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Rethinking Regio Parco

Urban Fabric and Riverfront Regeneration

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Declarations

We, Lakshya Bhagat (s301851) and Shancy Anthikat Shaji (s295779), enrolled in 2021, hereby declare that the aforementioned Thesis Dissertation for the award of the degree of Master of Science in Architecture for Sustainability, from Politecnico di Torino, is a record of original and bona fide work carried out by us.

The matter embodied in this Dissertation has not been submitted to any other University or Institute for the award of any degree or diploma.

Signed by,

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Abbreviations and Terminology

AiPO : Agenzia Interregionale Per Il Fiume Po

FIMIT : Fabbrica Italiana Materiali Isolanti Termoacustici

G.T.T : Gruppo Torinese Trasporti

IoT : Internet of Things

KPI : Key Performance Indicator

Polito : Politecnico di Torino

PPP : Public-Private Partnership

R.E.A.M.: Real Estate Asset Management

SDG : Sustainable Development Goals

TOD : Transit Oriented Development

Terminology

Domains: For the sake of the following research, infrastructures within cities shall be perceived as domains and they will be defined as 'The area comprising of several entities. For Example: The Urban 'Domain' comprises of the Built Infrastructure (Buildings, Plazas, Roads, etc.) and the Natural 'Domain' comprises of the Natural Infrastructure (Green Spaces and Water Bodies)'.

Abstract

Revitalization of Urban Fabric, Natural Habitat, and the Resources directly associated with the space, have always been at the forefront of Sustainability and Development, as these entities are responsible for providing quality, perseverance, and longevity to the space and life altogether.

The following thesis documents an intervention proposal for an urban pocket of Torino, located in the Regio Parco Area in accordance with the real-time scenario and its attributes. These aforementioned attributes shall include rethinking certain aspects of the built environment, the existing natural infrastructure, and the development of the Riverfront along River Po, in particular the underutilized spaces behind the Former Tobacco Factory.

Moreover, special consideration has been taken while fabricating this study and it has been made sure that it encompasses all the aspects of revitalization, regrowth, and regeneration. To ascertain the study, strong research is backing up the project, along with an extensive literature study and feedback from the people of Turin.

The said proposal shall pave the way to a new identity for the area and mend certain urban and natural elements that have been dormant in the region. It shall also help in revitalizing the built settlement and the banks of River Po, and add an essence to these spaces, ultimately enhancing the quality of the cityscape in Torino. Conclusively, the study shall adhere to global standards of Innovation within Infrastructures and Sustainable Living within Communities and aspire to be a model for Good Health and Well-being. The methodology aims to make the approach coherent and ecologically responsive, and in addition, apply to various global real-time scenarios[1].

[1] Keywords: Urban Revitalization, Urban Intervention, Urban Fabric, Riverfront Development, Natural Resources, Sustainability (SDGs), Coherence.

Introduction

A Metropolitan in Northern Italy, Torino stands as a testament to its rich history, culture, urban development, and innovation. Among the many attributes of Torino, lies an Urban Pocket with potential for regeneration – Regio Parco Area.

For years, the area has been considered the industrial zone of Torino, along with the banks of river Po, providing an identity and fostering a sense of belonging within the Torinese people. However, in recent years, the once vibrant area has now faded into the background, with neglect in the upkeep of the spaces, as urban settlements have continued to grow. The same urban settlements in the vicinity include the famous Regio Parco Area, the northmost Urban Cluster in the Torino Metropolitan Region. Once an Industrial Powerhouse, that stood through the wars, a self-sufficient space that used to fuel the city's economy and provide the residents with livelihood has seen deterioration in the last 100 years.
However, both the chosen entities poise room for transformation, renewal, and reuse, as both the region (Regio Parco) and the Riverfront (River Po) go hand in hand for the chosen context as they bind with each other and the urban landscape altogether.

It is within this dynamic context, that we, as a group of 2, present a proposal that could enhance the relationship that the region and the river have with the people –
Rethinking Regio Parco (*Urban Fabric and Riverfront Regeneration*):
An Urban Revitalization and Riverfront Regeneration plan, that is devised to enrich the Urban Fabric of the Regio Parco and the River Po area, to commemorate the existing infrastructure and pave way for a new dynamic within the context

Regio Parco has a mix of Historic Buildings, a Former Tobacco Factory, a village-type settlement, a culmination of Green Spaces, etc. making it a micro-pocket of Turin's rich architectural and cultural heritage. With the abandoned factories, settlements, narrow residential streets, and green spaces, the cluster is a testament to how the city has evolved. With that in mind, Regio Parco has faced several challenges in recent years, including depopulation, neglect, and disinvestment (Angeli L., Castrovilli A., Seminara C., 1999).

In response to the aforementioned challenges, our proposal seeks out application of Regeneration and Adaptive Reuse – A strategy proven to breathe new life into underutilized spaces without hindering their historical or cultural significance. These interventions may encompass a wider space or could be limited to a secluded area within the space. The application of the aforementioned strategy plays a vital role in connecting spaces holistically, on multiple levels, and make provision for new functionalities that can adapt to the existing setting and also accommodate future needs. Similarly, reimagining newer purposes and functionalities that adhere to modern-day use, we aim to revitalize the existing infrastructure and devise a strategic plan for selected areas within Regio Parco while creating opportunities for social interaction and cultural enrichment.

Drawing inspiration from the city's past and future potential, our approach seeks to intervene within Regio Parco, with a transformation for the waterfront that is adjacent to the Po River and turn them both into a dynamic, yet inclusive urban asset, with their individual identities refined.

At the heart of our proposal, lies the principle approach - Regeneration can simply be understood as betterment of existing status - a philosophy that embraces the existing value of the entity (in this case, the space, the structures and the setting) and accommodates newer perspective for a new development by making room for new functions. Along the same lines, Torino’s waterfront is home to a wide collection of historical and industrial sites, each having its own story. From abandoned structures (Former FIMIT, Former Tobacco Factory) to neglected open (Green) spaces (Parco della Confluenza, Municipal Nursery), these entities stand as witnesses to the city’s historic, industrial and cultural legacy.

Yet, despite their significance, the majority of the entities within the Regio Parco pocket have fallen into despair, the once vibrant spaces have undergone mass neglect, thus calling for an intervention that would restore the space to its former glory.

Our proposal seeks to restore this dialogue by introducing newer prospects to these forgotten spaces through the means of regeneration. By repurposing these spaces for modern-day use, we aim to preserve Torino’s architectural and natural legacy while creating mixed-use vibrant spaces that celebrate the city.

At the heart of our proposal shall lie the fundamentals of Sustainability – Both environmental and Social. By prioritizing rejuvenation over removal, minimizing the negative impact on the environment can be guaranteed, thus allowing us to preserve valuable resources as a whole. Moreover, fostering new functions through a sense of ecological responsibility, community ownership and engagement will ensure social cohesion.

Contextually, putting 'rejuvenation' as the sole basis of our design would open up several ways and approaches to look at and intervene in Urban Cityscapes, and Natural-Ecological Infrastructures.

Envisioning a multi-faceted approach to intervene in Regio Parco with a focus on repurposing the spaces for a variety of different uses, the possibilities are endless. At the same time, our vision extends beyond the confines of Regio Parco. Also, it accumulates certain prospects along the riverbank of River Po, in accordance with the proposals established for either bank of the river. Here, as well, lies tremendous potential for rejuvenation and renewal. Treating the said entities as domains and tackling and envisioning prospects for each one of them separately would allow us to establish a seamless connection between the spaces and the people, allowing a subtle transformation into an Urban Asset.

Central to our belief, approach, and the concept of placemaking – we aim to create vibrant, human-centric spaces that reflect and wear the unique identity and character of the community. By prioritizing public-friendly spaces and design, and the surge in green infrastructure and amenities along the riverfront, we aim to create a welcoming environment for residents and visitors alike. From stepped plazas to promenades and restoration of wetlands, from outdoor eateries to passive-recreation spaces, our sole aim is to create a diverse array of experiences that caters to the needs of local people and visitors (Whyte, 1980, pp. 47-69).

To better understand the dynamics of the space, an attempt shall be made to distinguish between the several entities (such as the built and the unbuilt), characteristics of the spaces (such as functionality, openness and feasibility), and the narrative it has both on Macro and Micro levels.

Ultimately, putting the studies altogether would allow us to better understand the context and how a design intervention can be implied to generate better and thriving, urban and natural

conditions, providing a secular identity to all the mentioned domains and enhance the connection between the people and the habitat.
In the pages that follow, we shall outline our project specifics, the methodology, and our understanding of revitalization and how it can be applied in the context of Regio Parco and most importantly it would allow us to envision solutions globally as well.

We shall be detailing certain intervention strategies, their influence on the urban spaces and ecology, and how these strategies could reap long-term benefits for the residents and the region alike. We shall also be considering community engagement and the level to which our freedom can allow us to design guidelines and implementation strategies while offering a roadmap to transform Regio Parco and Riverfront of Po into a vibrant and sustainable urban asset that honours its past while welcoming the possibilities of the future.

Chapter 1 –
Theoretical Foundations

1.1. Infrastructures within Cities

Cities are composed of the Urban Fabric, The Natural Environment, and Socio-Cultural Dimensions. The perception of cities can be addressed through an intricate interplay of the aforementioned elements. Successful cities are often a result of a successful integration of the elements, and these cities have nurturing and sustainable environments. On a much smaller scale, cities are also perceived as a culmination of several urban spaces (or Urban Pockets) and neighbourhoods. As these neighbourhoods continue to evolve, there is a need for restoring balance between all the elements in order to foster cultural growth and diversity. In a rapidly developing world, cities that manage to successfully incorporate this balance, are the epicentres of human civilization and development (Lynch, 1960, pp. 1-13).

Similarly, as a centre of growth and development, Regio Parco is a neighbourhood that is also undergoing rapid development and evolution, with multiple proposals laid out for the existing infrastructure. Perception of such infrastructure is solely determined by the presence of the elements within the neighbourhood. Regio Parco is one such culmination of the built and the natural infrastructure, and possesses good potential for future expansion. To achieve a successful transition of a neighbourhood, it becomes crucial to understand the complex interplay that the elements have within themselves, the relations and the dialogues the spaces have with the people and, several factors that concern cultural and social growth.

A key element within the neighbourhood is the Urban Life, which influences the perception we have of cities. The urban life can be discerned as a collective of spatial functionalities, aesthetics and most importantly liveability. Well-designed neighbourhoods (Urban Micro-zones) are often laid out on the principles of accessibility and connectivity with provisions for longevity and sustainability, altogether aiding towards creating a coherent and pleasant environment. These urban micro-zones encompass streetscapes, mixed-use developments and ample of open spaces to make up the visual dimensions. The presence of natural elements such as greenery and vegetation often make the place more vibrant and ultimately, welcoming. Several Cities and Urban Spaces around the world have now chosen to opt for development models that prove resourceful for its people in the present and leaves room for future

development, without hindering its existence and without exploitation of resources, equally applicable to the urban and the natural infrastructures (Jacobs, 1961, pp. 144-178).

Moreover, cities are also a result of rich history and approaches that played a significant role in how they are perceived today. Lucrative Urban Spaces cherish the historical and cultural identities that shaped the perception of the space once, and also accommodate modern needs. Historical landmarks and zones are needed to be preserved in order to commemorate the neighbourhood's existence and character. Additionally, the development of successful urban modules takes into consideration these aspects and integrates them in the design. This approach is efficient as it does not hinder the existing identity of the space but instead enhances it and prepares it for the future to accommodate the constantly growing socio-cultural diversity.

In essence, Urban Design doesn't only work towards enhancing visual and functional aspects but also influences the quality of life within the spaces. As mentioned previously, cities that incorporate and manage sustainable urban design models successfully, excel in terms of the quality of life they offer and present themselves as progressive examples. These cities and particularly the urban clusters within the, attract people, residents and visitors alike. Sustainable urban developments include efficient transportation networks, accessibility and safety measures, elements that foster a sense of community and harmony.

As indicated before, the following thesis project is focusing on a neighbourhood, known as Regio Parco, located in the north of the Torino Metropolitan Area. It is a dynamic zone, that has a culmination of a rich history, social and cultural diversity and also has potential for enhancement, along with the upcoming proposals for the area. The neighbourhood underwent significant developmental changes throughout its industrial past, and presently it has a nice blend of residential and commercial hubs and a collection of open and green spaces. The area also shows promise for the development of a sustainable environment within the existing infrastructures which would make it a prospect of sustainable living in Torino.

On the other hand, the selected zone has great potential for urban and natural interventions. With adequate interventions and strategies that enhance the liveability, Regio Parco could also prove to be a model of urban sustainability and lifestyle on the global scale. These interventions shall be adapted within the existing built and unbuilt, open and natural infrastructures present

within the area, and the improvisations shall cater to the needs of the residents and the visitors alike (Alexander C., Ishikawa S. and Silversetein M., 1977, pp. 3-22).

1.1.1.) Historical Context and Urban Evolution in Regio Parco:

The selected site within Regio Parco has seen significant urban transformations in the last 100 years. The present abandoned buildings, warehouses and settlements have played a crucial role in demonstrating the areas historical and social past as these determined the economic development of the area during the 19th and the 20th Century. Similarly, as metropolis of Torino underwent development and transformation, Regio Parco also witnessed considerable urban regeneration. These regenerative measures included repurposing of the old abandoned buildings (The Former Tobacco Factory and the Former Spinning Mill), adaptive reuse strategies to amplify and enhance the quality of the spaces for the residents, ultimately appealing to the diverse demographical fabric of Regio Parco and Torino. Despite all the qualities of transformed Regio Parco, the area still has room for development and enhancement.

1.2. Synergy of Elements within the Infrastructures

As mentioned in the previous chapter, cities are complex entities with an intricate interplay of elements within the Urban and the Natural Infrastructures, which shall also be referred to as domains. The domain that binds the two together is the human domain, thus making it extremely important to understand the relation and the interaction these domains have with each other and the people, in order to develop new sustainable models.
The perception of these domains solely depends on their composition, the elements within the domains and the neighbourhood altogether.

1.2.1.) The Urban Infrastructure:

The urban infrastructure or 'Urban Domain' comprises of all the built spaces, that includes architecture, public spaces and urban environments that have been developed. The domain is perceived by the physical attributes and the functions it has – for example, residential and commercial buildings, open spaces, transit systems, etc. Efficient intervention within the urban domain facilitate accessibility, feasibility, functionality and aesthetic properties (Cervero, 2003, pp. 240-267).

Architecture and Infrastructure:

These includes buildings and avenues that define the area's physical attributes, its visual dimensions. These infrastructures are also comprised of historical landmarks and places of interests that provide significance to the area. Urban Intervention strategies for this sub-domain shall be catered towards enhancing the visual attributes along with the practicality of the spaces.

Public Spaces:

As the term suggests, public spaces are comprised of all the open spaces, parks, gardens, plazas and in particular, places with pedestrian accesses. These spaces offer opportunities for recreation, leisure, gatherings, cultural and social activities, etc. Effective intervention within

Public spaces considers their significance in the general fabric of the neighbourhood, and boosts social cohesion and transparency.

Conveyance and Accessibility:

Accessibility to a space is a key aspect for sustainable development. Options for accessing a space may include pedestrian access, bicycling, public and private transport, representing the transit systems that pertain to the space. Integration of successful transit systems ensure easy access, and feasibility, and supports transverse movement, paving the way for sustainable mobility.

1.2.2.) The Natural Infrastructure:

The natural infrastructure, or the 'Natural Domain' includes all the entities pertaining to the environment within the city. These include natural parks, rivers, green belts, wooded areas, water bodies, etc. These spaces cater to the biodiversity and define the ecological status of the area. It is crucial to incorporate design measures that integrate natural elements without hindering natural processes and biodiversity. It should also not exploit the availability of resources but instead, pave way for biodiversity to flourish.

Green Spaces (Green Infrastructure):

Parks, Forests, Green Belts, etc. are the general constituents of green spaces and are also responsible for the environmental quality and life on land. These spaces influence the temperature, air quality, etc. which ultimately provides aid to the habitat. Green spaces within the Natural Domain offer opportunities to its users for recreation, leisure, and relaxation. Green Spaces play a crucial role in determining the quality of life within neighbourhoods and cities altogether.

Water Bodies (Blue Infrastructure):

Rivers, lakes, reservoirs, ponds, canals, etc. are the constituents of blue infrastructure that are present within cityscapes. They also serve as sources of water and are in charge of the aquatic biodiversity of the area. Interventions within the blue infrastructure usually include development of waterfronts that successfully incorporate biodiversity and mitigate any potential calamities (Benedict M.A., 2006, pp. 11-34).

1.2.3.) The Human Domain:

As the term suggests, the human domain comprises of the people that are present within the previously mentioned two infrastructures. The people are the binding entities that merge the Urban and the Natural Domain and fuse them together, thus determining the identity of the space, its socio-cultural aspects, and diversity. A thriving urban and natural intervention caters to the needs of the people (users), promotes sustainability and a healthier lifestyle, and also accommodates the cultural heritage.

Social and Cultural Fabric

The human domain comprises people from diversified backgrounds. These people determine the identity of the space. Design measures adapted within the Human domain shall cater to social cohesion and create inclusive spaces that provide equal opportunities for all people.

Opportunities for Economic Growth:

Spaces that promote economic activities are beneficial as they direct the economic attributes of the space and participation of people within the Human Domain. Design interventions that make provision for multi-functional spaces which accommodate economic and commercial activities should be incorporated within urban developments.

1.2.4.) Conclusion:

Conclusively, these infrastructures (domains) are the entities that define the characteristics of any space. Efficient urban design consists of holistic measures and strategies that integrate all the domains, the elements and the properties, in order to facilitate environmental sustainability and development (Gehl, 2010, pp. 63-87).

The aforementioned study shall allow us to perceive Regio Parco as one such culmination of Urban, Natural and Human domains, and facilitate the development of a sustainable model that shall work towards enriching the overall identity of the space.

1.3. Domains within Regio Parco

Regio Parco displays a dynamic convergence of the Urban and Natural Infrastructures, each essential to the identity of the area, its features and attributes. It is located within the North-eastern part of the Torino Metropolitan area, and has undergone significant transformation through the years.

In order to understand the fabric of Regio Parco - we shall identify the existing domains, both urban and natural, their influence and the potential. This step paves way for a comprehensive study of the area, the existing scenario and dynamics, and ultimately its future potential.

1.3.1.) The Urban Domain:

Historical Context and Emergence of the Neighbourhood:

Regio Parco is an emerging neighbourhood that commemorates its rich industrial past. During the years of late 19th Century and early 20th Century, the urban fabric was a bustling zone as the factories and warehouses were functional, which defined the economic background of the space. Over the later years, the abandonment of these factory spaces and warehouses made way for urban regeneration measures such as repurposing of the buildings for residential and commercial functions (Angeli L., Castrovilli A., Seminara C., 1999).

Residential and Commercial Characteristics:

Regio Parco currently houses several residential spaces, from repurposed old buildings to newer developments that have taken place in the last 50 years. The commercial aspects are fortified by the presence of cafes, eateries, local artisanal shops, market avenues, etc. This diverse mix of residential and commercial zones plays its role in attracting varied demographics, thus making room for zonal revival and regeneration. There are several small-scale businesses and public amenities within the area. These elements and areas intricately define the dynamics of the urban domain in Regio Parco (Comoli Mandracci V., Goy F., Roccia R., 1998).

The Socio-Cultural Fabric:

The emergence of urban development within the area also resulted in emergence of diverse demographics. The Area is a centre of rich history and contemporary lifestyle. There are a number of Art Galleries, Exhibition Spaces, and Spaces for community events. These spaces play their part in improving social cohesion and foster a sense of belonging within the residents. At the same time, Social aspects are solely dependent on the diversity and the inclusivity. With further new developments, the area is prone to an influx of new residents which shall lead to the creation of a multicultural environment, where different traditions co-exist.

1.3.2.) The Natural Domain:

Green Spaces and the Environment:

Regio Parco has a significant number of Green Spaces, that are intricately woven with the existing infrastructure. With the presence of parks (Parco Pietro Colletta, Parco dall'Arrivore), and other spaces that pertain to natural infrastructure (for ex. Municipal Nursery), the residents of the Regio Parco Area can explore leisure, recreation, and relaxation opportunities. These spaces have their ecosystems and are also equipped with access routes, picnic areas, jogging tracks, bicycle lanes, and other pedestrianized zones. These spaces within the green infrastructure aid the well-being of the people and increase the liveability of the area.

The presence of these spaces within the fabric also contributes to the environmental quality. Green spaces within urban settings improve air quality, aid mitigation of the heat island effect, and provide relaxation, leisure, and recreational opportunities to the people. Each element within the green infrastructure plays a crucial role in sustaining the local biodiversity and also works towards balancing the built and the natural infrastructures (Forman, 2014, pp. 115-140).

