiago de Cali. Retrieved May 17, 2024, from https://www.cali.gov.co/planeacion/publicaciones/106497/pot_2014_idesc/

Alcaldía de Santiago de Cali. (2018). Presentación diagnóstico territorial UPU 14 - Pance. Santiago de Cali, Colombia. Retrieved from <https://www.cali.gov.co/documentos/2517/upu-14/>

Alcaldía de Santiago de Cali. (2019). Encuestas electrónicas: Diagnóstico de usos de suelo en UPU 14 - Pance. Santiago de Cali, Colombia. Retrieved from <https://www.cali.gov.co/documentos/3083/01-upu-14-2019/>

Alcaldía de Santiago de Cali. (2023). Cali en Cifras 2023. Departamento Administrativo de Planeación Municipal. Retrieved from <https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/proyecciones-de-poblacion>

Alcaldía de Santiago de Cali. (2024). Cali se destaca en el índice de biodiversidad urbana o índice de Singapur con importantes avances en sostenibilidad. DAGMA. Retrieved January 17, 2025, from <https://www.cali.gov.co/dagma/publicaciones/183984/cali-se-destaca-en-el-indice-de-biodiversidad-urbana-o-indice-de-singapur-con-importantes-avances-en-sostenibilidad/>

Alcaldía de Santiago de Cali. (n.d.). Geografía de Cali. Retrieved December 10, 2024, from https://www.cali.gov.co/informatica/publicaciones/106104/geografia_de_cali/

Alcaldía del Municipio de Santiago de Cali, Departamento Administrativo de Gestión del Medio Ambiente (DAGMA), & Corporación Autónoma Regional del Valle del Cauca (CVC). (2019). Humedales urbanos de Santiago de Cali. Santiago de Cali, Colombia. Retrieved January 4, 2025, from <https://www.cali.gov.co/dagma/publicaciones/138055/humedales-de-santiago-de-cali/>

ArchDaily. (2015). Parque Martin Luther King / Jacqueline Osty & Associés. ArchDaily. Retrieved from <https://www.archdaily.cl/cl/767976/parque-martin-luther>

Armenteras, D., & Vargas, O. (2016). Patrones del paisaje y escenarios de restauración: acercando escalas. *Acta Biológica Colombiana*, 21(1, Supl), S229–S239. Retrieved from <https://www.redalyc.org/pdf/3190/319049262003.pdf>

Asamblea Nacional Constituyente. (1991). Constitución Política de Colombia. Retrieved from <https://www.corteconstitucional.gov.co/lacorte/constitucion-politica-de-colombia/>

Beery, T., Olafsson, A. S., Gentin, S., Maurer, M., Stålhammar, S., Albert, C., Bieling, C., Buijs, A., Fagerholm, N., García-Martín, M., Plieninger, T., & Raymond, C. M. (2023). Disconnection from nature: Expanding our understanding of human-nature relations. *People and Nature*, 5(3), 470–488. <https://doi.org/10.1002/pan3.10451>

Carretero, A. B., & Sáez Baeza, C. (2017). Latin American critical epistemologies toward a biocentric turn in communication for social change: Communication from a good living perspective. *Latin American Research Review*, 52(3), 431–445. <https://doi.org/10.25222/larr.59>

Congreso de Colombia. (1993). Ley 99 de 1993: Por medio de la cual se crea el Ministerio del Medio Ambiente y se organiza el Sistema Nacional Ambiental (SINA). Retrieved from [https://www.minambiente.gov.co/wp-content/up-](https://www.minambiente.gov.co/wp-content/uploads/2021/08/ley-99-1993.pdf)

[loads/2021/08/ley-99-1993.pdf](https://www.minambiente.gov.co/wp-content/uploads/2021/08/ley-99-1993.pdf)

Congreso de Colombia. (1993). Ley 99 de 1993: Por medio de la cual se crea el Ministerio del Medio Ambiente y se organiza el Sistema Nacional Ambiental (SINA). Retrieved from <https://www.minambiente.gov.co/wp-content/uploads/2021/08/ley-99-1993.pdf>

Congreso de Colombia. (1994). Ley 165 de 1994: Por medio de la cual se aprueba la adhesión al Convenio sobre Diversidad Biológica. Retrieved from <https://www.cancilleria.gov.co/convenio-sobre-diversidad-biologica-cbd>