Sustainability Measures for the Natural Domain:

The green infrastructure can be enhanced through applications of green measures such as green walls, permeable pavements and inoculating green features within the built spaces in the domain. These interventions also work in strengthening the environment and improve the quality of life. Adopting sustainable practises through the aforementioned shall also guarantee commitment towards creating better and ecologically balanced environments, thus attracting more users, residents and visitors alike (McHarg, 1969, pp. 66-95).

The Blue Infrastructure:

Regio Parco shares its eastern and northern edge with the River Po. The river plays a crucial role in defining the blue infrastructure of the zone. With the presence of canals and intermediate water supply channels, the factories and the warehouses used to meet their water requirements. In the past, the river was also used as means of transportation but in the present, it has become more conventional with its focus shifted towards recreation, environmental conservation and aesthetics.

Waterfront Development Opportunities:

The waterfront area shared between the river and Regio Parco is majorly along the edge of the natural infrastructure (Parco Pietro Colletta and Parco dall'Arrivore), with the space possessing significant potential for recreational opportunities, development of bicycle paths and promenades which could also be used for access and leisure respectively. The development strategy for the waterfront shall enhance the built landscape and provide a new identity to the space (Forman, 2014, pp. 115-140).

Environment and Conservation:

The presence of water bodies within the Regio Parco area makes it crucial to adapt environmental management steps and mitigate any potential calamities. Since the area present behind the Former Tobacco Factory has faced flooding issues in the past, it is important to incorporate flood mitigation measures within the intervention strategy. The area also needs to consider initiatives that improve the ecosystem of the river and the canals. These initiatives shall include the conservation of the riverbanks and the creation of water retention areas (wetlands, floodplains, etc.). These measures also facilitate in maintaining the ecological balance and conservation of resources (Sharma, S. N., & Ayuba, D, 2024).

1.3.3.) Interplay of the Domains:

The aforementioned domains and their elements function in harmony to provide a unique identity to Regio Parco. The interplay created through the urban and the natural environments,

with their historical significance and heritage, pave way for further development and intervention potentials that can improve the overall quality of the space.

Relation between the Domains:

Unification of the Urban and the Natural domains in a seamless manner, across the Regio Parco has the potential to make the area more welcoming, vibrant and inclusive. Although Regio Parco has already been provisioned for repurposing of the old abandoned buildings into functional spaces, the regenerative measure can be implemented as an effort towards historical conservation and to meet the present and future requirements. At the same time, the presence of green infrastructure contributes towards the aesthetic features and the environmental quality of the area, and also influences its longevity and resilience.

Challenges, Strengths and Opportunities:

Despite the previously mentioned attributes, the area of Regio Parco is still prone to challenges as new developments and proposals are laid out. Key concerns for the Regio Parco area pertain to establishing balance between new developments and the existing settings. Along with the evolving interplay of the domains, management of social diversity and ensuring sustainable growth are important.

However, these challenges also make way for opportunities and solutions that aid in innovation and social cohesion. The character of the Regio Parco area along with its rich historical and cultural heritage contains huge potential for carrying out sustainable interventions (Benedict M.A., 2006, pp. 85-112).

1.3.4.) Conclusion:

Regio Parco along with the dialogue of Urban and Natural Infrastructures (Domains), contains potential in regeneration. Its rich history commemorates the heritage of the space and the interplay of the several elements within the domains makes it a unique neighbourhood. The area has shown promise in transformations and regeneration through the years. With upcoming proposals for abandoned buildings and the introduction of new access routes, adapting innovation and sustainability will be crucial in addressing future challenges and needs. A successful regeneration strategy within the domains shall prove beneficial in accommodating future needs, enhancing the quality of life, and fostering a sense of community among the residents.

1.4. Approaches for Regeneration within Built and Natural Settings

Regeneration of the Urban and the Natural Infrastructures (Domains) comprises of several strategies that aim to revitalize both environments. This approach integrates sustainable practices, innovative design strategies, involvement of the people, and consideration of the cultural and historical contexts. These measures not only enhance the physical attributes of the space but also improve the quality of life, resilience of the space, and environment and provide opportunities for economic growth (Hough, 2004, pp. 101-132).

1.4.1.) Regeneration Strategies within the Urban Domain:

Adaptive Reuse and Historical Conservation:

Adaptive reuse involves repurposing of existing built structures and spaces with new functions while preserving their historical significance. This measure is advantageous for the following reasons:

Impact on the Environment: It reduces waste generation and ensures minimal intervention within the built spaces.

Cultural Identity: Adaptive Reuse ensures the conservation of historical and cultural heritage.

Economic Effects: Usually a cost-effective approach as it doesn't require major developments.

By retaining the architectural attributes and adopting modern use applications, adaptive reuse serves as a cost-effective measure to introduce regeneration within urban settings and enhance the character and the identity of the spaces alike.

Mixed-Use Proposals:

Mixed use development is a strategy that encompasses residential, commercial, recreational and spaces within a single area. This measure promotes saving of spaces, enhances the usability of the space and offer several benefits such as:

Reduces Travel: By merging several functions within single spaces, it reduces the need for long commutes, thus mitigating traffic congestion and pollution, aiding the environmental quality.

Effect on Local Economy: Provides support to local businesses by creating opportunities.

Social Interaction: It also boosts social interaction and cohesion as the spaces are shared for different functions within the users.

Sustainable Mobility Strategies:

Implementation of transit-oriented and pedestrian-friendly design offers the following advantages:

Interventions in Specific Areas: Implemented within selected areas to preserve the open spaces and their attributes, and reduce traffic congestion.

Efficiency in Transit: It encourages users to opt for public transportation and reduce their reliance on private vehicles, thus regulating traffic.

Pedestrian and Bicycle-Friendly Design: Enhancing the walkability of spaces and introducing bicycle routes prove to be more sustainable alternatives in comparison with other modes of transportation.

Transit-Oriented Design (TOD) is a crucial aspect of designing for sustainability. With its focus on developing public transit nodes and spaces, it ensures easy access to public transportation and regulates traffic and movement (Cervero, 2003, pp. 240-267).

Development of Public Spaces and Placemaking Strategies:

Public Spaces are vital for communities and social life. They provide venues for interaction, recreation, leisure, and cultural events. Placemaking is a strategy devised to design these venues with a focus on the following aspects:

Needs of its Users and Communities: Involvement of its users in the development process ensures that the space caters to their needs and preferences.

Flexibility and Feasibility: The development of spaces can accommodate a variety of functions, activities, and events.

Accessibility: Placemaking strategies ensure that the public space is accessible to all of its users.

Efficient Placemaking strategies create vibrant and dynamic urban spaces that support interaction and cohesion, thus enhancing the social attributes of the space and garnering a sense of ownership within its users (Dover V. and Massengale J., 2013, pp. 40-78).

1.4.2.) Regeneration Strategies within the Natural Domain:

Green Spaces and Parks:

Urban Green Spaces are important for environmental balance, sustainability and public health. The regenerative principles within these spaces include:

Creation and Enhancement: Development of new parks and enhancing the existing green spaces to provide more recreational, leisure, and relaxation opportunities to its users alongside improving the ecological state of the spaces.

Conservation of Biodiversity: Using native vegetation within the developed spaces enhances the habitat and supports biodiversity.

Management and Maintenance: Implementing a management strategy that ensures the upkeep of these spaces to ensure the longevity and long-term use of the space.

Green Spaces aid the environment and enhance the microclimate, improve air quality, provide cooling effects, and also allow its users to explore recreational and leisure opportunities.

Waterfront Development:

Regeneration within the blue infrastructure includes the development of waterfronts that convert underutilized areas into vibrant public spaces. Strategies for waterfront development include:

Ecological Restoration: Restoring spaces and creation of habitats that support biodiversity.

Flood Mitigation: Creation of wetlands, water retention zones, reservoirs, or flood plains to prevent calamities and accommodate excess water.

Public Recreation Areas: The creation of promenades, trails, etc., enhances public access and allows the users to carry out recreation, relaxation, and leisure.

Development of waterfronts and its integration into the urban and natural settings, significantly improves the environmental quality and the quality of life, besides providing an aesthetic appeal (Campanella, 2006, pp. 259-278).

Development of Green and Blue Infrastructure:

The green infrastructure comprises the natural systems that support the environment. It includes the following elements:

Green Surfaces: These absorb excess water, reduce heat dissipation, and improve the microclimate.

Bioswales: Landscaped areas that absorb water, reduce the run-off, maximize percolation, and also support biodiversity.

Permeable Pavements: Materials that absorb water and allow it to permeate through the surface. They have low heat emissivity and can also be used to provide access across the space.

Sustainable development of these infrastructures ensures minimal impact on the environment, conserve the resources from exploitation, and also enhances the health and well-being of both the environment and the users.

Restoration of Biodiversity:

Promoting biodiversity and restoration of habitats within urban and natural settings are crucial for the ecological well-being of the environment.

Creation of Habitats: The development of green areas provides habitat to local flora and fauna.

Water Resilient Infrastructure: Creation of Bioswales, Wetland, besides mitigating floods and excess water, also flourishes aquatic biodiversity and improves water management.

These aforementioned measures contribute to creating balance in ecosystems present within the urban and natural settings (Steiner, 2011, pp. 151-180).

1.4.3.) Integrative Approaches:

Inclusion of Users in the Development:

An effective regeneration approach incorporates its users and the community in the planning, development, and implementation process. This ensures homogeneity in the design and also that the space meets the requirements of its users.

Public Consultation: Carrying out surveys and holding workshops to collect responses from the users to evaluate design strategies and their feasibility.

Collaborative Design: Involvement of all the users and the community members to ensure that the design is efficient and meets the requirements.

Transparency: The transparency in the design process establishes a more coherent vision and perception of spatial development and this is ensured through clear communication between the users and the management through all the stages of development and implementation.

Participation in the development ensures social cohesion and inclusivity, and also that the regeneration measures are user-friendly and community-driven (Whyte, 1980, pp. 15-35).

Regulation and Governance of Spaces:

Policies that devise regenerative approaches within spaces are crucial for sustainable development as these regulate the upkeep of the space, prioritize sustainable growth, and also enforce the protection of natural and built environments.

Zoning and Land-Use: Implementing regulations of the development zones protects green spaces and ensures maintenance.

Rewarding Green Practice: This encourages developers and users to adopt sustainable development practices.

Laws for Environment: Regulations that ensure the conservation and protection of Natural Resources.

A strong Regulatory framework ensures that the regeneration measures are oriented towards sustainability and receive the required supervision and support.

Innovation and Technology:

Innovative design practices with the inclusion of technology can significantly aid the regeneration efforts, making more sustainable urban spaces that are efficient and adaptable.

Smart Systems: Systems that use analytics, the Internet of Things (IoT) devices that optimize services and are useful for the management of energy, water, transportation, etc.

Energy Efficient Systems: Renewable energy systems such as solar panels, windmills, etc.

Use of Sustainable Materials: Using and developing materials that have a very low impact on the environment, such as Compressed Stabilized Earth Blocks (CSEB), recycled Rubber and plastic, etc.

The inclusion of the aforementioned elements within the design promotes innovation and prepares the spaces for future needs and challenges (Townsend, 2013).

1.4.4.) Conclusion:

To recap, the Regeneration of neighbourhoods requires a comprehensive and integrative approach that brings the infrastructures in harmony and addresses the built and the natural environment equally. To facilitate regeneration within the urban domain, strategies such as adaptive reuse, placemaking, etc. play a crucial role. Similarly, regeneration in the natural

domain can be implemented through green spaces, water management, and ecological restoration.

Integrative approaches involve its users and communities and bind them with the design process. This also ensures that the projects are adaptable and resilient through devising regulatory policies and laws that promote longevity and long-term sustainability (Birkeland, 2008, pp. 201-238).

In conclusion, as cities undergo constant evolution and growth, it is crucial to adapt principles of sustainability in the development and regeneration of spaces. By implementing the aforementioned measures into design and development, cities and neighbourhoods can emerge with vibrant, human-centric environments, and ensure that the spaces within these environments meet the needs of present and future generations.

1.5. Project Guidelines

A regeneration approach involves functionality, aesthetics, community requirements, and environmental needs, that are achieved through a set of steps that cater to the design decision. The important aspects that outlines the roadmap and devise the design intervention for sustainable development within Regio Parco are as followed:

1.5.1.) Analysis of the Context:

Understanding the context of the site within Regio Parco is crucial and it could be analysed through the following factors:

Topography: The terrain, differences of levels, existing natural features, and elements.

Hydrological Features: Presence of water bodies, their role in the environment and the relation with users

Ecological Features: Habitats, ecosystems, flora, and fauna, for environmentally sensitive areas.

History and Culture: Analysis of the site along with its history and cultural heritage paves the way for conservation and human-centric approaches. It also gives an insight on the existing land-use patterns and functionalities.

1.5.2.) Preliminary Goals of Intervention:

Implementation of the intervention strategy within the Regio Parco area will consider the following:

Community Engagement: The involvement of users and communities will help in creating inclusive spaces and also in identifying potential stakeholders.

Accessibility: The developed space shall be accessible to all the users accommodating people from all backgrounds, ages, and abilities.

Sustainability: Defining Sustainable Development Goals (SDGs) provides direction and orientation to the intervention within Regio Parco and supports design decisions.

Economic Attributes: The developed spaces in the Regio Parco area will allow its users to explore opportunities in tourism, recreation, leisure, and relaxation.

Conservation of the Historical and Cultural Identity: Since Regio Parco has notable historical heritage and significance, integration of its historical past and cultural heritage within the intervention strategy will preserve the identity of the space and accommodate present and future needs (Gehl, 2010, pp. 87-112).

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1.5.3.) Development of Functional Spaces:

Understanding the spaces within Regio Parco and analysing the domains separately in order to pave way for intervention and devising design strategies that cater to the different groups and activities.

Recreational Areas: Areas for leisure, space for walking, jogging, bicycle lanes and other outdoor passive recreational activities.

Gathering Spaces: Converting open spaces and making them more welcoming for communities. Creation of plazas, cores and other gathering spaces.

Waterfront: Development of promenades, trails, water retention zones, etc.

Green Spaces: Creation of Plazas and lawns, wetlands and natural habitats as means of ecological restoration.

Commercial Avenues: Eateries and shops to support local businesses and repurpose the old buildings.

Urban Spaces: Identification of Urban Cores and open spaces within built settlements to have a clear understanding of the area.

1.5.4.) Mobility and Connectivity:

Provisions for Transit Oriented Design within the Urban and the Natural Domains of Regio Parco to enhance access and the interconnectedness.

Pedestrianization of Streets: Demarcating pedestrian zones to make provisions for resting zones, ensure safety, limit vehicular movement, and mitigate noise and pollution.

Bicycle Lanes: Provision of bicycle lanes in the existing network along with amenities such as bicycle stations.

Conveyance: Integration of parking lots in accordance with the mobility plan to provide ease of access.

Mixed-Use Development: Repurposing of buildings and streets and introduction of multifunctional elements that bind the infrastructures together. These spaces shall promote recreational opportunities and boost social cohesion.

Wayfinding: Use of elements that aid in wayfinding and linkages that merge the proposed mobility plan with the existing routes (Paths and Trails) (Forman, 2014, pp. 115-140).

1.5.5.) Creation of Public Inclusive Zones:

Public inclusive zones within the built and natural infrastructures of Regio Parco shall be developed with the following considerations:

Landmarks: Identifying the iconic spaces such as plazas, streets, etc., or even architectural features that serve as focal points.

Water Features: Integrating the existing water infrastructure within the natural infrastructure in order to create environmentally responsive spaces.

Public Spaces: Converting areas with spatial potential to serve as zones for gathering, fostering a sense of inclusivity.

Seating Areas: Provision of seating areas and shaded spaces to offer relaxation, socialization, and passive recreation.

1.5.6.) Prioritization of Sustainability:

Identifying the SDGs (Sustainable Development Goals) in order to facilitate harmonic growth and ensure longevity of the development within the Regio Parco area.

Green and Blue Infrastructures: Incorporating green spaces, and repurposing spaces for ecological restoration to support biodiversity and promote sustainability.

Native Vegetation: Plantations of native origin in landscaping features to facilitate enhancement of the habitat.

Energy Efficiency: Inclusion of energy-efficient lighting systems and passive design strategies that mitigate excess carbon emissions.

Climate Resilience: Design strategies that take the environmental impacts of development into account. These also include mitigation measures that can be proposed to prevent potential calamities (Farr, 2007, pp. 1-25).

1.5.7.) Provisions for Ease of Access:

Prioritizing easy accesses for the users, to facilitate wayfinding and creation of environments in all the intervention zones across Regio Parco.

Universal Accessibility: Provision of access for users from all sorts of backgrounds and abilities.

Vehicular Regulations and Safety: Demarcation of vehicular and pedestrian zones, and regulation of heavy traffic and movement across Regio Parco in order to make the space safe and facilitate well-being.

1.5.8.) Integration of Innovation and Technology:

Inclusion of technology and adapting innovative approaches towards enhancing urban and natural environments within Regio Parco.

Innovative Elements: Inclusion of continuity elements that can be used for multiple functions such as wayfinding and integration of technology such as smart lighting and also make an effort to bind the domains together.

Interactive Features: Spaces that make provisions for its users to interact with the elements within in the environment.

1.5.9.) Implementation Phases and Roles of Participants:

It is easier to implement intervention within spaces with a proper roadmap, that facilitates direction and establishes goals. The intervention can also be carried out in phases in each of the domains within Regio Parco.

Development within the Domains: Individual approaches that can be implemented within each of the domains, to facilitate homogeneity and make the regeneration holistic.

Priority Areas: Identification of areas that have tremendous potential and are aligned with the goals of the intervention.

Identification of Stakeholders: The users along with their requirements can also be integrated within the project, thus introducing a sense of ownership. Ultimately, the identification of potential stakeholders and public-private partnerships to have a better understanding of the expectations with the project and the intervention. They also ensure that long-term goals and objectives are met as the implementation is carried out based of their inputs.

1.5.10.) Evaluation of Regeneration Strategies:

Upon adaptation of the aforementioned strategies within the context of Regio Parco, it could be easier to evaluate the performance of the intervention:

Feedback from the Users: Conducting surveys and workshops among the users to devise a roadmap and a methodological approach for development. This shall also help in predicting and analysing the results of the intervention.

Performance Indicators: Key Performance Indicators (KPI) that are associated with the social, cultural, and environmental expectations, in order to assess the impact of the intervention within Regio Parco.

Adaptive Management: Creating a stakeholder map to evaluate the power and control dynamics of the different people in charge of the project. This shall also help in determining managerial roles and shaping important intervention strategies.

By considering the aforementioned objectives and principles, implementation of the intervention strategies within Regio Parco can lead to the creation of dynamic, vibrant and inclusive environments that enhance the quality of life and social interactions, foster a sense of community, and conserve the historical and cultural heritage.

Chapter 2 –
Research Analysis

2.1. Approach Towards Regeneration in Urban Settings

Regeneration within Urban Settings encompass a wide range of factors, such as the type of approach, the level of intervention and its counterparts, the influence of the intervention on the setting and the people associated with it. There are several approaches which act towards livening of these settings, and they differ based on the applications within the area. Depending upon the scenario, the regeneration strategy may be more permanent than a makeshift change in the existing infrastructure. For example, a temporary regeneration measure to liven a streetscape would be to make it more inclusive, pedestrian friendly, using elements such as urban furniture, seating, planter beds, etc., whereas a more permanent approach would be to introduce new functions through cohesion of immovable elements.

One such makeshift approach that can be adapted to liven urban spaces is practiced through Tactical Urbanism, which can be simply defined as a cost-effective approach which accumulates changes within a neighbourhood or a district in order to make meaningful improvements and adjustments within urban pockets of a town or a city. It can also be defined as a low-cost change to the built environment, which is likely to be moderated by citizen-led entities if not the government.

Application of such tactics into the Urban fabric, although hard, always leads to improvised urban interaction and participation. These changes may be temporary in nature but they often result in more permanent solutions on a localized scale.

As the term was coined within the later half of 2010s, it is still being adapted in several parts of the world. It offers a comparatively leaner and more agile approach towards creating changes within the built environment (Mike Lydon and Anthony Garcia, 2015). Moreover, Tactical Urbanism is a much viable option as:

2.1.1.) Tactical Urbanism and the Methodology:

Adaptability:

Municipal Governance often neglects urban spaces, and can also hinder the process of growth within the said urban fabric. Tactical Urbanism emerges as a form of solution by the people,

and gives them complete liberty to make essential changes to their own neighbourhoods immediately.

Promotes Experimentation:

Tactical urbanism acts as a temporary initiative thereby evaluation of factors such as costs, community engagement, advantages, and impacts of the intervention before concluding on a solution to the problem. Furthermore, by involving the inhabitants of the neighbourhood, the practicality of its long-term effects on the approach toward the success of the initiative can be determined.

Fosters Public Involvement and Interaction:

The needs of the community are best understood by its residents. As most developments to urban areas are routine checks, or proposals led by distant governments and developers, Tactical Urbanism strengthens Social Cohesion by empowering the residents to collaborate. These collaborations are carried out at the grassroot level using DIY methods, thus ensuring a participative role in creating and maintaining the shared spaces (Silberberg S., Lorah K., Disbrow R. and Muessig A, 2013).

Cost-Effectiveness:

Tactical Urbanism is perceived as a costly alternative, although it is not. By utilizing readily available materials, residents can implement significant changes to their built environment, adding a more humane character with minimal financial investments.

Endless Possibilities:

The Urban fabric within the cities are dynamic and seem static or intangible. Tactical Urbanism intervenes and expands the potentials by inspiring people to reimagine and interact with the built settings in innovative and exciting ways. In addition to these tangible improvements, areas which foster tactical urbanism often become more beautiful, vibrant and lively.

Tactical Urbanism is Achievable:

As major changes seem overwhelming, this approach offers an even more extensive feasibility to community-based projects. By adopting this swift, cost-effective approach, both residents and institutions can actively engage and implement their vision towards a more successful and livelier neighbourhood (The Street Plans Collaborative, 2016).

2.1.2.) Forms of Tactical Urbanism :

Pop-Up Parks and Parklets:

Conversion of smaller spaces into public parks or seated areas by installing temporary platforms, benches, etc. These can often be implemented in vacant lots by using inexpensive materials such as grass turf, seaters and planters. Pop-up parks provide recreational opportunities within green spaces while boosting social interaction (McCormick, 2018, pp. 22-28).

Figure 1 Pop-Up Parks on Curb-Side

Guerrilla Gardening:

Involves residents to covertly cultivate within neglected or abandoned public spaces, such as roadside verges or lots, by planting flowers or smaller trees. This measure beautifies the area,

promotes biodiversity and encourages community participation in urban greening movements (Guerrilla Gardening, 2004).

Figure 2 Guerrilla Gardening

Open-Street Initiative:

Temporary closing off streets and roads to regulate traffic and create car-free zones for pedestrians, bicycles and other communal activities. The initiatives often allow people to reclaim public spaces for recreational and social activities, promoting active lifestyles and interaction altogether (The Open Streets Project, 2015).

Figure 3 Open-Street Initiatives

Tactical Crosswalks:

Residents use temporary materials such as chalks, paints, etc. to create beautiful crosswalks, pedestrian islands or bike lanes in spaces where they are needed but not provided by the

governing municipality. These tactical crosswalks improve safety aspects, walkability and encourages active transportation (Johnson, 2019, pp. 15-19).

Figure 4 Tactical Crosswalks

Street Murals:

Transformation of dull and neglected Urban surfaces (building facades, sidewalks, utility boxes, etc.) into vibrant works of art. Street Murals not only beautify these urban surfaces but also provides a sense of identity and community pride (Rodriguez, 2020, pp. 34-39).

Figure 5 Street Murals

Temporary Marketplaces:

Temporary markets and fairs that have been set within the underutilized spaces of the neighborhood help in the economic well-being of the local vendors. These pop-up markets will provide opportunities for small businesses to showcase their products and improve footfall in the area.

Figure 6 Temporary Marketplaces

Place-making Installations:

Installation of temporary artworks, interactive exhibits, or other typical installations to activate underutilized spaces and encourage community gatherings. These installations often create focal points for social interaction, cultural and creative expressions within the built environment (Silberberg S., Lorah K., Disbrow R. and Muessig A, 2013).

Figure 7 Place-Making Installations

2.2 Case Studies for the Urban Domain

2.2.1. Pavements to Parks, San Francisco:

San Francisco's Pavements to Parks (P2P) program, launched in 2010, represents an innovative approach to urban architecture and public space management. The program is designed to transform underutilized streets and sidewalks into vibrant public parks and plazas, fostering Community Interaction and enhancing Urban Life.

The program has become a model for rethinking and transforming Urban Spaces, emphasizing on flexibility and sustainability (SF Environment, 2015).

Community Engagement, Participation, and Stakeholders:

Urban Architecture is significantly shaped by its residents, who actively participate in initiatives such as the P2P initiative. The place-makers often offer volunteerism, and contribute towards the development by sharing ideas. These steps in turn help the residents foster a sense of ownership and responsibility.

The project involved business proprietors and other non-profit entities. Parklets are best defined as green pockets that are tailored for their specific surroundings. These developments sparked interest within the United States and globally. By 2015, over 60 parklets were established across the city of San Francisco.

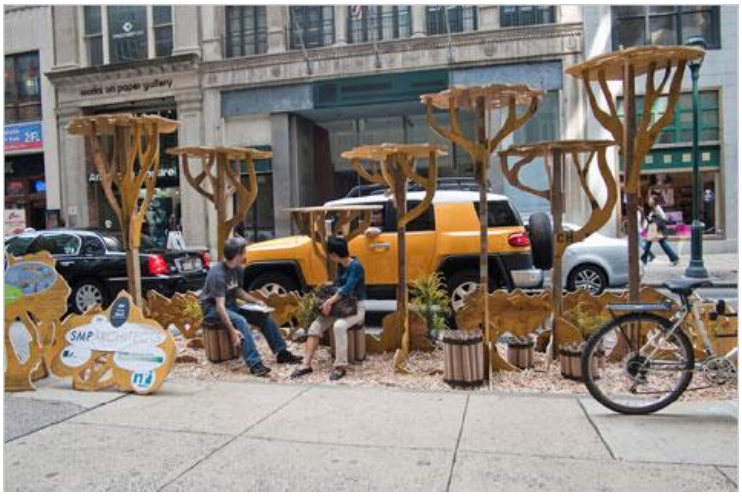


Figure 8 Community Engagement

Innovative Use of Space:

The program focuses on repurposing existing infrastructure creatively and challenges traditional notions of urban space usage. These conversions involve low-cost materials and designs that demonstrate that urban improvements do not always require significant capital or extensive resources.

These parklets are removable and do not impede curb-side drainage. Regulations involving the use of parklets were also devised and it was deemed that these shall not be used for commercial purposes. Parklets are universally accessible. They are all raised to curb height with no obstacles to wheelchair access.

Figure 9 Parklets

Sustainability and Green Design:

Sustainability is incorporated within the program through elements such as permeable pavements, native vegetation, and rain gardens. These elements help manage stormwater and reduce urban heat island effects. The use of sustainable elements and environmental construction techniques also helps showcase the city's commitment to a sustainable future. These measures not only enhance the aesthetic appeal of these spaces but also contribute towards healthy and sustainable living (Friends of the Urban Forest, 2015).

Figure 10 Use of Plazas

Enhancing Urban Connectivity:

The P2P initiative creates a splendid urban landscape within the city's built infrastructure. By transforming disconnected public spaces into cohesive and vivid urban spaces, the program improves the walkability and Bicycle connectivity. By linking parks, commercial spaces and the residential fabric, the initiative creates a continuous network of green spaces that boost walkability (SF Environment, 2015).

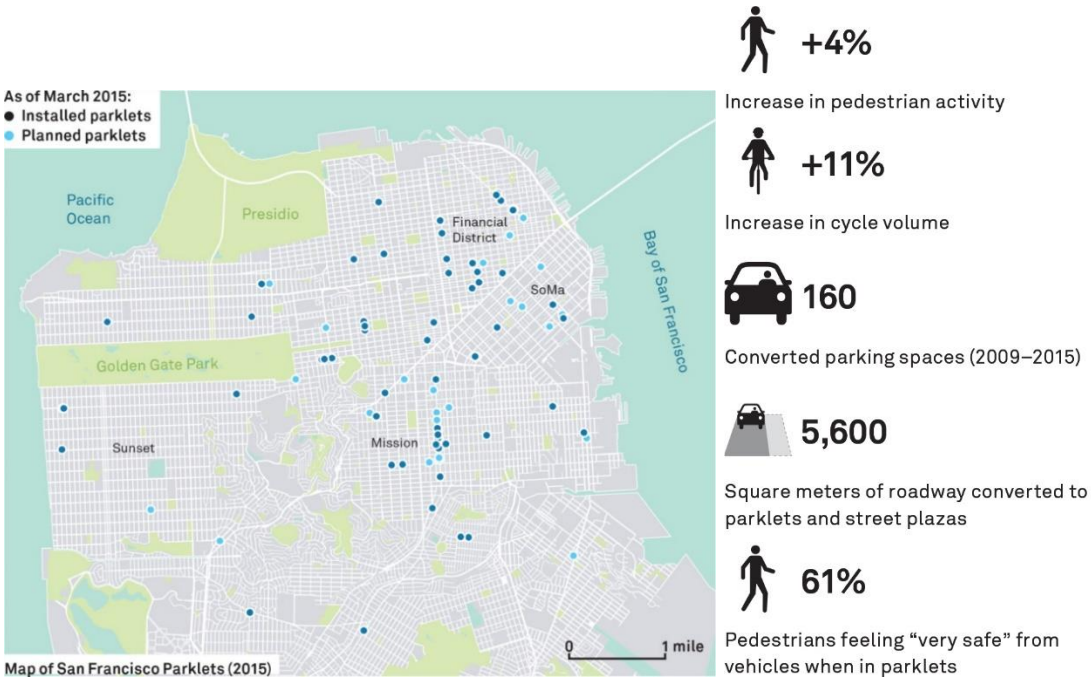


Figure 11 Parklets within SF's Urban Fabric and the Impacts

Aesthetic and Social Impact:

Within the Social Context, these spaces provide spaces for community events, markets, and other cultural venues, fostering social cohesion within the people. These venues also feature public murals and creative seating arrangements, art installations, etc. which contribute to a vibrant and visually engaging urban environment.

Figure 12 Livening of Curbs and Footpaths

Activity throughout the day and week ensures a public space is well loved and used. Act ivity also encourages more social mixing with a greater sense of safety and comfort. Ideal sites are surrounded by uses that naturally generate pedestrian activity. The project allowed the city to discover new potentials of several streets, improve the interaction within neighbourhoods alongside public safety and boosted local businesses. Through the innovative use of spaces, the program has successfully transformed underutilized spaces into spaces of harmony and valuable public assets. It has also been established as a milestone for Urban Development Worldwide, among other goals.

2.2.2.) The High-Line, New York City:

Another prime example of Innovative Urbanism and Urban Architecture, which also incorporates principles from adaptive reuse. Highline was a former West Side Industrial railway 1.45 mile-long elevated, steel structure built in the 1930s for freight trains; the last train

ran on it in 1980. It is a redevelopment project that stretches across 2.4 Kms of an elevated subway track passing through 3 distinctive neighborhoods in Manhattan's west side. The project transformed a disused subway line into a vibrant public space that integrates nature, art, and design and has significantly influenced contemporary urban development (The High Line: The Official Website).

Figure 13 The High Line in Manhattan

Adaptive Reuse and Transformation:

The project incorporates the concept of adaptive reuse in urban architecture. As the rail line became obsolete in the 1980s, it was classified as an urban reclamation project as demolition of the Subway track was suggested initially. Counteractively, the activists, designers, and the residents suggested repurposing it as an elevated park. The track is elevated through its stretches, it poses opportunities for a 6-acre green roof with several functionalities, through a densely built urban environment. The project demonstrates how various urban environments can creatively reimagine and repurpose existing infrastructure to meet the requirements (Arch-Daily, 2011).

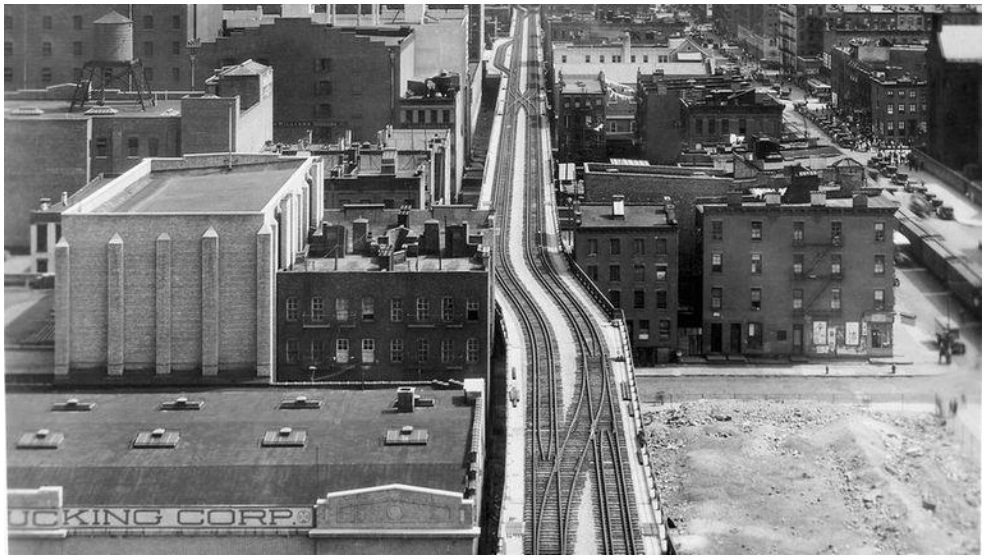


Figure 14 The Abandoned Rail-Line

Design and Aesthetic Integration:

Led by James Corner Field Operations and Diller Scofidio + Renfro, with planting design by Piet Oudolf, the design seamlessly integrates urban architecture into the landscape. The elevated park's design maintains the linear form of the rail line, incorporating pathways, seating infrastructure, and plantations following along the route. The use of native vegetation and wildflowers evokes the self-seeded landscape that took over the rail line after it was abandoned in the 80s, allowing a blend of Natural and Urban elements. A few of the features of The High Line include viewing platforms, benches, and art installations, as these are carefully designed to complement the historic structure and the surrounding urban fabric, providing a cohesive and immersive experience (The High Line: The Official Website).

Figure 15 View of the High Line, passing through the Manhattan Skyline

Community Engagement and Cultural Programming:

Involvement of the community was a crucial aspect to the High Line's development. 'The Friends of the High Line', a non-profit organization founded by local residents, played a significant role in advocating for the creation of the High Line and continues to manage it operations. The programming showcases its commitment to community engagement, offering a diverse range of venues for cultural, educational, and recreational activities. Events such as art exhibitions, performances, and workshops attract both natives and tourists, garnering a sense of social inclusivity and making the elevated park a cultural hub (Friends of the High-Line).

Figure 16 Viewing Decks

Impact on Urban Development and Gentrification:

The High Line has had a profound impact on the surrounding urban fabric and development within the neighborhood. The intervention has initiated real estate development, transforming the West Side of Manhattan into a place of interest for residential, commercial and cultural projects. On the contrary, this development has also led to concerns about gentrification and displacement of the existing communities. The project's success showcases the need for a balanced urban cityscape that considers both economic growth and social integrity (Arch-Daily).

Figure 17 Public Gathering Spaces

Urban Connectivity and Public Space:

The High Line enhances urban connectivity by providing a continuous, accessible green space adjacent to the existing rail line, which links the surrounding neighborhood within the network. Also offers a unique vantage point for viewing the City, garnering a sense of exploration and connection between the natives and the visitors. As a public amenity, the project encourages walking, relaxation, and social interaction, contributing to the physical and well-being of its users (Friends of the High-Line).

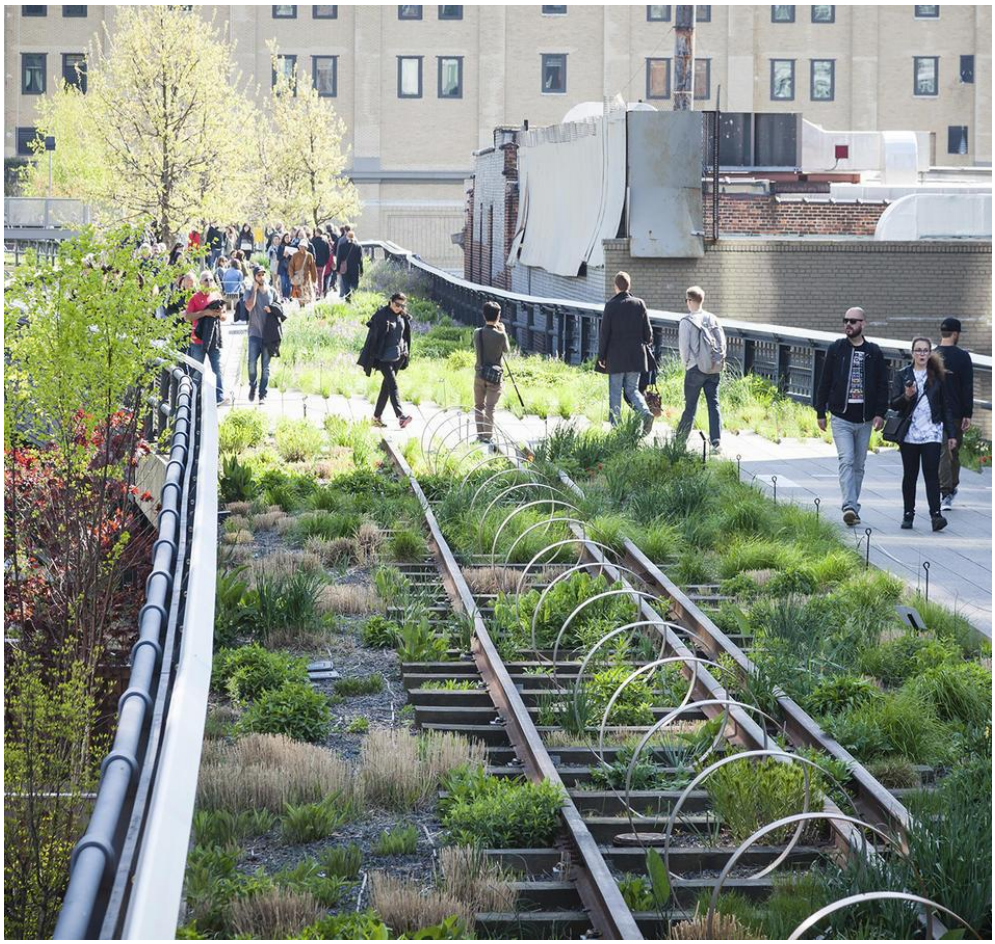


Figure 18 Walkway alongside the Rail-Line

Major driving factors for the project were the scalability, social inclusion and the need for revitalization. It encompasses a wild and dynamic landscape and uses natural and robust materials for planters, furnishing, paving, lighting and other utilities. Moreover, it also incorporates the rail tracks directly into the paved surface. Before the new landscape could take form atop the High Line, every component of the structure was tested and treated to ensure its

structural strength. As each piece of rail was removed, it was marked and mapped so that later, it could be returned to its original location as an integrated planting piece.

In conclusion, the High Line project stands as a landmark achievement in urbanism and urban architecture, as it demonstrates the paradigm of adaptive reuse, community cohesion and sustainability by creating inclusive an urban environment.

2.2.3.) The Superblocks Programme, Barcelona:

Also known as Superille (in Catalan) is an approach to establish the Quartiers in Barcelona as 400 x 400 m units of Self-Sustaining neighbourhood. These blocks aim to recover and reclaim spaces for sustainable mobility, and community gatherings and boost social cohesion.

Concept and Design:

The Superblocks initiative is a revolutionary urbanism measure that would transform the city's urban fabric, and enhance the quality of life for its residents. The core idea behind the program is to group 9 existing city blocks into 1 where movement and traffic would be regulated. Only vehicles owned by the residents, delivery trucks and emergency services are allowed within the superblock and the limit is set to 10 km/hr. These blocks are rerouting the traffic to the perimeter roads which significantly reduces the vehicular density in the core. These measures allow the interior streets of the superblock to be used for recreation, leisure and other public gatherings (BCNecologia).

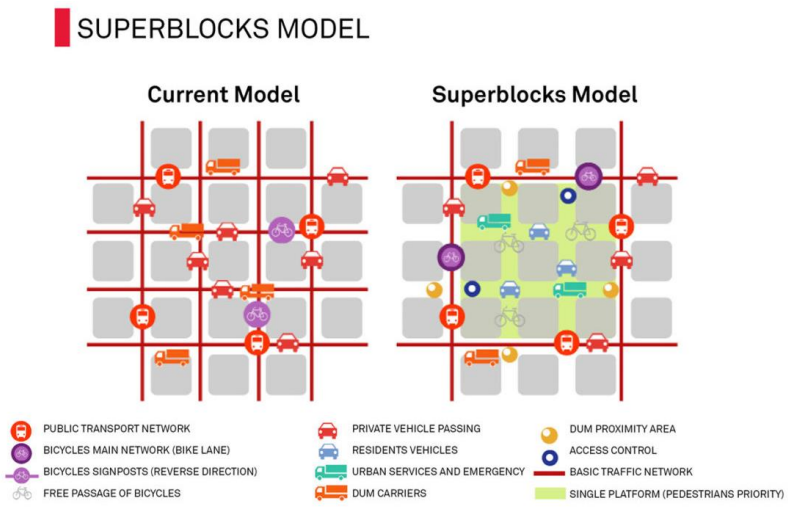


Figure 19 Model of the Superblocks

Public Space and Green Areas:

As a primary goal of the program, the reduction of vehicular movement within the superblock allows an increase in usable public space and green areas. The areas are repurposed for leisure and recreation with amenities such as urban furniture, play areas, and gardens, which altogether boost social interaction and encourage outdoor activities besides increasing the aesthetic value of the neighbourhood. The available off-street parking areas can cater to the increased demand in the future. Furthermore, there is an inclusion of goods vehicles and individual cars' movement in the design of the green streets for loading and unloading goods. These spaces also mitigate the local Heat Island Effect and provide a healthier and more comfortable microclimate (Ajuntament de Barcelona).