Congreso de Colombia. (1997). Ley 357 de 1997: Por medio de la cual se aprueba la "Convención Relativa a los Humedales de Importancia Internacional Especialmente como Hábitat de Aves Acuáticas". Recuperado de https://www.cancilleria.gov.co/sites/default/files/Normograma/docs/pdf/ley_0357_1997.pdf

Congreso de Colombia. (1997). Ley 388 de 1997: Ley de Ordenamiento Territorial. Recuperado de https://www.cancilleria.gov.co/sites/default/files/Normograma/docs/pdf/ley_0388_1997.pdf

Congreso de Colombia. (1997). Ley 388 de 1997: Ley de Ordenamiento Territorial. Retrieved from <https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=339>

Corporación Autónoma Regional del Valle del Cauca (CVC). (2014). Plan de Gestión Ambiental Regional - PGAR 2015-2036. Retrieved May 2, 2024, from https://www.cvc.gov.co/sites/default/files/Planes_y_Programas/Planes_de_Gestion_Ambiental_Regional/Plan-de-Gestion-Ambiental-Regional-2015-2036-descarga-liviana.pdf

Corporación Autónoma Regional del Valle del Cauca (CVC). (2015). Instructivo: Caracterización de Ecosistemas del Valle del Cauca (Código: IN.0130.06, Versión: 01). Santiago de Cali, Colombia: CVC. Retrieved May 24, 2024, from https://www.cvc.gov.co/sites/default/files/Sistema_Gestion_de_Calidad/Procesos%20y%20procedimientos%20Vigente/0130_Caracterizacion%20y%20Balance%20de%20los%20Recursos%20Naturales%20y%20sus%20Actores%20Sociales%20Relevantes/Instructivos/IN.0130.06%20Caracterizacion%20ecosistema%20VC.pdf

Corporación Autónoma Regional del Valle del Cauca (CVC). (2023). Caracterización y Balance de los Recursos Naturales y sus Actores Sociales Relevantes. Retrieved from <https://www.cvc.gov.co/sites/default/files/2023-12/CP.0130%20V02%2020231130%20Caracterizaci%C3%B3n%20y%20Balance%20de%20los%20Recursos%20Naturales%20y%20sus%20actores%20sociales%20relevantes.pdf>

De la Cadena, M. (2015). *Earth beings: Ecologies of practice across Andean worlds*. Duke University Press. <https://doi.org/10.1215/9780822375265>

De la Torre, S., & Moraes, M. C. (2005). *Sentipensar: Fundamentos y estrategias para reencantar la educación*. Editorial Aljibe. Retrieved from <https://www.edicionesaljibe.com/libreria-online/Catalog/show/sentipensar-fundamentos-y-estrategias-para-reencantar-la-educacion-147>

Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). (2012). Plan de Manejo Ambiental Humedal La Babilla – Zanjón del Burro. Santiago de Cali, Colombia: Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). Retrieved August 23, 2024, from <https://www.cali.gov.co/dagma/publicaciones/138918/humedal-la-babilla-cali/>

Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). (2016). Plan de Restauración Ecológica del Municipio de Santiago de Cali, 2016–2036. Retrieved from <https://www.cali.gov.co/documentos/7222/ecosistemas-y-conectividad/>

Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). (2019). Resolución 1530 de 2019: Plan de Silvicultura Urbana para la Renaturalización Inducida. Retrieved from <https://www.cali.gov.co/loader.php?idFile=43306&l->

Funcion=descargar&IServicio=Tools2&ITipo=descargas

Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). (2007). Ríos: Objetivos de calidad [PDF document]. Santiago de Cali, Colombia. Retrieved April 11, 2024, from <https://www.cali.gov.co/publico2/documentos/dagma/objetivosdecalidad.pdf>

Departamento Administrativo de Gestión del Medio Ambiente (DAGMA). (2019). Guía de humedales urbanos de Santiago de Cali. Santiago de Cali, Colombia: DAGMA. Retrieved September 12, 2024, from <https://www.cali.gov.co/dagma/publicaciones/138055/humedales-de-santiago-de-cali/>

Departamento Administrativo de Planeación Municipal (DAPM). (2015). Encuesta de Movilidad 2015. Santiago de Cali, Colombia. Retrieved from <https://metrocali.gov.co/wp/wp-content/uploads/2019/02/Encuesta-de-movilidad-2015.pdf>

Departamento Administrativo de Planeación Municipal de Santiago de Cali. (2019). A Cali la atraviesan 7 ríos, ¿conoces cuáles son? Retrieved November 9, 2024, from <https://www.cali.gov.co/gobierno/publicaciones/150131/a-cali-la-atraviesan-7-rios-conoces-cuales-son/>