Figure 20 Underutilized Areas to Public Seating

Community and Social Benefits:

By fostering the aforementioned sense of community by creating more inclusive accessible spaces, the design encourages more social cohesion and recreational activities. The increased pedestrian footprint also enhances walkability and at the same time paves way for community events, local markets, and other cultural activities. By prioritizing better walkability and cyclability, it encourages a healthier lifestyle and also reduces the reliance on motor vehicles (Ajuntament de Barcelona).

Figure 21 Public Gathering Spaces

Sustainable Mobility and Environmental Impact:

Superblocks' initiative goes hand in hand with redefining mobility. The council listed 300 specific measures for the coming years, including but not limited to adding 32km pedestrian-only streets, expanding bike network by 40%, adding 30km/hr lane on roads with three or more lanes, etc. Sustainability as a cornerstone of the program, through restricting heavy vehicular passage and promoting walkability, cyclability, and the use of public transport, reduces greenhouse gas emissions and improves air quality. The superblocks consider the measures of sustainable mobility by redefining the pedestrian infrastructure. Additionally, the regulated traffic helps mitigate traffic noises and contributes towards a more pleasant urban environment. Altogether, these measures ensure that the city meets its climate goas in the future (The Guardian, 2019).

The 'Green axes' for the Superblock project are meant to connect green areas, transit stops, and commercial activities. Although cars and motorbikes can access these plazas, they cannot cross the junction. The plazas or squares formed at junctions of intersecting green streets will become locations for socialising, leisure activities, play areas, etc.

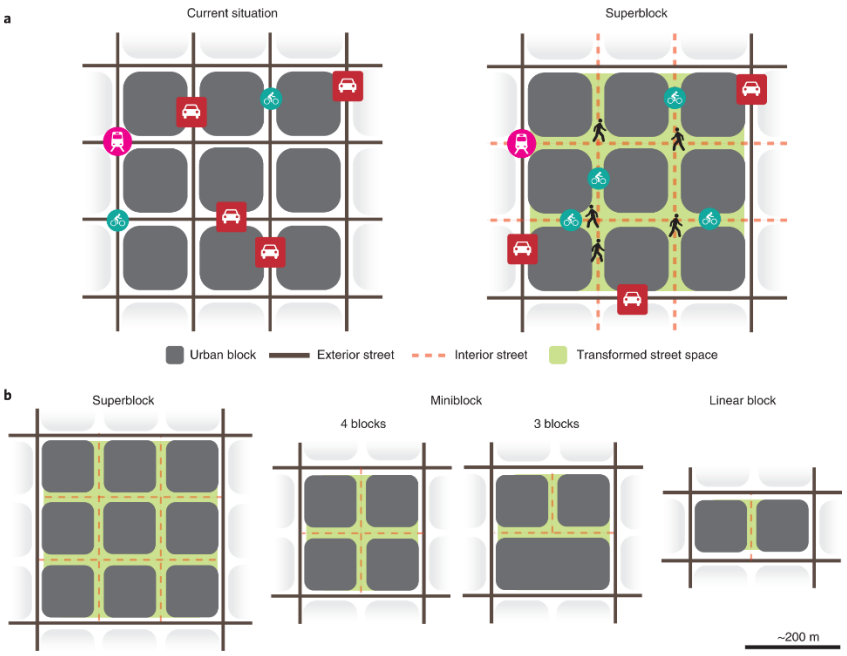


Figure 22 Mobility and Street Hierarchy

Economic and Urban Development:

It is a government-funded project which identifies and modify 120 intersections in the Mobility Plan, sanctioned by Barcelona City Council in the years 2013-2018, and then aims to modify 21 streets by the end of 2030. The revision of the Superblock module also aims to create another 500+ superblocks in the future. The creation of these spaces can pose opportunities for local businesses as it increases foot traffic and makes the neighborhood an area of interest. Property values in these sectors have remarkably increased, however, the initiative needs to be inclusive to ensure that the development benefits equally to all the residents (BCNecologia).

Figure 23 Parking Places to Play Areas

Challenges and Criticism

The proposal faced backlash in the initiation period as residents were concerned about the increasing property values and displacement in the Urban Fabric, but special measures were adapted to foster equality and localisation within the areas in the Neighbourhood. The balance between the needs of different stakeholders is critical to the program's success. Additionally, there is an ongoing debate about the recurring gentrification and displacement of lower-income residents as the superblocks become more attractive.

Figure 24 Natural Elements infused within the Junctions

It can be concluded that the initiative of the city of Barcelona is a revolutionary approach on an Urban scale. The rethinking of the cityscapes, traffic regulation, and promoting walkability has a positive impact on the neighborhood making it more lively. It can serve as an inspiration for the projects in the cities addressing the challenges of rapid urbanization and climate change.

2.2.4.) Piazze Aperte Programme, Milan:

Just like Barcelona's plan to devise improvements and liveliness within the streets, Milan initiated its Piazza Aperte (Open Plazas) Programme in 2018. This program identified and established 38 public squares within the underused streets and localities in Milan. It exemplifies a forward-thinking approach to Urban Architecture and Public Space Management. It focuses on converting underutilized spaces into vibrant and multifunctional public spaces, fostering social interaction and enhancing the quality of urban life (Comune di Milano).

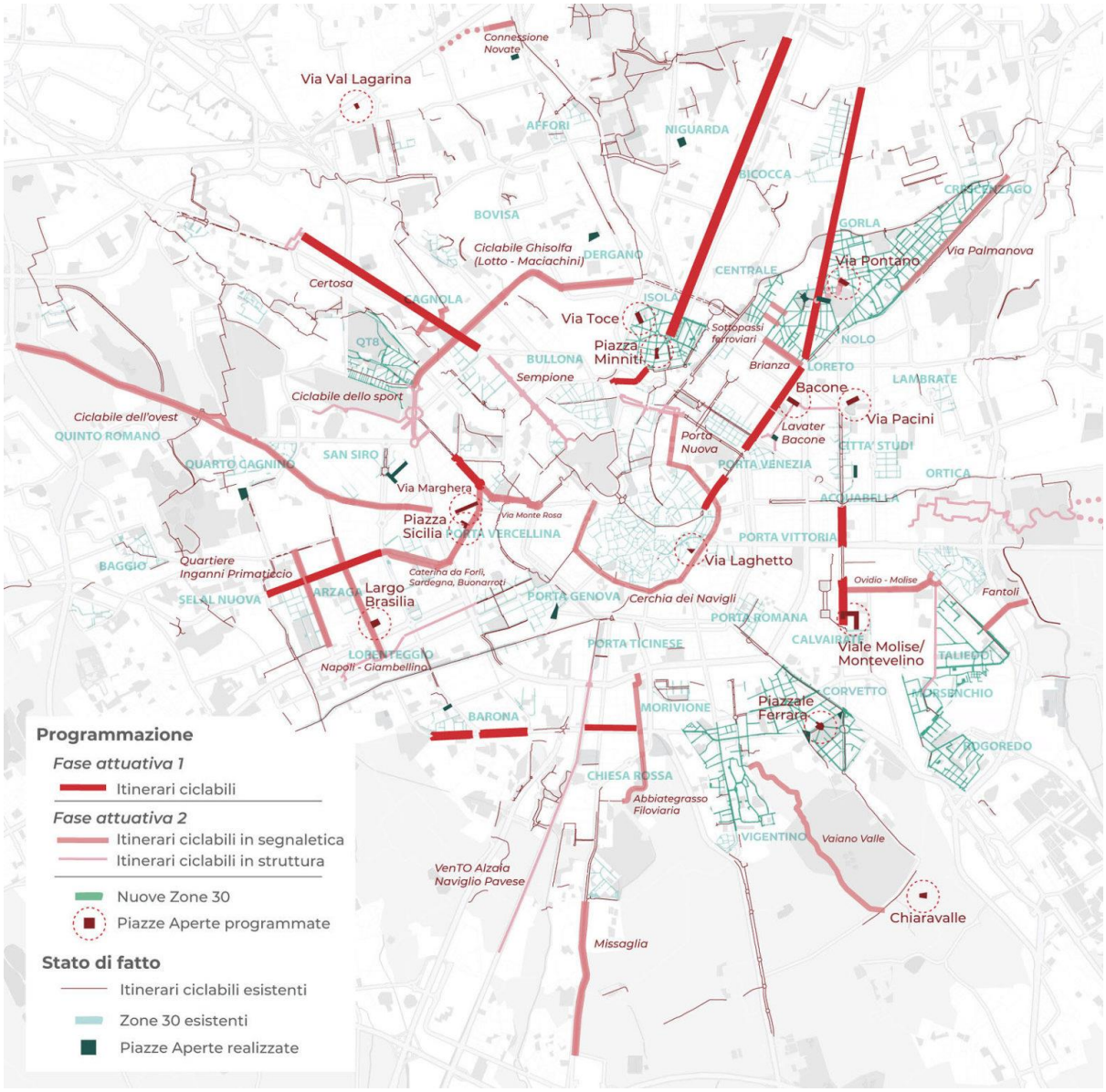


Figure 25 Plan of Milan with Areas Intended for the Programme

Community-Centric Design:

The program prioritizes the involvement of the local fabric in the design and planning process. Piazze Aperte aims to activate neighbourhoods and develop activities and services for residents that involve regional networks and support citizens' organizations, paying particular attention to residents' quality of life. This inclusive approach not only empowers residents but also garners a sense of ownership and stewardship over the newly developed spaces, ensuring long term success and maintenance (Bloomberg Philanthropies).

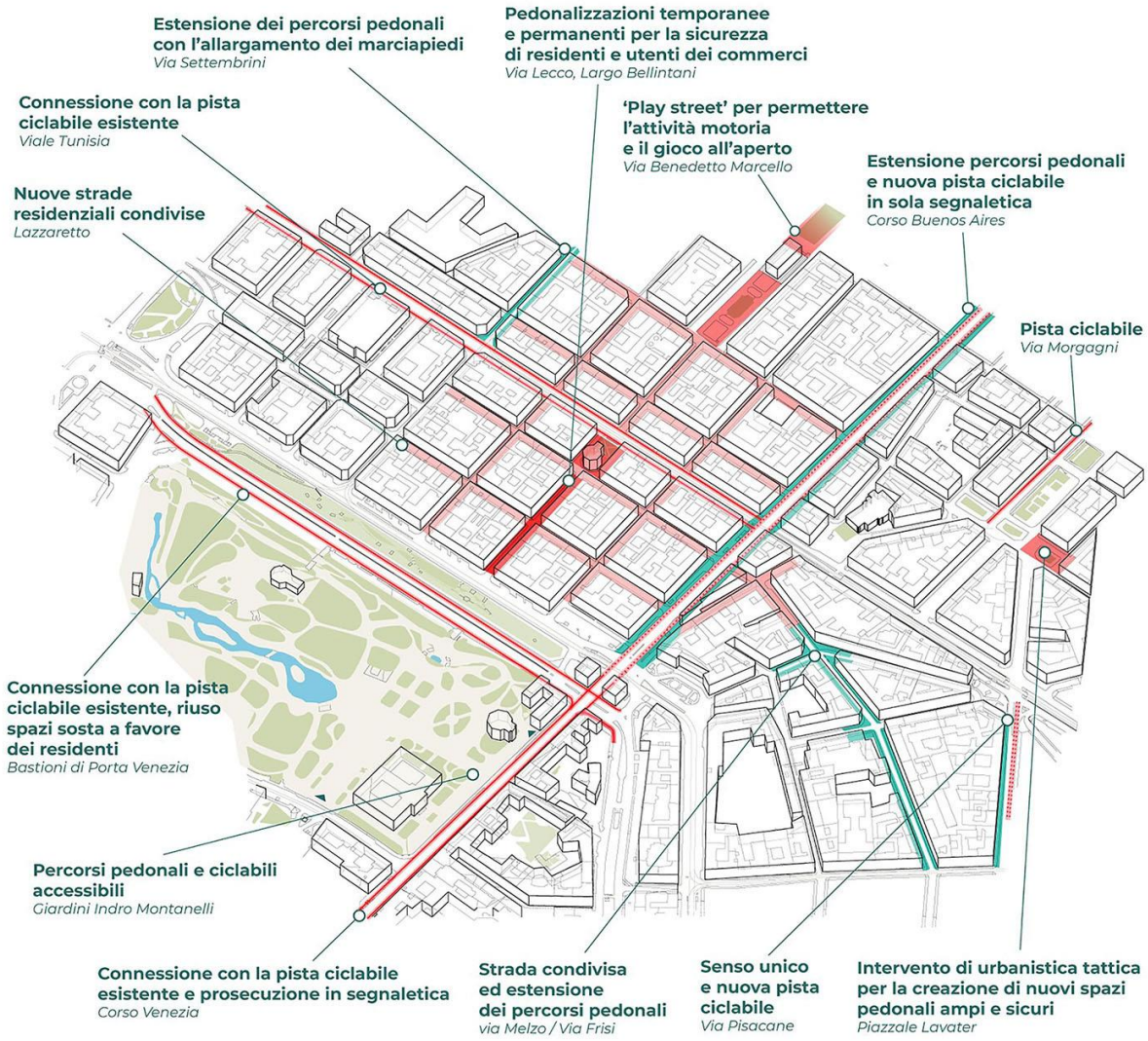


Figure 26 Applicability of the Program

Temporary Makeshifts to Permanent Changes:

The hallmark of the initiative is its use of temporary installations as means of testing and revamping existing urban spaces. These provisional measures serve as an experimental measure that tests the various ideas, applications and implementations based on public feedback and usage patterns. Successful temporary projects often transition into permanent spaces, allowing a dynamic and responsive urban development process. This methodology provides flexibility and adaptability, the key elements in modern urbanism (Arch-Daily, 2019).

Figure 27 Public Involvement

Reimagining Public Spaces:

The open plaza program focuses on repurposing and revitalizing spaces such as parking lots, traffic islands and neglected corners. The transformation of these spaces into attractive and functional public squares challenges conventional notions of urban land use. These interventions typically feature low-cost elements and are replicable across various parts of the metropolitan. The intriguing use of color, patterns, and street murals along with street furniture enhances the visual appeal and functionality of these spaces (Bloomberg Philanthropies, 2019).

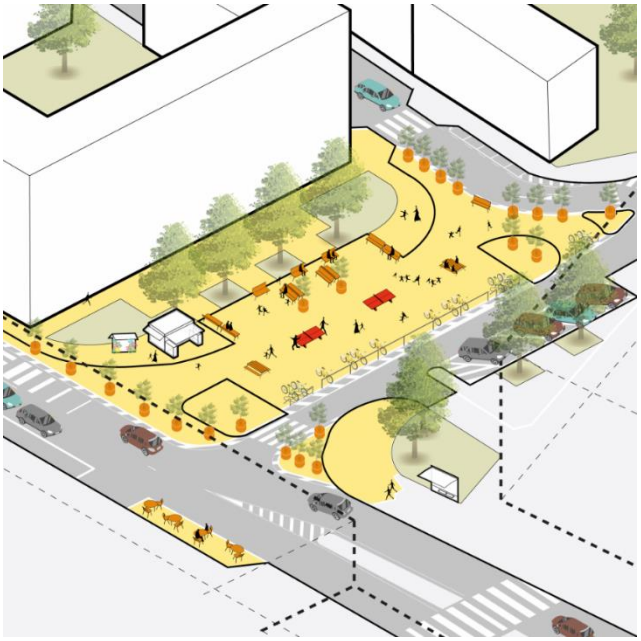


Figure 28 Prototype for Parking Lots

Sustainable Urban Development:

The initiative often incorporates green elements such as permeable pavements, urban gardens, and an increased vegetation area. These features help manage stormwater, reduce urban heat island effects, and improve air quality. Additionally, the program prioritizes the use of recycled and locally sourced materials reinforcing Milan's commitment to a sustainable future. By strategically placing benches, planters (Guerrilla Gardening), and decorative patterns on road surfaces, the city came together and transformed these spaces into more accessible and safer areas for community gathering and similar functions (Arch-Daily, 2019).

Figure 29 Public Spaces for Gathering and Venues for Events

Enhancing Urban Mobility and Connectivity:

The intervention focuses on enhancing green mobility by intervening on an urban level making streets pedestrian and bicycle-friendly and also promoting usage of public transportation. The result of this is a sustainable mode of commuting and decreased pollution rates thereby paving way for a healthier lifestyle among the residents of the neighborhood.

Cultural and Social Impact:

These new spaces serve as venues for community events, gatherings, cultural activities, etc. which overall enriches the cultural identity of the city of Milan. The introduction of Public art, creative seating arrangements interactive installations, etc. garners a vibrant and engaging urban environment.

Figure 30 Piazza Dergano (one of the plazas from the programme)

Additionally, this approach was a part of Territory Governance Plan for Milan 2030 and the Sustainable Urban Mobility Plan, and was modulated along the likes of Bloomberg Associates and Global Designing Cities Initiative, based on the context of "Piano Quartiere" (Neighbourhood Plan).

The Open Plaza initiative adapts tactical urbanism within public spaces and make them the focal points for community life in order to boost interaction, participation and involvement to make the most of the readily available public squares, rather than using them for parking and other subsidiary functions.

The adaptation of this programme enabled half of the Milanese population, accessibility to a public spaces within 15 min walk from their residence and also makes itself a prime example of innovation urban transformation (Comune di Milano, 2020).

2.3. Case Studies for Riverfront Development

Increasing urbanization and climate change demand riverfront development projects with water-sensitive approaches and mitigation strategies to control flooding. These could be mitigated by integrating design strategies such as green infrastructure, and flood-resilient architecture that help develop sustainable riverfronts. The following chapter deals with the case studies addressing the issues highlighted in the previous chapters concerning the context of the chosen site.

2.3.1.) River Loop:

Location: Antioquia, Columbia

Architect: 100 Architects

River Loop is a metropolitan intervention in the riverbanks of Rionegro that extends for over 4 kilometers in length. The master plan defines not only the riverfront itself but also the areas adjacent to the river as a public park with urban equipment of different types for all kinds of users.

Site and Context:

This project transforms the underutilized waterfront into a vibrant multifunctional & public space integrating nature and recreational features alike into spaces thereby enhancing the standard of the riverfront.

To face the immense challenge of imagining the Rionegro Park of the future, and in what way the project could better serve the citizens of Rionegro, the proposal inevitably finds inspiration in the River itself that gives name to its city, and around which the entire project is developed. The project is part of broader urban development efforts to develop and improve public spaces and foster community engagement, enhancing the City's connection to natural surroundings.

Project Objectives:

The main purpose of the proposal is focused on creating a hybrid urban-natural system intertwining three fundamental aspects of the landscape: controlled natural ecosystems, pedestrian accessibility, and a public functional program. The proposal aims to generate

controlled hybrid spaces, interspersing nature and architecture, on the one hand, to contribute to generating a healthy natural ecosystem along both riverbanks, and on the other, to do it in such a way that it can be accessible and enjoyable by citizens, creating a true urban-natural environmental corridor along the winding route.

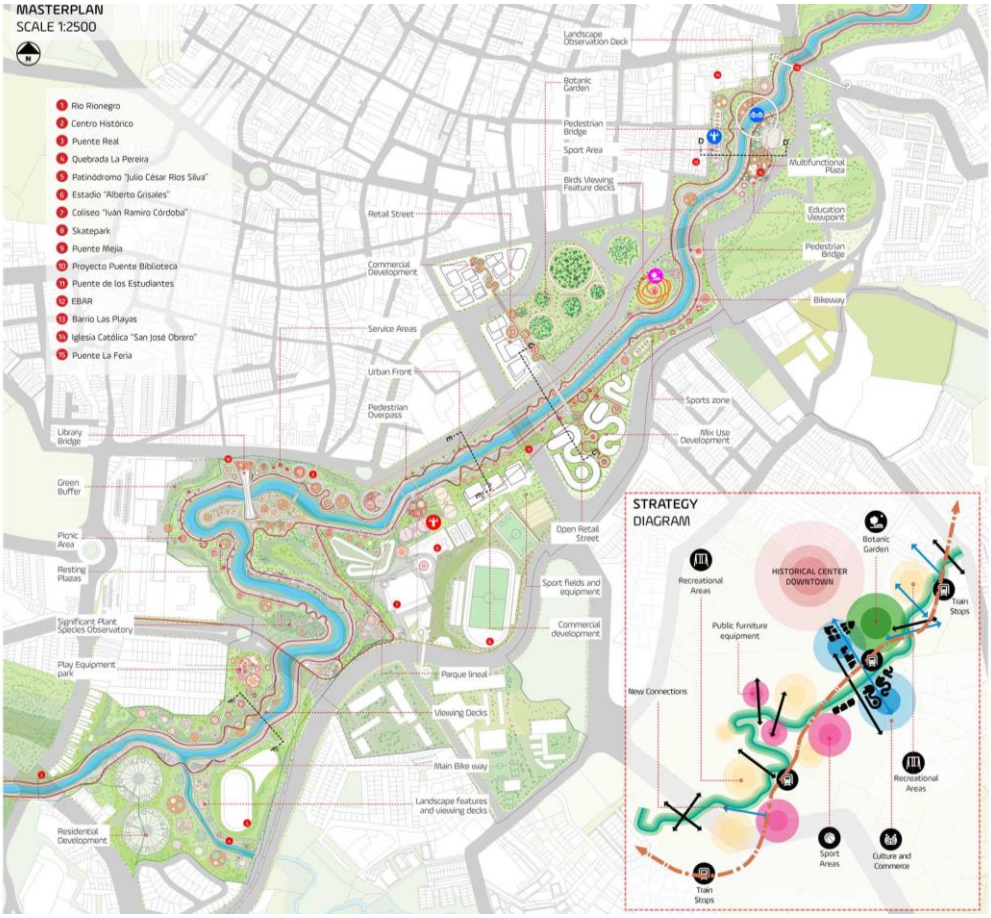


Figure 31 River Loop Master plan

Design Features:

The design emphasizes the concept of fluidity by the free flow of connectivity in the design and providing multifunctional spaces. The fundamental feature of the project is a continuous loop of paths that resonates with the flow of the river inspired by its banks. The continuous multileveled pathway connects various zones to different activities such as commercial, sports complexes relaxation spaces, and cultural spaces.

The project is characterized by vibrant colours making the design aesthetically appealing. The features included in the design such as elevated walkways, installations, open-air theaters

sports courts catering to a wide range of people from residents to tourists making the space lively.

Project Significance:

- The River Loop's main intent is to re-connect the city and the citizens with their fundamental public space, the river through the above-mentioned objectives.
- It connects various public activities such as sports fields, retail spaces, and viewing decks through its landscape design which has resulted in a multi-functional park.
- Reconnecting to the river with the emotional play of color that has been deep-routed with the Country.

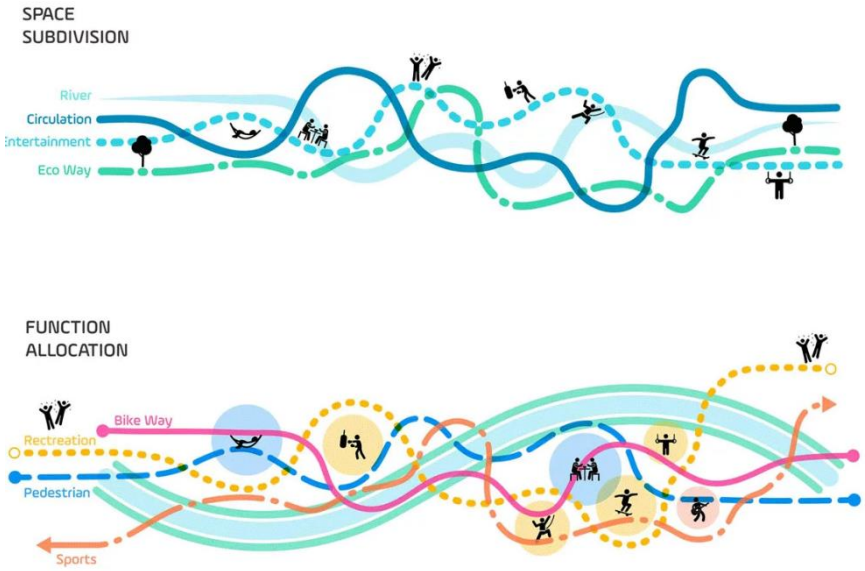


Figure 32 Conceptual Layout

Lessons learned:

River Loop showcases how a neglected riverfront can be turned into a livable space depending on community engagement; designing such spaces helps meet the needs of the users. The incorporation of multifunctional spaces such as play zones, performance spaces, and commercial zones makes sure that the riverfronts are used at various times of the day and are functional all around the year. The usage of multilevel pathways and playful curves helps connect various spaces and ensures community engagement while reaching the different spaces and acts as a continuous element throughout the design. It also projects how the incorporation of elements reflecting the local culture can enhance the identity of the riverfront as a whole and

foster a deeper connection between the locals and the tourists by using simple but colorful elements.

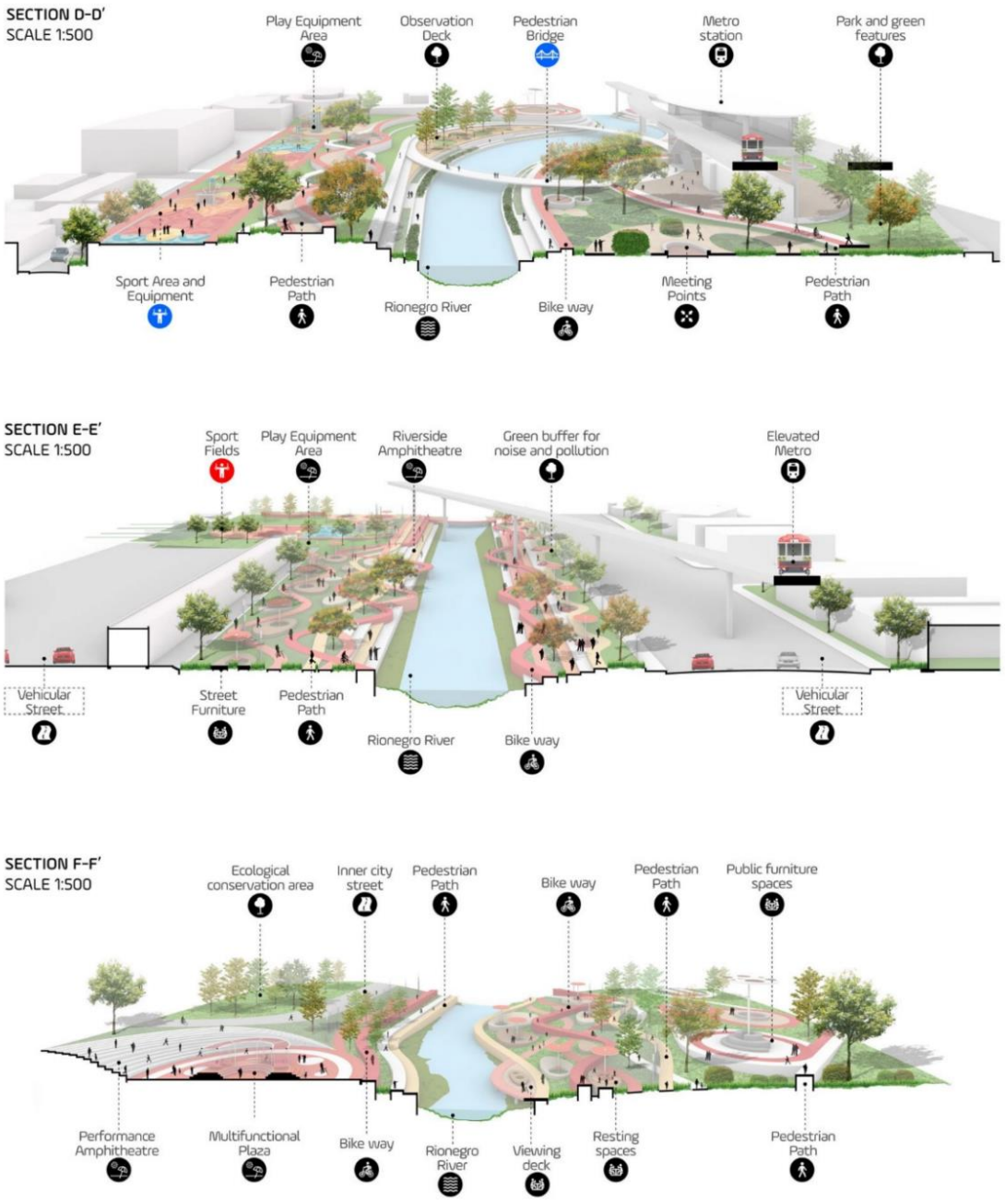


Figure 33 Sectional View of The River Loop Project

2.3.2.) Sanya Mangrove Park:

Location: Hainan Island, China

Architect: Turenscape Architects

Sanya Mangrove Park is an example of showcasing how eco-friendly architectural practice blends seamlessly with nature. The park demonstrates how urban development and natural ecosystems can coexist offering both residents and tourists a retreat with nature. It is a revolutionary approach to urban ecological restoration.

Site and Context:

The site before its transformation was a neglected mangrove forest. Though the forest had the ecological significance of the mangroves the area suffered from severe pollution and encroachments. The construction of flood walls to mitigate flooding was due to rapid urbanization which led to the destruction of the natural ecology of the mangroves. The aforementioned act further increased the flooding of the area.

Project Objectives:

- Restoring the mangrove ecosystem thereby promoting biodiversity.
- Mitigate flooding risks through the landscape.
- Public accessibility to the wetlands.
- Provide green space for the citizens and improve the quality of living.

Design Features:

Sanya Mangrove Park focuses on solving environmental concerns such as flooding, loss of biodiversity, polluted water bodies, etc... The sustainable approach to the design project has resulted in a solution that enhances nature and solves the core problem of reviving mangroves. Architectural interventions such as boardwalks, observation decks, and pavilions have been incorporated into the design by adapting a simple material palette of bamboo and reclaimed woods helping the interventions seamlessly blend into the ecosystem that Sanya Mangrove Park has created.

The trails thus designed will allow users to visualize and experience the natural ecosystem that has been created by the intervention. In addition, the pavilions enable the users to envision the landscape and serve as resting spaces. Smaller channels of ponds replicating the natural water body help in the maintenance and growth of the mangroves.

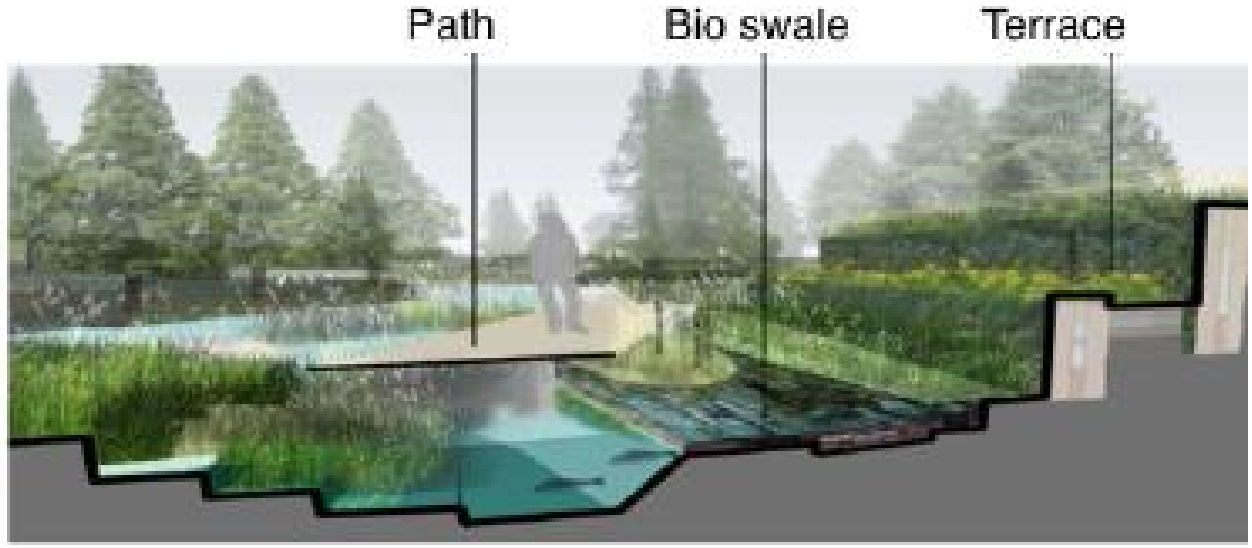


Figure 34 Integration of Bio-Swales and Terraces

The Sanya Mangrove Park is a landmark project that exemplifies the harmonious integration of urban development and ecological restoration. It is designed in an interlocking figure design that allows the natural flow of the tides into the park whilst controlling the Strom currents. The park has terraced landscapes and elevated walkways allowing the visitors to enjoy the natural surroundings. The level difference from the urban roads to water levels is designed with terraces containing bioswales that help catch and filter stormwater from urban pavements thereby creating public spaces at various levels.

Project Impacts:

- Increase in biodiversity, erosion control, and water purification
- Controlled floods due to the presence of Mangroves
- Better spaces for recreation and relaxation thereby improving tourism
- Improved quality of life by providing parks in an urban context.

The mangroves within the interlocked fingers have been established well. Along with the mangroves ecology has improved attracting visitors of different ages. The park has become a daily recreational place for the local communities, and a showcase of ecological restoration that not only benefits the natural environment, but the public welfare.

Lessons Learnt:

Sanya Mangrove Park showcases how the implementation of nature-based solutions on-site helps solve the problem of flooding and thereby bring back the Mangrove trees which acted as a natural flood control system. Integration of stepped terraces with bioswales and other nature-based solutions to tackle the level difference between the road and the water body and help control the inflow of polluted water. Mangrove forest acts as natural barriers to coastal erosion by holding the soil thereby making the design climate resilient. Scalability of the project is a key factor to be considered applying the same design strategies to sites with flooding issues according to the context and climatic conditions helps to create viable nature-based solutions. Designing concerning the flow of the water to help water seep into the mangrove park eventually helps the trees thrive by creating a natural yet controlled environment for their survival which can be adapted in other projects.

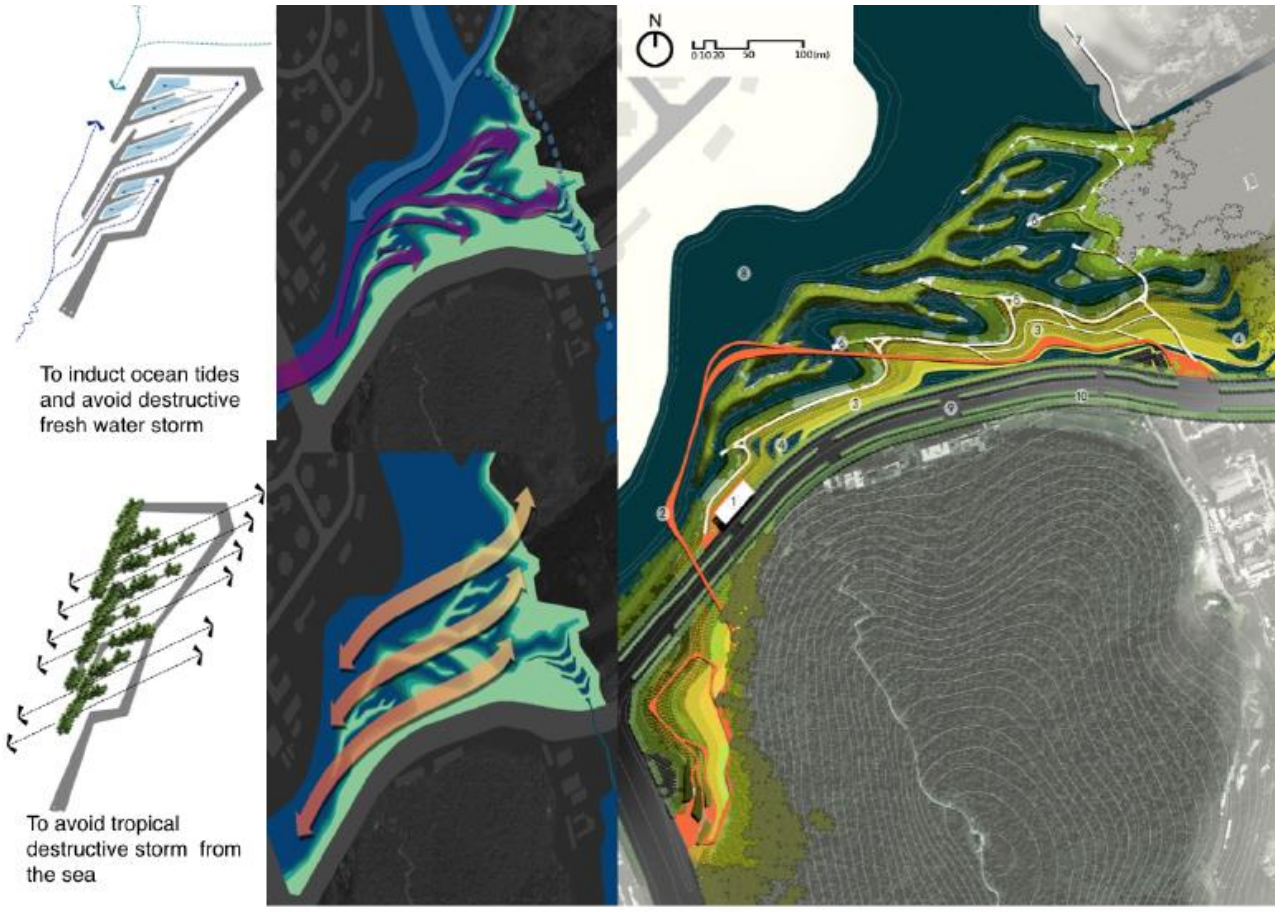


Figure 35 Site Plan

2.4. Mitigation Strategies for the Domains

Flooding is one of the major concerns to be considered regarding riverfront developments. Flooding of rivers is a natural hazard identified by the overflow of water beyond its banks, flowing into the adjacent lands. It is usually caused by various reasons, including rapid urbanization, topographic conditions, intense rainfall, rapid melting of snow, and dam failure. It causes significant risks to human life infrastructure agriculture and the environment, making it necessary to reduce its impacts through mitigation strategies.

Mitigation strategies can be categorized as structural measures, Non-structural measures, and nature-based solutions. The structural measures include levees and Flood walls which are generally constructed to contain floodwater; Dams, and reservoirs to control floods, regulate the flow of rivers, and store excess water. Non-structural measures include floodplain zoning such as restricting the development of flood-prone zones, and Watershed management practices like agriculture and forestry thereby enhancing water absorption and reducing runoff water. Nature-based solutions like wetland restoration, Bio retention areas, River flood plains, and Mangrove forests (World Bank, 2021). The following chapter explains in detail the nature-based solutions for mitigation strategies.

2.4.1.) Bio Retention Areas:

The bioretention area is used to augment the conventional system of gray stormwater and sewerage infrastructure. Bioretention areas are shallow landscaped depressions which are typically under drained and rely on engineered soils, enhanced vegetation and filtration to remove pollution and reduce runoff downstream. They are aimed at managing and treating runoff from frequent rainfall events.

Bio retention areas can be adapted to a variety of urban environments. The form of the system is flexible according to the context. Some examples of bio-retention areas are Bioretention basins, infiltration trenches, vegetated swales, retention ponds, rain gardens, and detention ponds. Recent research shows that bioretention facilities reduce flood peaks, runoff volumes, and pollutant loads while increasing runoff lag times, groundwater infiltration, and evapotranspiration (Allen P. Davis; William F. Hunt; Robert G. Traver; and Michael Clar, 2009).