Escobar, A. (2014). Sentipensar con la tierra: Nuevas lecturas sobre desarrollo, territorio y diferencia. Medellín, Colombia: Universidad Autónoma Latinoamericana (UNAUCLA). Retrieved from https://biblioteca.clacso.edu.ar/Colombia/escpos-unaula/20170802050253/pdf_460.pdf

Fals Borda, O. (2009). Una sociología sentipensante para América Latina. En V. M. Moncayo (Comp.), *Antología de Orlando Fals Borda* (pp. 1-492). Siglo del Hombre Editores; CLACSO. Recuperado de <https://bibliotecavirtual.clacso.org.ar/ar/libros/coedicion/fborda/fborda.pdf>

Favre, D. (n.d.). Parc Martin Luther King – Clichy-Batignolles. In Didier Favre Projects. Retrieved from <https://didierfavre.com/ParcBatignolles03.php>

Feliz, N. (2020). Bug Filter. Retrieved from <https://www.nereafeliz.com/bug-filter>

Feliz, N., & Hwang, J. (n.d.). Multispecies Lounge. In Double Happiness Studio Projects. Retrieved from <https://www.doublehappiness.studio/multispecies-lounge>

Harvey, D. (2008). The Right to the City. In N. Brenner, P. Marcuse, & M. Mayer (Eds.), *Cities for People, Not for Profit: Critical Urban Theory and the Right to the City*. Routledge. Retrieved from <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315748504-46/right-city-david-harvey?context=ubx&refId=a9d1da31-a244-4077-bf6a-1026ad2e3acd>

Jóźwik, R. (2020). Rainwater management solutions and their impact on shaping inner city areas undergoing transformation (Case study of the ZAC Clichy-Batignolles area in Paris). *Journal of Ecological Engineering*, 21(3), 209–219. <https://doi.org/10.12911/22998993/118277>

Keogh, M. J. (2010). *Liberating the Power of Choice: Healing the Disconnection Between Humans and Nature*. Self-published.

Kopnina, H., Washington, H., Taylor, B., & Piccolo, J. J. (2018). Anthropocentrism: More than just a misunderstood problem. *Journal of Agricultural and Environmental Ethics*, 31(1), 109–127. <https://doi.org/10.1007/s10806-018-9711-1>

Lefebvre, H. (1996). *Writings on Cities*. Blackwell. Retrieved from https://monoskop.org/images/4/40/Lefebvre_Henri_Writings_on_Cities.pdf

Marques, J. C. (2014). Improving change management: How communication nature influences resistance to change. *Journal of Organizational Change Management*, 27(4), 561–573. <https://doi.org/10.1108/JOCM-05-2014-0105>

Mejía, M. A., & Amaya-Espinel, J. D. (Eds.). (2022). *BiodiverCities by 2030: Transforming cities with biodiversity*. Bogotá, Colombia: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. Retrieved from <https://proyectos.humboldt.org.co/biodivercitiesby2030/book.html>

Ministerio de Ambiente, Vivienda y Desarrollo Territorial. (2002). Política Nacional de Humedales Interiores de Colombia. Retrieved from <https://www.minambiente.gov.co/wp-content/uploads/2021/10/Poli%CC%81tica-Nacional-de-Humedales.pdf>

Ministerio de Ambiente, Vivienda y Desarrollo Territorial. (2004). Resolución 157 de 2004: Uso y Conservación de Humedales. Retrieved from <https://www.minambiente.gov.co/wp-content/uploads/2021/08/resolucion-0157-de-2004.pdf>

Mitsch, W. J., & Gosselink, J. G. (2021). *Wetlands* (6th ed.). Wiley. Retrieved from https://media.wiley.com/product_data/excerpt/34/11198269/1119826934-13.pdf

Pontificia Universidad Javeriana. (2008). Caracterización socio-espacial y demográfica de la Comuna 22 de Santiago de Cali. Santiago de Cali, Colombia. Retrieved from https://repository.icesi.edu.co/biblioteca_digital/bitstream/10906/65188/1/comuna_veintidos.pdf

Ramsar Convention Secretariat. (2013). *The Ramsar Convention Manual: A guide to the Convention on Wetlands (Ramsar, Iran, 1971)* (6th ed.). Ramsar Convention Secretariat, Gland, Switzerland. Retrieved from <https://www.ramsar.org/sites/default/files/documents/library/manual6-2013-e.pdf>