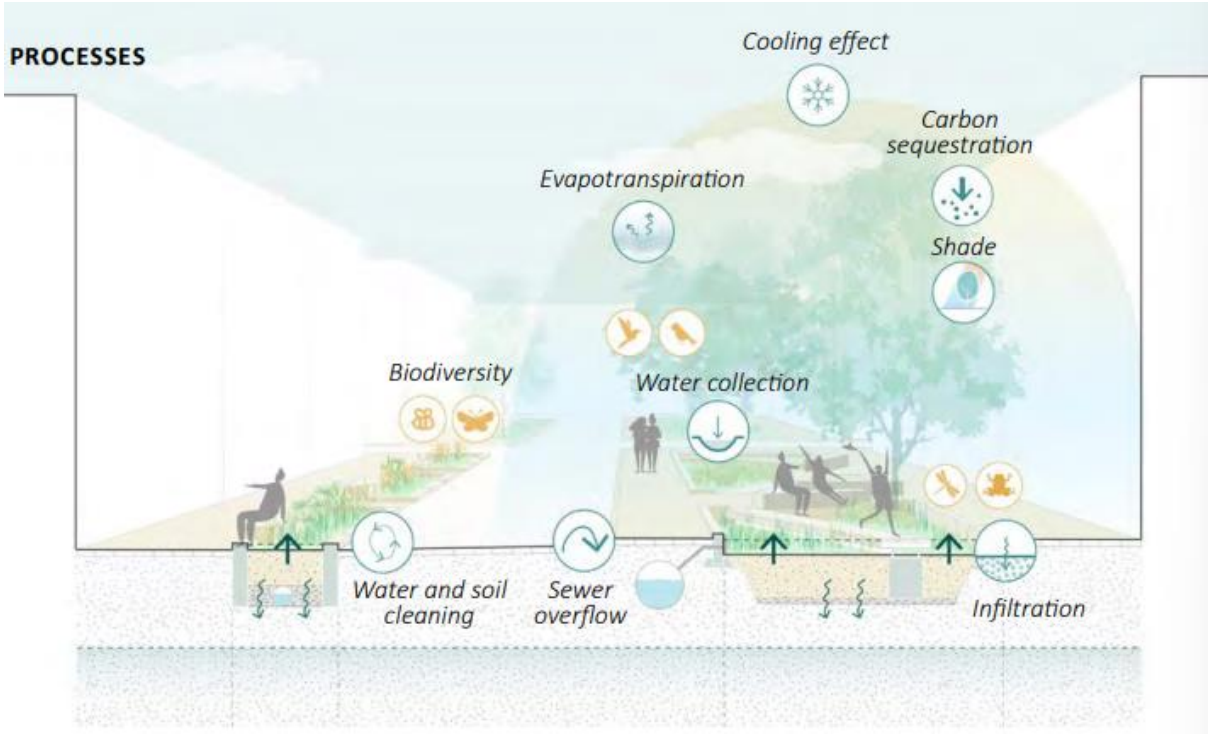


Figure 36 Schematic section showing Bio retention areas

Techniques:

- **Bioswales and Rain Gardens:**

  Bioswales and rain gardens are vegetated ground depressions with vegetation growth that helps to promote groundwater infiltration by flooding and facilitate ground infiltration during storms. Whereas in the dry season, they function as a public space. Bioswales are implemented along the streets and rain gardens in parks, and gardens.

- **Detention Pond:**

  Detention ponds are deeper to capture and store stormwater during heavy rains and recharge the groundwater excess of which is discharged to the sewer system.

- **Retention Pond:**

  Retention ponds are permanent water bodies with vegetated edges. They collect stormwater from the surroundings, store it, and later let it into the sewerage system. During drought conditions, they act as public green spaces.

- **Permeable Pavements:**

  Permeable pavers are an alternative to traditional pavers for reducing surface runoff by infiltrating treatment and storing water, thereby reducing the runoff water to seep into

the layers underneath, including stone aggregate and filter layer of fabric at the bottom. They can be used in parking lots, pedestrian walkways, institutional spaces, etc…

Functions & Benefits:

Functional use of bio-retention area includes reducing pluvial flooding and mitigating water loads on stormwater and sewerage systems by collecting, infiltrating, and storing stormwater. Heat regulation can be achieved because of lowered surface and air temperature through evapotranspiration. Other functions include the removal of pollutants from soil and water and recharge groundwater levels (World Bank, 2021).

These areas improve the quality of life by providing spaces for gathering and social interaction. When combined with traffic regulation systems safety and use of public spaces can be handled together.

- Natural and local spaces for local interaction
- The system on streetscapes reduces car dominance and incorporates nature in public spaces
- Improve the transition between public and private spaces within cities

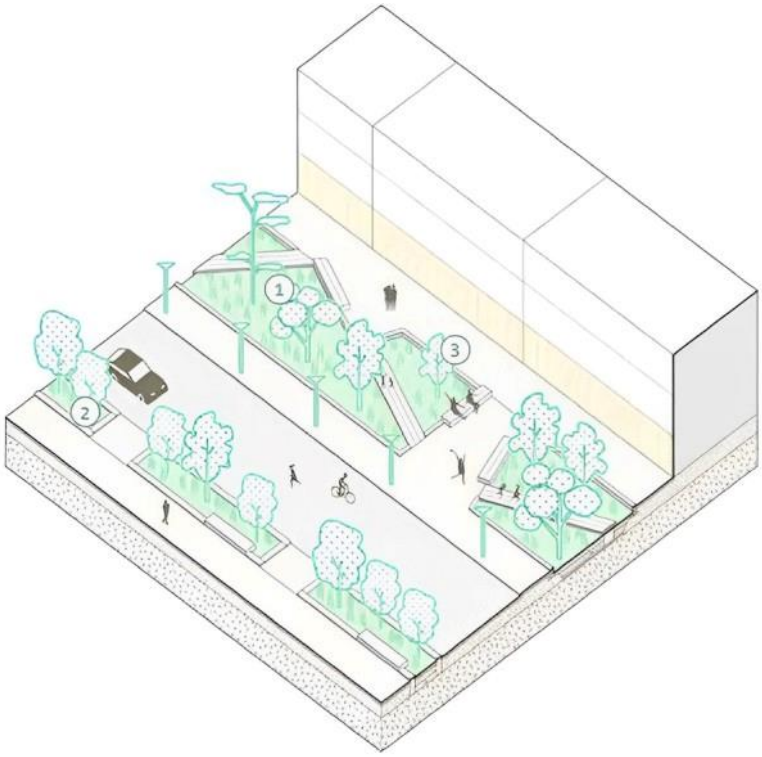


Figure 37 Bio-retention area in an urban setting

Case Studies:

- **Permeable Pavements in Portland, Oregon:**

  The permeable pavement system of Portland plays a vital role in the stormwater management system. Rapid urbanization and impermeable surfaces led to increased flooding and degraded water quality in Portland. This problem was addressed by replacing it with permeable pavers. The system mitigates surface runoff and enhances groundwater replenishment by infiltration through soil. The utilization of permeable pavements in Portland underscores the need for supportive policies that incentivize or mandate the incorporation of green infrastructure in urban development (Sharma, S. N., & Ayuba, D, 2024).

- **Rain Garden in Chicago:**

  Rainforest in Chicago was a program initiated in 2014 aimed at the installation of rain gardens in both residential and commercial zones. “Rain gardens are characterized by shallow depressions with native vegetation to collect and penetrate the surface runoff water. The success of this program is evidenced by the installation of over 1,000 rain gardens to date, resulting in a reduction of flooding by up to 30% and an improvement in local water quality” (Sharma, S. N., & Ayuba, D, 2024, p. 24).

2.4.2.) Constructed Wetlands:

Constructed wetlands are treatment systems that use natural processes involving wetland vegetation, soils, and their associated microbial assemblages to improve water quality. They are engineered systems designed to mimic the functions of natural wetlands. They can be used in urban regions to Improve biodiversity, reduce carbon sequestration, erosion control improve the environment help cities adapt to climate change, and reduce groundwater contamination through surface runoff. During arid climates and areas with water scarcity constructed wetlands can help in the reuse of water, recharge aquifers, and conserve natural resources.

They protect urban areas in case of flooding and maintain the water quality in natural sources. They work by reducing the flow of stormwater runoff and letting it infiltrate the ground. The vegetation in them helps in water filtration and enhances the water quality. The form of which can be adapted to fit urban settings including parks, parking lots, and gardens.

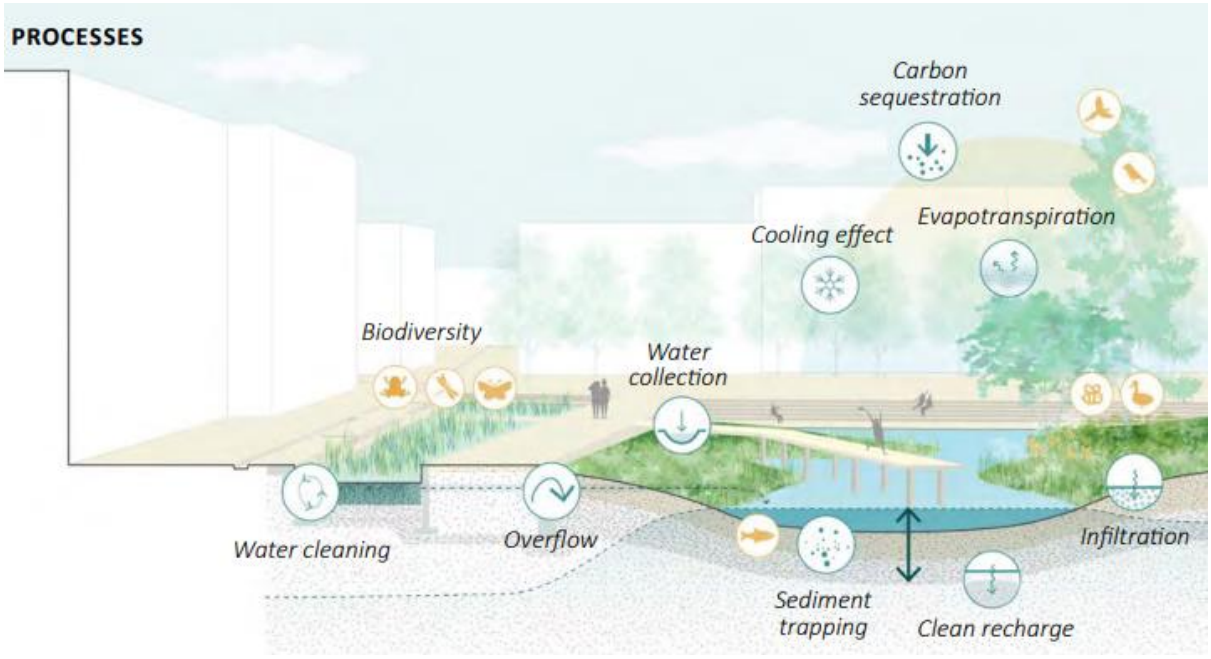


Figure 38 Schematic section showing constructed wetland

Construction Techniques

- **Surface Constructed Wetlands:**

  Surface-constructed wetlands cleanse water through the system of vegetation and soils that remove contaminants by imitating the natural wetlands. In addition to water purification, they aid in improved levels of biodiversity (Kennen, K.,Kirkwood, N. , 2015)

- **Subsurface Gravel Wetlands:**

  Horizontal subsurface-flow constructed wetlands work by pumping contaminated water slowly through subsurface gravel beds which get filtered through root zones and soil in vertical or horizontal flow patterns. They offer the advantage of space efficiency and the ability to prevent mosquito breeding (World Bank, 2021).

- **Floating Wetlands:**

  Constructed floating wetlands contain floating structures on which plants are installed, they are placed in existing water bodies to filter contaminants. Contaminated natural and man-made water bodies can be treated with floating wetlands. Similar to surface-constructed wetlands they improve the natural habitat and enhance surface temperature.

Functions and Benefits

During floods, the constructed wetlands reduce the stormwater runoff by collecting and storing them. The wetlands' size and shape determine the runoff water's storage capacity. It influences surface temperature, humidity, and microclimate through the natural process of evaporative cooling. Constructed wetlands play an important role in carbon sequestration.

- Recreational urban spaces
- Opportunity to increase awareness and involvement in water-related challenges
- Aesthetic and sensory exposure for urban communities

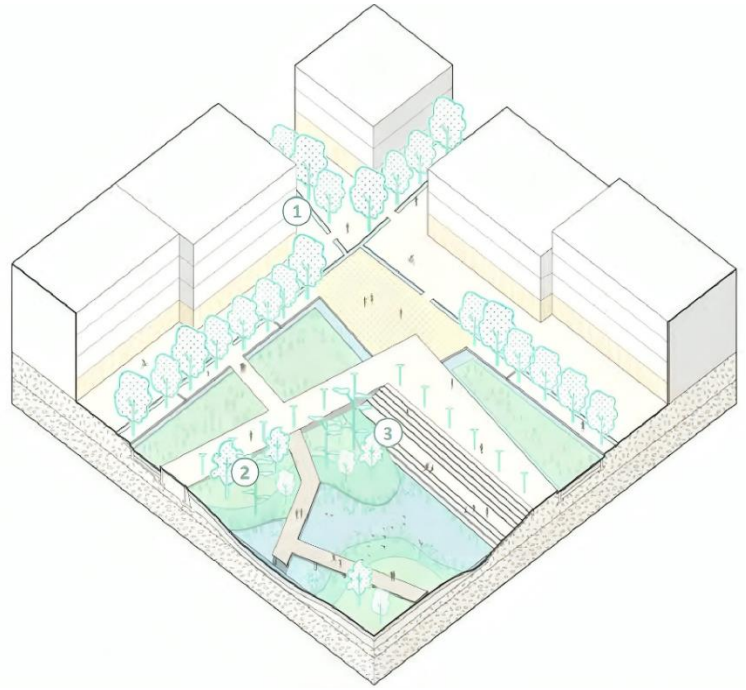


Figure 39 Wetland in an Urban Setting

Case Studies:

- **Constructed wetlands in Rotterdam, Netherlands:**

  The city of Rotterdam is affected due to climate change and faces significant problems with stormwater control and flood prevention challenges. The system of constructed wetlands mimicking the natural ones was integrated into the urban landscapes of the city which contributes to the purification of water and the enhancement of biodiversity. The experience of the city highlights the critical role of community engagement in the development and utilization of nature-based solutions. The incorporation of local communities in the projects helps keep them lively and in line with their needs and

preferences. The city's successful implementation of artificial wetlands acts as a model for cities facing similar issues.

- **Qunli National Urban Wetland, China;**
  Qunli New Town is a planned district on the outskirts of Haerbin City, China. Planned to accommodate 350000 new residents in about 32 million square meters of built-up in 2010, of which only 16.4 percent of the land was permeable green spaces which was formerly a flat plain. With frequent flooding and waterlogging a former wetland area of 34.2 hectares was designed as an urban stormwater park.
  The stormwater collected in the urban space is infiltrated into the ponds in the wetland. The project is a success, the network of paths along the wetlands provides visitors a feeling of walking through the forest experience. Recreational spaces are integrated to the park system for leisure activities.

2.4.3.) River Flood Plains

- Floodplains can be defined topographically as relatively flat surfaces that stand adjacent to river channels and occupy much of the area constituting valley bottoms.
- Early human settlements started along rivers and used the food plains as sources for food and agriculture. Rapid urbanization in today's world has increased the rate of flooding along the banks leading to concerns about risks due to flooding and management actions. Traditional levee construction methods and dredging rivers reduce local flooding but increase the chances of downstream flooding.
- Rapid change in climatic conditions and clarity about these issues has led to the demand of more sustainable and multifunctional practices. As a result, numerous cities around the world are investing in rivers and flood plains restoration projects to find solutions for water sensibility problems under the concept of “Room for the River”, allowing rivers to handle high water levels. While addressing the issues of riverine flooding these projects also create space for recreation and enhance wildlife habitats (World Bank, 2021, p. 183).
- The approach for preserving floodplains can be carried out by preventing encroachment along the floodplains, preserving natural tree cover, restoring the natural process of floodplains, and making the floodplains more sociable by incorporating recreational activities.

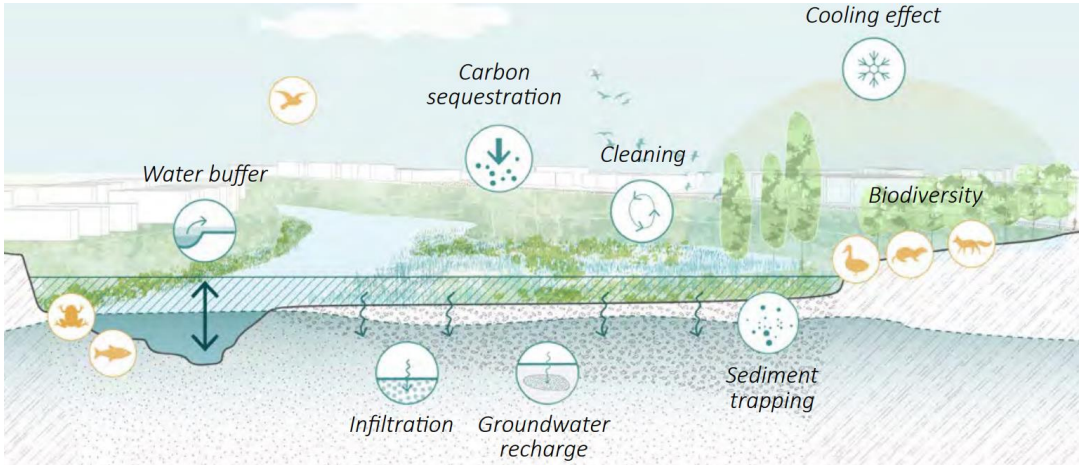


Figure 40 Schematic section showing floodplain

Special Techniques:

- **Setting Levees Back:**

  Levee setback is the process in which the levee is relocated inwards further from the natural flow of the river to allow the river to flood in the setback space provided. The space thus provided helps reduce flooding and allows ecological enhancement improving biodiversity and space for recreation.

- **River Bypass or Oxbow:**

  An oxbow is a river meander typically cut off from the mainstream through the man-made or natural process of channelization. Usually, water levels are maintained by diverting the flow to the oxbow during floods.

- **Re-activating the Floodplain:**

  In incised floodplains, a new meandering stream channel is created by raising the stream bed over the original one. The old channel is then filled, becoming a floodplain feature. This method works well where lateral constraints are minimal and increased flooding is acceptable (World Bank, 2021, p. 185).

Functions and benefits

Flood plains help in riverine flooding regulations by providing space for the water to flow. Vegetation on the floodplain helps lower the speed of the flow of surface water. They also play a role in heat regulation and improve water quality. Flood plains are used as resources for

cultivation in some cultures. Creating a habitat for wildlife and birds and passive recreation is also promoted on the flood plains.

Figure 41 River Flood plain in an urban setting

Case Studies:

- **Rio Bogota Environmental Flood Control Project:**

  The primary aim of the Rio Bogota project was to transform the river into an environmentally friendly asset for the metropolitan region through improved water quality, reduced flood levels, and incorporation of multifunctional areas along the river. The rehabilitated zones come under functions such as ecological habitats, public space, and flood detention areas.

  The main strategies were to reduce flood risks, restore riparian, establish multifunctional zones along the river, and water treatment plants. Environmental improvement included river dredging, embankment construction, meanders and wetlands, and the construction of a recreational landscape. The benefits of the projects include heat stress reduction, improved economy, and reduced flooding.

- **Room for the River Programme, Nijmegen, Netherlands:**

The project was started in 2007 by the Duch government with the development of the room for the river Programme due to the flooding damage suffered in the previous years on the Rhine River. The primary goal was to manage the higher water levels by lowering the floodplains. Restoring the river's natural floodplain in the areas of least harm to protect the areas that need to be defended.

More than thirty locations were identified across four rivers to give them more area to flood. As a result of the construction of these channels that bypass the river, an elongated island was created. The island thus formed not only reduced flooding but also acted as a recreational and ecological area adding aesthetic values to the project.

The project increased the quality of space thus obtaining environmental benefits abundantly. The entire area is now a river park where nature and leisure spaces co-exist.

2.5. Applicability, Surveys, and Research Questions

2.5.1.) Applicability of the Study within the Chosen Context of Regio Parco:

From the aforementioned detailed studies of urbanism, domains, and built and green infrastructure along with extensive research and case studies, it can be concluded that the chosen Urban Pocket possesses great potential for intervention along the following lines:

1. The context has urban and natural spaces which can prove to introduce harmony to the urban pocket and incentivize social cohesion and participation. In particular, Piazza Abba, the Core of the Village, the Tow-Yard facility behind the Tobacco Factory Complex, and the Shed area along the riverfront to name a few.

2. The Village Block of Regio Parco can be envisioned as a self-sustaining superblock but on a much more conventional scale, the area can be incorporated with measures to pertain to Tactical Urbanism, wherein understanding of the various Accesses (Historical and Metropolitan), connectivity and the different zones in the built infrastructure would help tremendously.

3. The inculcation of tactical urbanism measures could reap long-term benefits for the residents, along with the proposed development of the Former Tobacco Factory as a Cultural District, which would invite a higher footfall in the future, along with the introduction of the M2 Metro Line. This would guide the level of intervention that can be introduced in the urban domain.

4. The selected streets within the Urban Domain, along with the chosen plazas shall be taken in consideration for deploying this tactical urbanism shall enhance the liveability of the area, in particular Via Maddalene, Corso Regio Parco and Via Norberto Rosa for the streets and Piazza Abba, The Village Core and the Church Complex along Via Norberto Rosa for development of Open Spaces.

5. These measures shall also enhance the walkability of the streets and ensure safety of the pedestrians and residents alike, giving Regio Parco a distinguishable identity on the Metropolitan Level.

6. The interventions on the street level shall encourage local inhabitants in participatory roles and provide the new development with a sense of homogeneity, and a unique identity in comparison to the other Urban Spaces located in the vicinity and the city.

7. Interventions for the spaces between the factories, namely the Former Tobacco Factory and the Former Spinning Mill (Former-FIMIT) include reimagining the car tow-yard and the shed area into an insightful, multi-stepped plaza leading to a combination of urban wetland infused within the Natural Domain, paving a smooth transition between the built and the natural domain within the chosen site.

8. Sustainable landscape practices can be incorporated into the plaza area, and the wetland setting to mitigate flooding thereby restoring the ecological balance, a new biodiversity setting, and ensuring long-term sustainability.

9. Continuous elements and continuity features shall also be incorporated in the site altogether to provide a sense of homogeneity between the various domains and the aspects located on site.

10. On the City Level, wayfinding shall be made easier altogether, given the provisions for car-free streets (Pedestrianized Zones), enhanced walkability (in both the Urban Domain and the Natural Domain), and the smooth merger between the 2 domains using Tactical Urbanism, landscaping and mitigation strategies shall ensure that the intervention is aimed towards converting the underutilized spaces into vibrant and resourceful zones which offer various functional, recreational and communal opportunities.

This questionnaire below was created to gather preferences and insights regarding the proposal for the Redevelopment of Regio Parco as part of the thesis. The main problem that the questionnaire addressed was how the people living in Turin either students or working class

perceive Regio Parco as a region when compared with the rest of Turin and wanted to determine the major factors that need to be incorporated for the suburb to be more active and lively.
The responses thus collected provide us with valuable insights for the development of our thesis.

2.5.2.) Questionnaire:

1. How old are you?
    a. 12-20
    b. 20-35
    c. 35-50
    d. 50-70
    e. 70 +

2. Which of the following categories do you belong to
    a. Resident of Turin
    b. Student
    c. For Work
    d. Other

3. How long have you been in Turin?

4. Which of the following spaces do you think Turin should provide?
    a. Recreational spaces
    b. Housing facilities
    c. Co-Working spaces
    d. Functional open spaces
    e. Other

5. How can public open spaces in Turin be improved?
    a. Sports Infrastructure
    b. Recreational spaces
    c. Performance spaces
    d. Restaurants and bars

e. Community spaces
f. Other

6. How can the open spaces along riverfronts be improved?
    a. Promenades
    b. Bicycle tracks
    c. Passive recreational spaces
    d. Parks for animals and humans
    e. Vegetation
    f. Playgrounds and sports facilities
    g. Other

7. Would you consider living near Regio Parco and why?

8. Which elements according to you would improve the perception of security?
    a. Addition of more functional spaces (24/7)
    b. Well-light spaces
    c. Installation of security systems
    d. Police depots
    e. Others
9. What spaces can be integrated to improve the neighborhood in and around Regio Parco?
    a. Housing
    b. Recreational spaces
    c. Co-working spaces
    d. Study halls
    e. Commercial spaces
    f. Super Markets
    g. Health facilities
    h. Eco Park
    i. Other
10. Which features in public spaces could contribute to the history of the river in this part of the city?

11. Which functions would you like to incorporate in the redevelopment of the space in between the Former Tobacco Factory and the Former FIMIT?
    a. Public space
    b. Performance Space
    c. Co-working space
    d. Eateries
    e. Exhibition spaces
    f. Other

12. How do you prefer moving across different parks and open spaces
    a. By walk
    b. With bicycles
    c. Using Motorized vehicles
    d. Others

13. How often do you take part in community events
    a. Never
    b. Rarely
    c. Often
    d. Very often

14. In what ways can community interactions be improved?
15. Given the authority and freedom what feature would you prefer to implement in Regio Parco?

2.5.3.) Collective Responses:

1. Responses were collected from various age groups between 12 -50 from 50 participants.
2. Participants were diverse including both native, and non-native residents of Turin involving students, workers, and others.
3. The majority of the group expressed providing provisions for Housing, Recreational spaces, Community spaces, and Coworking spaces to be provided in Turin thereby improving the city's public spaces.

4. Providing spaces for passive recreation and promenades was highly suggested to improve the spaces along the riverfront.
5. Enhancement of safety and connectivity to the rest of the city is crucial for making Regio Parco a more livable locality.
6. Installing lighting systems and 24/7 functional spaces was essential to enhance the region's safety.
7. Recreational spaces, Coworking spaces, and housing services could be integrated to improve the quality of the neighborhoods of Regio Parco.
8. For the redevelopment of the spaces between the former tobacco factory and the former FIMIT complex, incorporating public spaces and coworking spaces was recommended.
9. The mode of commute preferred by people between public spaces and parks is by walking or bicycling.
10. Providing space for community interaction by organizing regular local markets, and cultural activities could help boost community interaction in the region was suggested.

Chapter 3 –
Understanding Regio Parco, The Village, and The Former Tobacco Factory

3.1. About the Site

3.1.1.) Introduction to the Site:

The urban intervention is located in the vicinity of the proposed metro stop Cimarosa-Tabacchi of line M2 in Tuin. The subway routes which were initially planned through Corso Regio Parco were then modified due to a higher density of traffic along Via Bologna and the potential user's welfare.

Our project mainly focuses on regions of Regio Parco which includes the Former Tobacco Factory, the residential cluster adjacent to the historic building addressed as the village settlement, and the former FIMT complex. The location of the metro stop between the districts of Regio Parco and Barriera di Milano plays a crucial role in the connectivity to the site in our project. This region is connected to the history of the Savoy residence and also the entertainment of the city. The Savoy palace which served as a hunting space was then transfigured into the Tobacco Factory. The region's face then changed from an agricultural one to a manufacturing area to at last an industrial one which was eventually abandoned.

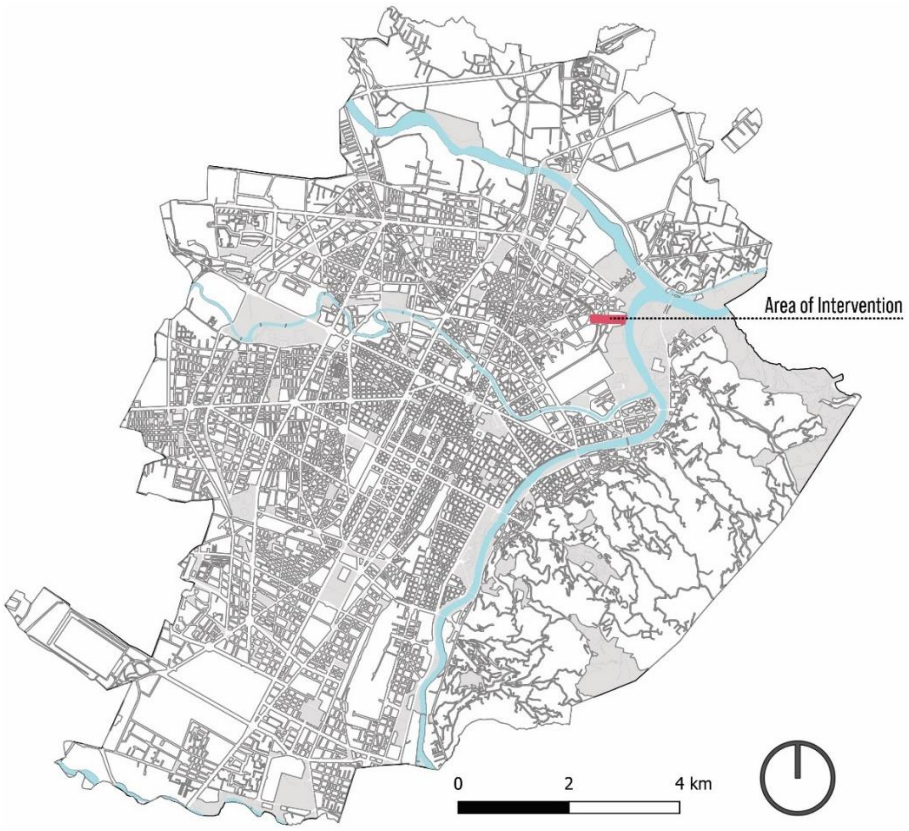


Figure 42 Location of the Site w.r.t. Torino Metropolitan Area

3.1.2.) Natural Infrastructure:

The city of Turin is closely related to the natural system comprising the greenery, Mountains, and the water body i.e. the Po River. On March 19, 2015, during the MAB, Man and the Biosphere Congress held in Lima The Po Park and the hill of Turin were recognized as "UNESCO Italian Biosphere Reserve"[2]. An area of 1,700 square kilometers which includes 85 municipalities & 120 km of the river must be bounded according to Art. 134 of Legislative Decree, 2 January 2004, n.42 "Code of Cultural Heritage and Landscape".This was the first time in the country that an area with a higher population density had such a recognition which led to the city's attention in terms of tourism and environment.

In the 19th century, a few buildings in addition to the Savoy residences were located along the river due to the distance of the river from the ancient city. The development that took place in the Napoleonic period; the demolition of the old walls, and the construction of bridges made of stone shortened the distance considerably thereby strengthening the relationship of the city with the river (Cappelletti, 2001). Leisure linked with the rivers was active until the late 1950's, when the city passed into mass motorization which in turn led to the interruption of the relationship between the city and the river. From 1960, natural elements had to undergo major changes due to the addition of new infrastructures, bridges, and road networks. The period between the years 1970 to 1990 marked a new culture focusing on the redevelopment of the city's riverbanks and the urban parks. This was the period that the Piedmont region launched plans such as the Territorial Operational Project (PTO) for the protection of the environment defining the rules for the whole of the river belt in the Piedmontese region and defined "rules on the protected areas".

First among the proposals of PTO in 1989 aimed at providing information on the problems and prospects for recovery of the river and guidelines for developing the same. The Area Plan of the river belt Protection system was drafted to elaborate the PTO. The plan includes the river beds of Cuneo, Vercelli-Alexandria, and Turin, Concerning the Turin riverbank, it was planned to develop the urban edge of the city and renaturalize the unbuilt areas in the riverfronts and the areas surrounded by the confluence of Stura di Lanzo (Area Plan of the Po River Park, n.d.)

In the 90's new plans such as Natura 2000 were approved and adopted by the European Union for the enhancement and maintenance of the ecosystem. **The Natura 2000 Network** is an ecological network spread across the entire territory of the European Union, established

2 UNESCO-MAB Report-https://unesdoc.unesco.org/ark:/48223/pf0000378679

under Directive 92/43/EEC "Habitats" to guarantee the long-term maintenance of natural habitats and species of flora and fauna threatened or rare at the community level[3]. The areas that come under Natura 2000 in Piedmont are the parks of Arrivore, Confluence Park, Parco Colleta, and Messino Park. Nevertheless, the areas above mentioned are being used less by the people of Turin due to their lack of proper connectivity. During the same years, studies were carried out for the green system for municipal regulatory plans identifying the system of green and the blue, the river, and the parks of the city.

Corona Verde is another system that takes into consideration the green infrastructure of Turin approved in 1997 bringing together the Savoy residence and the Turin's parks. The system aims at improving the ecosystem of the city by incorporating the city with the river which eventually has an impact on the imageability of the city and the urban life of its citizens.[4]

Turin's parks have an impact on its overall imageability and they are one of the basic elements to be considered when redesigning a part of Regio Parco. With the proposal of the metro line coming in the future, enhancing the connectivity would have a great impact on the footfall of the Parks. By making it easily accessible to the people using the new metro line the urban life around the city center and the areas surrounding it can be redirected to its suburbs which were more active in the history of Turin.

3.1.3.) The Historic Past:

The urban transformation of the Borgo Regio Parco and its surroundings can be seen in the chapter below. The historical research thus obtained would allow us to reconstruct the transformation of the area and its influence on the neighborhood.

The earliest records for the history of this neighborhood are from the 14th and the 16th centuries when the population was dipping because of the dreadful Plague that people of Turin moved to the countryside used to move out of Turin due to the Plague. Later in the time was the development of Villas for holidays on the city's outskirts (Angeli L., Castrovilli A., Seminara C., 1999, p. 13). The Royal Park was recognized by Emanuele Filiberto of Savoy in the mid-16th century after the treaty of Cateau-Cambrésis of 1559 (Comoli Mandracci V., Goy F., Roccia R., 1998). In the year 1563, the transfer of the Dutch capital to Turin increased the development potential of the outskirts area adjacent to the historic center (Angeli L., Castrovilli A., Seminara C., 1999, p. 14). The duke started acquiring the adjacent territories for security

3 http://www.cittametropolitana.torino.it/cms/fauna-flora-parchi/parchi-aree-protette/siti-della-rete-natura-2000

4 https://www.regione.piemonte.it/web/temi/ambiente-territorio/ambiente/corona-verde

reasons by purchasing them from 1564 to 1574 which included the area of the regions between Stura and Dora and the "Palco" to form a single unit of land. The Palco region was primarily used for hunting. Still, due to its orientation and geographical layout, it was added as an extension to the Palazzo Vecchio (Comoli Mandracci V., Goy F., Roccia R., 1998, p. 22) and in 1568 was planned for the transformation of the park of Viboccone.In 1580 Carlo Emanuele son of the Duke succeded him and destined the palace exclusively as a recreational residence (Milleto, E., & Sasso, E., 2016, p. 56). Between 1602 and 1609 was the design and execution of the project for residence and was eventually the birth of Pallazo del Viboccone (Angeli L., Castrovilli A., Seminara C., 1999, p. 19).

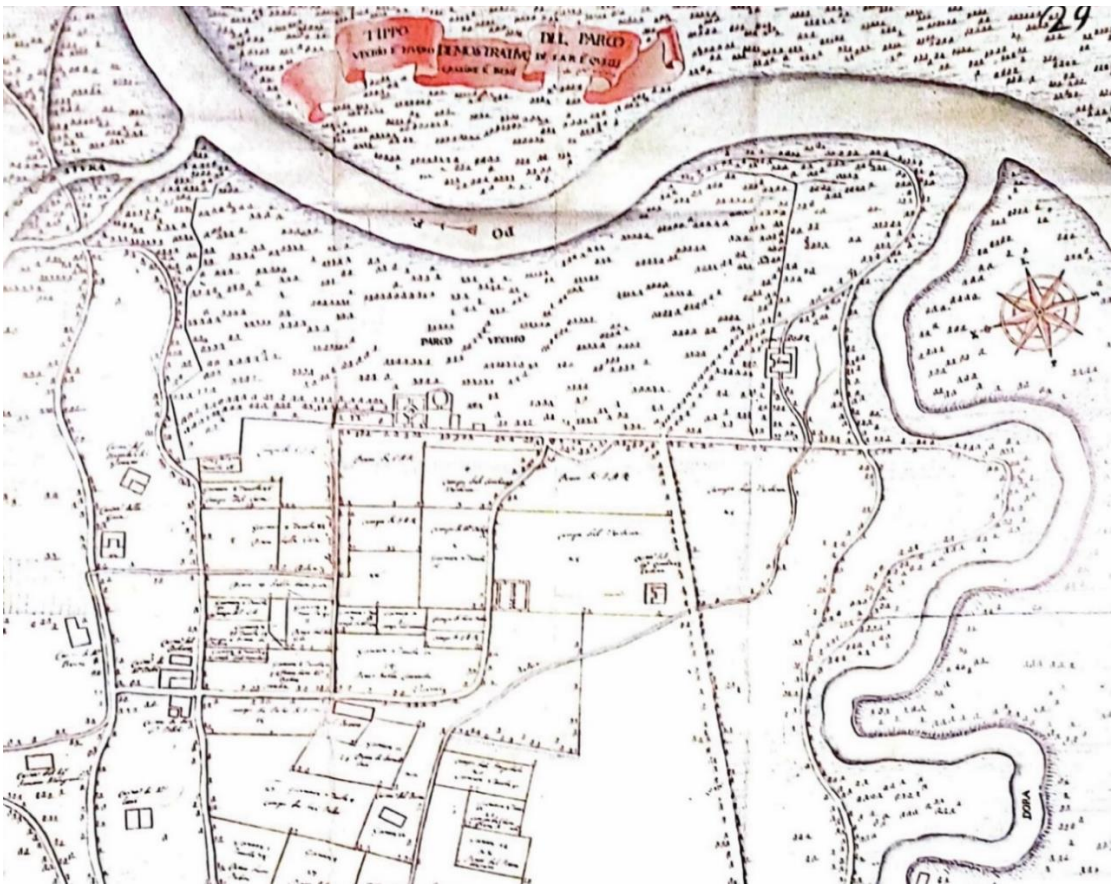


Figure 43 16th Century, Neighbourhood of Regio Parco

Plan dating back to the 1620s reveals the proposals to expand the palace and alter it to the new residence for the Duke.[5] It had to pause in 1630 due to the death of the Duke. The park was treated as a place for leisure and then for its primary function Agriculture (Vittonetto E., 2003). With the appointment of engineer Maurizio Vanelli as the park governor in 1640 the Royal

5 - R.E.A.M. SGR., Valorizzuzione pieomonte. Fondo valorizzuzione e Innorazione Piemonte. Studio di fattibilita – Progetto di Valorizzazione, 2018

Park was under maintenance. The end of the siege in 1643 and the civil war led to the closure of the residence. The productive property was rented to private individuals which led to its closure. The French destroyed the castle in 1706, during the siege of Turin in 1706 while it was already progressively falling into ruin. However, the Royal Park of Turin had a notable importance in the development of pleasure residences in Italy. The structure remained damaged until 1768 when the work began to transform into the Royal Manufacture of Paper, Tobacco, and Lead. Then, as it is now tobacco was the subject of a state monopoly (Bocco Guarneri A., 2010, p. 118).

Origin of the Former Tobacco Factory:

Tobacco as a plant brought to for its medicinal value by Fernandez da Toledo became a social custom in the courts of Europe in mid 16th century. By the beginning of the 17th century, Tobacco was being consumed in the Savoy ducal court. Tobacco taxes came into existence and the cultivation of tobacco was promoted. Carlo Emanuele II planned the construction of a factory for production and processing intending to promote the cultivation and export of tobacco (Angeli L., Castrovilli A., Seminara C., 1999, p. 27) in 1740. The site chosen for the construction was the noble ramshackle residences (Comoli Mandracci V., Goy F., Roccia R., 1998, p. 38). Giovanni Battista Ferroggio and Colonel Devincenti were assigned to renovate the buildings in 1758 as residences for workers and the construction of new structures (Chierici P., Palmucci L., 1993, p. 222). In the following year, 1759 a canal was dug to serve the factory called Canale del Regio Parco running parallel to the Park (Comoli Mandracci V., Goy F., Roccia R., 1998, p. 39). The canal was branched into the basement of the factory.

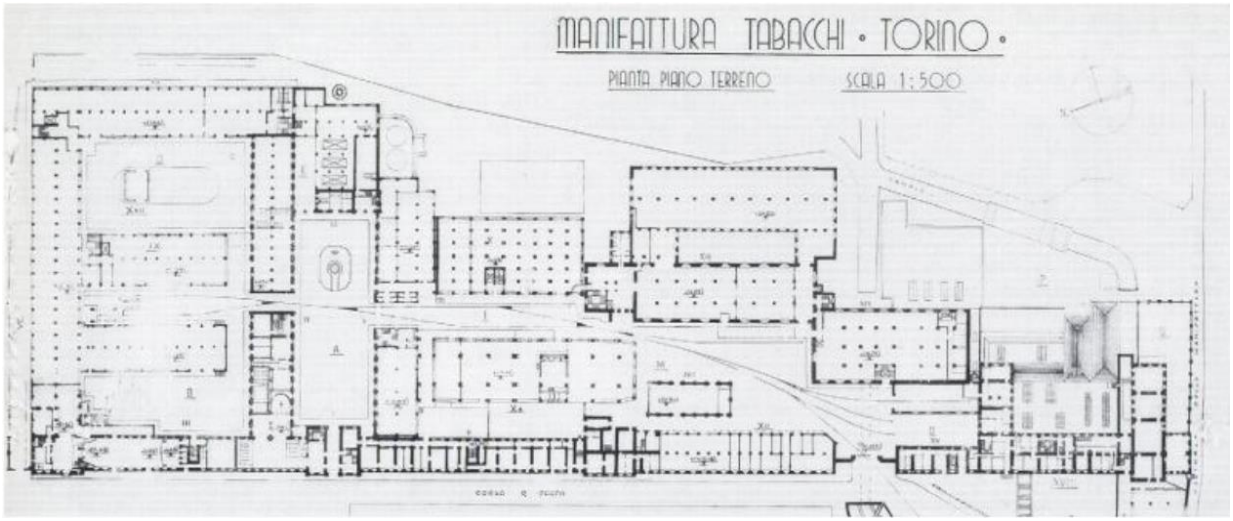


Figure 44 Plan of the Ex-Tobacco Factory

Giovanni Battista Ferrogio was then in charge of the work soon after his brother passed in 1775, and the factory was inaugurated in 1789 with the ducal chapel transforming the hunting residence of Viboccone (Angeli L., Castrovilli A., Seminara C., 1999, p. 29).