República de Colombia. (1984). Decreto 1594 de 1984: Reglamentación sobre el uso y aprovechamiento de aguas en Colombia. *Diario Oficial*. Retrieved from https://www.minambiente.gov.co/wp-content/uploads/2021/08/Decreto_1594_de_1984.pdf

República de Colombia. (2016). Decreto 516 de 2016: Por el cual se determinan las funciones de las Autoridades Ambientales Urbanas en Colombia. Retrieved from <https://www.cali.gov.co/documentos/6528/decreto-0516-de-2016/>

Secretaría de Desarrollo Económico de Cali. (2022). Diagnóstico socioeconómico de la Comuna 15. Santiago de Cali, Colombia. Retrieved from <https://www.cali.gov.co/desarrolloeconomico/loader.php?IServicio=Tools2&ITipo=descargas&IFuncion=descargar&idFile=75243>

Secretariat of the Convention on Biological Diversity. (1992). *Convention on Biological Diversity*. United Nations. Retrieved from <https://www.cbd.int/doc/legal/cbd-en.pdf>

Studio Ossidiana. (n.d.). Platform for Humans and Birds. Retrieved from <https://www.studio-ossidiana.com/platform-for-humans-and-birds-la-biennale-di-venezia>

Studio Ossidiana. (n.d.). The Birds' Palace / Vondelpark. Retrieved from <https://www.studio-ossidiana.com/the-birds-palace>

Studio Ossidiana. (n.d.). The Garden Table / Chicago Architecture Biennial. Retrieved from <https://www.studio-ossidiana.com/the-garden-table>

Tortosa Blasco, J. M. (2009). El futuro del maldesarrollo. *OBETS: Revista de Ciencias Sociales*, 4, 67–83. <https://doi.org/10.14198/OBETS2009.4.07>

UN-Habitat. (2012). Estado de las ciudades del mundo 2010/2011: Uniendo la división urbana. UN-Habitat. Retrieved from <https://unhabitat.org/sites/default/files/download-manager-files/State%20of%20the%20World%27s%20Cities%2020102011%20-%20Cities%20for%20All%20Bridging%20the%20Urban%20Divide.pdf>

Varanasi, R. (2020). Does empathy make us less maximizers? Empirical proof against rational choice. *Equidad y Desarrollo*, 36, 133–150. <https://doi.org/10.19052/eq.vol1.iss36.6>

Watts, V. (2013). Indigenous place-thought and agency amongst humans and non-humans: (First Woman and Sky Woman go on a European world tour!). *Decolonization: Indigeneity, Education & Society*, 2(1), 20–40. <https://doi.org/10.18357/decolonization21201312330>

apparently, the Tesi di laurea 293944 shares the same references/plans/official documents, these were taken from public sources such as the annexes and cartography of the POT of Cali.

The help of artificial intelligence was used for the drafting of some texts, in order to improve the coherence and fluency of the text or the translation into English.

Figures and annexes

Figures Chapter 1

Figure 0: wetland biodiversity taken from Humedales urbanos de Santiago de Cali. Alcaldía del municipio de Santiago de Cali, Departamento Administrativo de Gestión del Medio Ambiente -DAGMA- y Corporación Autónoma Regional del Valle del Cauca (CVC). Santiago de Cali, 24 pp.

Figure 1: structure and methodology diagram, by the author

Figure 2: Location elaborated by the author based on Sistema de referencia geocentricopara las americas (MAGNA-SIR-GAS)

Figure 3: Valle del cauca ecosistems based on GeoPortal de la CVC

Figure 4: diagram Biomes of Valle del Cauca taken from DESCUBRIENDO NUESTRO TERRITORIO. SÍNTESIS AMBIENTAL DEL VALLE DEL CAUCA (n.d)

Figure 5: orography of Valle del cauca, in red the Farallone de cali national natural park.

elaborated by the author based on Sistema de referencia geocentricopara las americas (MAGNA-SIRGAS)

Figure 6: Rivers in Cali taken from Archivo:Rios de Cali.Png. In Wikipedia. https://commons.wikimedia.org/wiki/File:Rios_de_Cali.png

Figure 7: Pance rive taken from <https://locationcolombia.com/wp-content/uploads/2022/03/juanarias-cfc-90-cali.jpeg>

Figure8: Cali river taken from: <https://www.facebook.com/vypconectamos/>

Figure 10: Humedal Panamerica,Cali (n.d.). Fotografía publicada en Facebook Recuperado de [https://www.facebook.com/HumedalPanamericanoCali/?locale=es_LA].

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