The increase in demand for tobacco in the nineteenth century led to the expansion of the factory with two locations in Via della Zecca (now Via Verdi) and the Regio Parco with 600 employees (Milleto, E., & Sasso, E., 2016, p. 56). In 1855 the works moved almost entirely to the Royal Park section; in that year, renovation work on the building began and ended in 1858[6]. At last, in the second half of the nineteenth century production of tobacco was monopolized in 1861 and handled by the private sector and then handled back to the state in 1869. The transformation of a church inside a factory to a warehouse was a remarkable alteration of 1893 (Comoli Mandracci V., Goy F., Roccia R., 1998, p. 52).

Corresponding to the development of the Former Tobacco Factory, the cotton spinning mill was built in 1833 and was later used as a space for spinning flax and hemp, in 1847 for rice husking,1874 for nonferrous metal treatment factory,1881 and 1920 had transformations after which it was passed over to FIMIT for the production of insulators and soundproofed for the automotive industry at the end of 1950s which was active until 1998[7].

Figure 45 View of the Spinning Mill

6 -Former tobacco manufacturing plant, -https://www.museotorino.it/view/s/d35c5bc1b17e4819967c71cbceebafa9

7 Former FIMIT factory- https://www.museotorino.it/view/s/05c6ed7198e941ecaf63ecff69bb3201

The Inception of Village Settlement and Urbanization:

Until the last couple of decades, Regio Parco remained as fields and pastures except for the village-type settlement located near the factory (Angeli L., Castrovilli A., Seminara C., 1999, p. 141). In 1853 the first barrier houses were built just outside the factory. In 1826 the meadows to the south of the factory saw the construction of Turin's cemetery and in the following year the construction of the Turin-Novara railway station. They acted as physical barriers that held back the expansion of the city along the north-east direction. The isolated village was incorporated in the city's master plan with the extension of the outside the custom rings in 1887. Via Maddalena located near the current Piazza Bottesini has its importance due to it being the main axis for the workers to the Tobacco Factory, It will be the matrix for the development of the village (Comoli Mandracci V., Goy F., Roccia R., 1998, pp. 40,41).

At the beginning of the twentieth century, the Financial Police, workshops and mechanical carpentry workshops, canteens were also present in the structure. , a railway connection for the entry of wagons from the Turin Vanchiglia freight yard, entertainment areas, and a nursery.

Starting from 1860, an urban agglomeration also developed near the Royal Fabbrica, the Borgo Regio Parco. Two school buildings were then built overlooking Piazza Abba according to the needs of the employees: the Umberto I nursery school (1880) and the Rurale del Regio Parco Elementary School (1882, which changed its name to the Giuseppe Cesare Abba Elementary School in 1920)[8].The Trincernone a railway access to the Tobacco Factory from 1918 acts as a new physical barrier for the expansion of the village. Its need to integrate with the village was solved in 1923 with the construction of an over-pass in Rocailles (Comoli Mandracci V., Goy F., Roccia R., 1998, pp. 46,47).

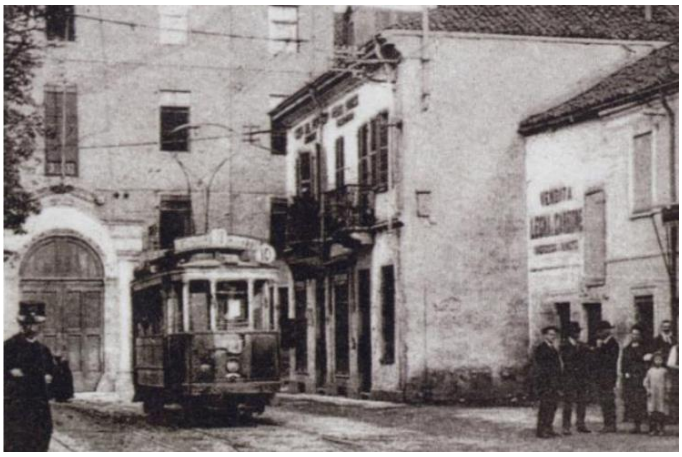


Figure 46 Train Tracks within the Compound

8- Former tobacco manufacturing plant_https://www.museotorino.it/view/s/d35c5bc1b17e4819967c71cbceebafa9

Numerous transformations took place in the 50s and 70s post-World War when farmsteads were demolished to make space for public and private settlements (Angeli L., Castrovilli A., Seminara C., 1999, p. 143). The expansion of the Former Tobacco Factory took place in 1900 to accommodate machinery that was consequently damaged in 1943 in the Second World War. The year 1960s has its significance because of the decision to build several new buildings to add new types of machinery. The changes put forth and the development of machinery led to the disappearance of the sigaraia, the cigarette makers' jobs managed exclusively by women (Vittonetto E., 2003, p. 85). The final transformation that took place in the village was the "Area Abba" project in 1989 intended to reorganize the circulation keeping in mind the shift of bus line 18 and the tram from Piazza Abba to pIazza Sofia making the square a public space.

The intervention area, delimited by Via Bologna, Corso Mamiani, Corso Regio Parco, and Via Pergolesi represents the most important part of the "old village" and redeveloping them. The project thus developed has a combination of various activities by changing the colors pedestrianizing certain areas, etc… The Piazza Abba is divided into pedestrian areas for events and parking spaces whereas the church complex of San Gaetano da Thiene is a space for events with a special playground for children as been designed. Via Maddalene The main axis of the village leading to the Former Tobacco Factory was pedestrianized and made accessible to the commercial spaces (Comoli Mandracci V., Goy F., Roccia R., 1998).

Figure 47 Piazza Giuseppe Cesare Abba

The Abandonment of the Historic Building:

The decline of the Former Tobacco Factory began in the 1960's which in turn led to its closure in 1996 was the transfer of about 250 laborers into different sectors (Angeli L., Castrovilli A., Seminara C., 1999, p. 58). The disposal, which began in 1999, led to the acquisition of the property by the State Property Office, and a part of it was temporarily handed over to the University of Turin; also in 1999, the production of FIMIT ceased, it was immediately acquired by the City of Turin and also sold to the University[9].

In 2002, the variation to the Master Plan was approved, which assigned a new intended use to the area in question, transforming it from an urban transformation zone to areas intended for public services. The intervention included all the building and plant works necessary for the recovery of the rooms on the ground floor of the building located in front of the driveway entrance of Corso Regio Parco. The project was aimed at satisfying the need of the University Administration to have a single and permanent space for the Registration Center, with accessibility requirements. The area outside the building subject to the intervention, delimited for the area necessary for the use of the service, was redeveloped with the addition of outdoor furniture and equipment (information gazebo, rest area with benches, bicycle parking).

The proposal regarding the future of the former Tobacco factory was proposed by REAM SGR - Real Estate Asset Management SGR S.p.A., in 2018 and aims to convert into a "Welfare City", social-health type activity, with commercial, culturally educational, and social-housing areas; the revenues of this operation would also allow the requalification of the area of the former FIMIT, currently under bureaucratic procedures to verify the possibility of implementation[10].

9 - Museo Torino, Stabilimento ex Manifattura Tabacchi-https://www.museotorino.it/view/s/d35c5bc1b17e4819967c71cbceebafa9

10 - Citta di Torino, Direzione Urbanistica Territorio, Deliberazione Della Giunta Comunale, Proposta Progettuale Relativa. AI Compendia EX Manifattura Tabacchi. Presa D'Atto, 26 Febbraio 2019$_{SS}$

3.2. Present Scenario

The following chapter narrates about the state of the art of the area of intervention that includes the abandoned historic building on which there exists a proposal for redevelopment, the Former FIMIT complex, the river banks of the Po that have great potential to be developed, the village settlement that started its evolution with the inception of the former tobacco factory and the neighborhood of Regio parco.

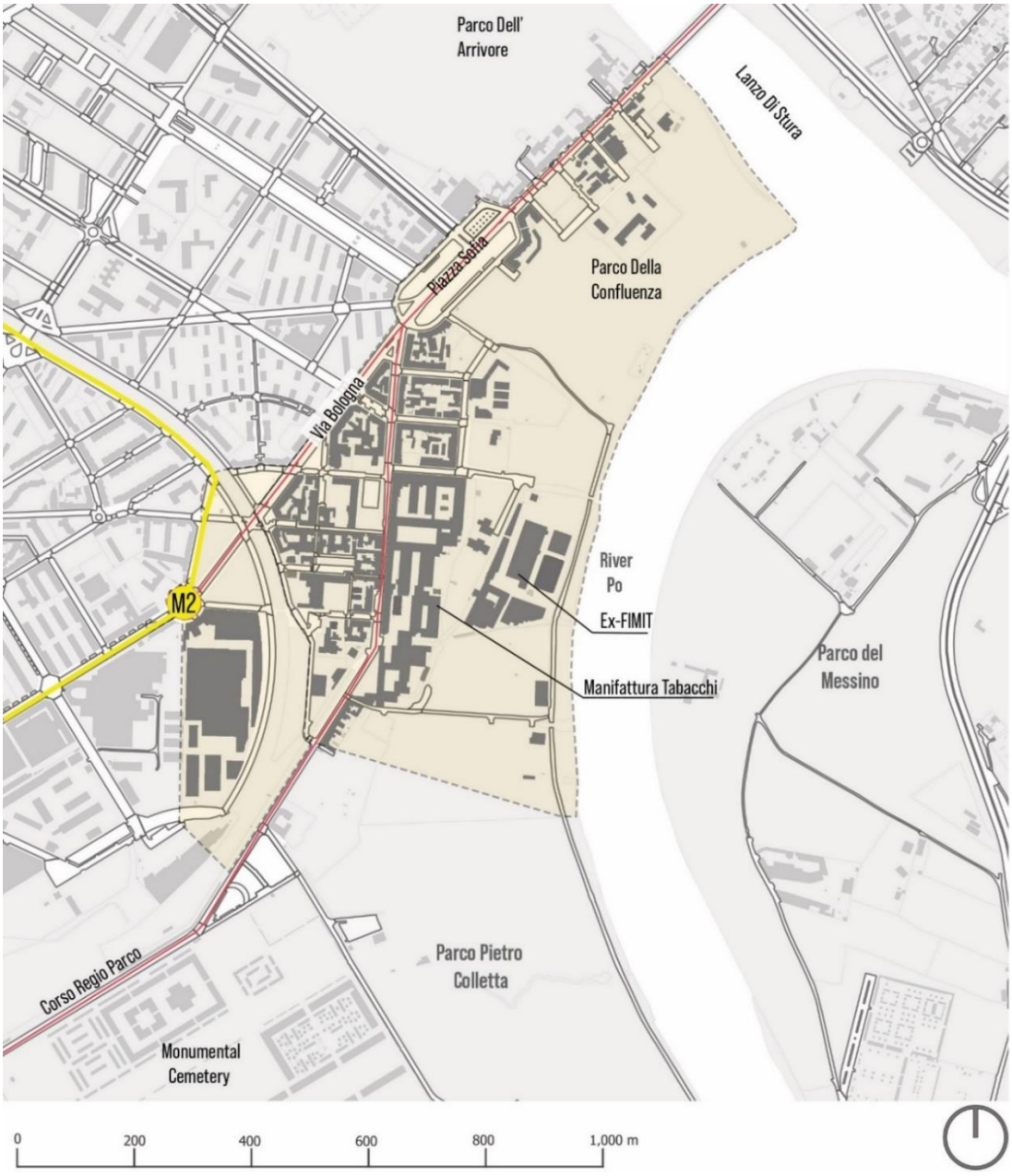


Figure 48 The Site and neighborhood

Source: Author

3.2.1.) Analysis:

The physical characteristics of the regions between the proposed Cimarosa-Tabacchi metro station and the Cultural District act as fundamental elements to be considered in the urban fabric of the intervention area. The perceived elements are not just superficial features but deeply tangled with the historical, cultural, socio-economic, and functional context of the region.

To begin with, urban research must involve taking into consideration a wider perspective of the spaces to analyze the characters of a broader scale which includes the urban fabric, mobility, and the natural ecosystems of the river and the greenery in general and their coexistence on a macro scale.

3.2.2.) Domains:

The built and the open spaces are inclusive elements of urban fabric its structures, barriers squares, typologies, and services, and correlate their interdependence to exist as a single piece on a macro level. The project area has various key factors of attraction such as Piazza Sofia, Piazza Abba, and the Tobacco Factory. The Tobacco Factory has a historic significance of its own which acts as the base for the development of its borgo.

3.2.3.) Urban Domain:

The Urban Domain is inclusive of all the built spaces, man-made settlements, and structures within the site. It includes the buildings, roadways, streets, etc. It also includes anything tangible in terms of design and development. Developing the domain would include understanding the different aspects of how humans interact with the entities, for instance,

1. Access Routes
2. Open Spaces
3. Edifices and other smaller Buildings, etc.

The neighborhood is characterized by a combination of industrial, commercial, and residential space with the village-type settlement, a dense nucleus bordered by the monumental symmetry, the trench, Via bologna, and the banks of the river. Beyond the borgo is the settlement which is from the twentieth century with mid-rise buildings, housing settlements, and public parks. The proposed metro line could be a boon connecting Regio Parco to the rest of the city and

with the development of the cultural district, it would be an opportunity to bridge various districts and enhance their connectivity.

Rethinking the area may need attention to reorganizing the public spaces to cater to the different urban structures and to enhance the experience of the potential user groups on macro and micro levels. Taking into consideration the state of the art of the space an intervention capable of enhancing the varied urban structure and sewing them together creating a vibrant and cohesive space to celebrate the past while enhancing its future potential would allow us to revitalize the existing scenario through the exercise of design strategies. It may also help us provide a new prospect to the built domain altogether.

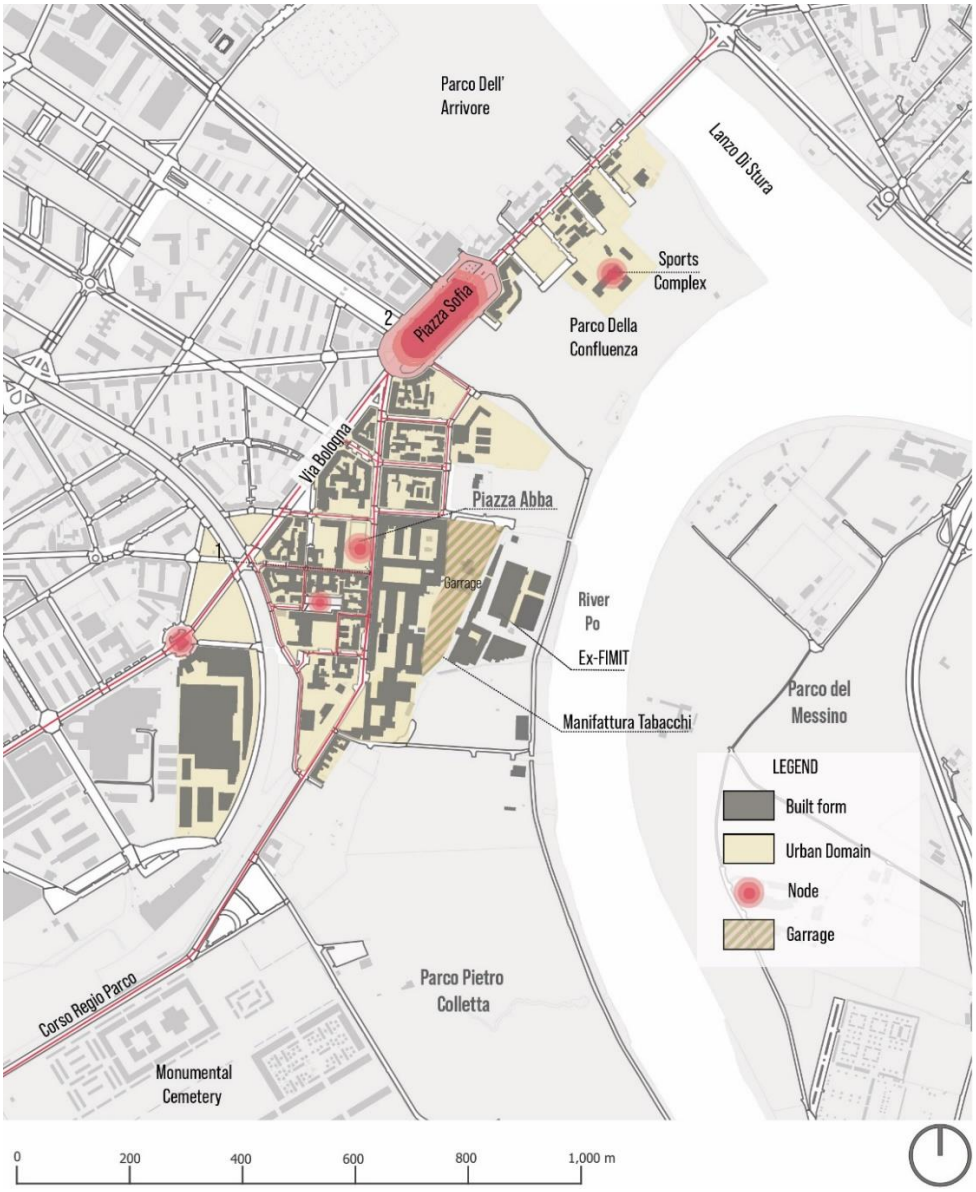


Figure 49 Core area and Nodes

Source: Author

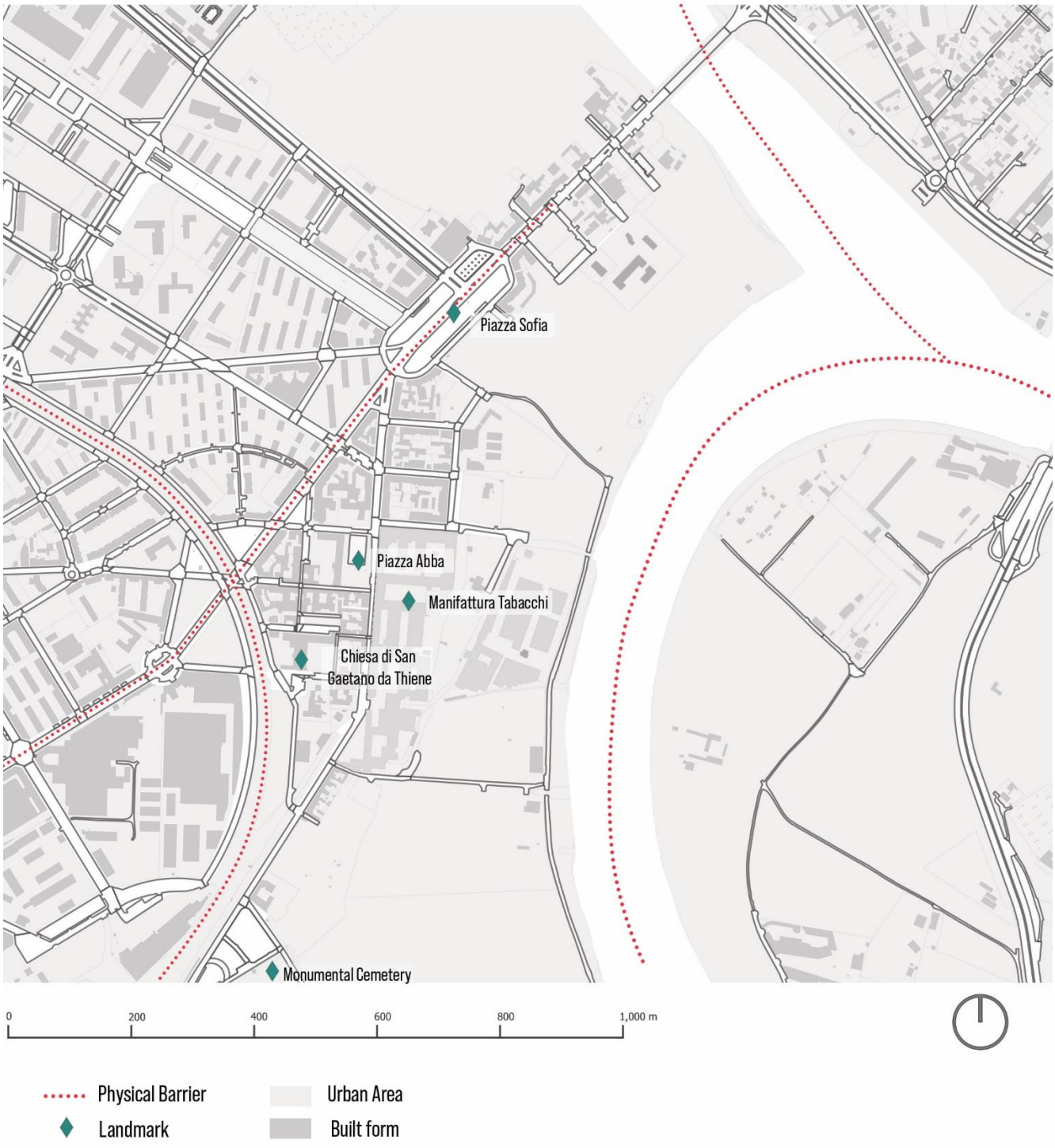


Figure 50 Historical Landmarks and Points of Interest

Source: Author

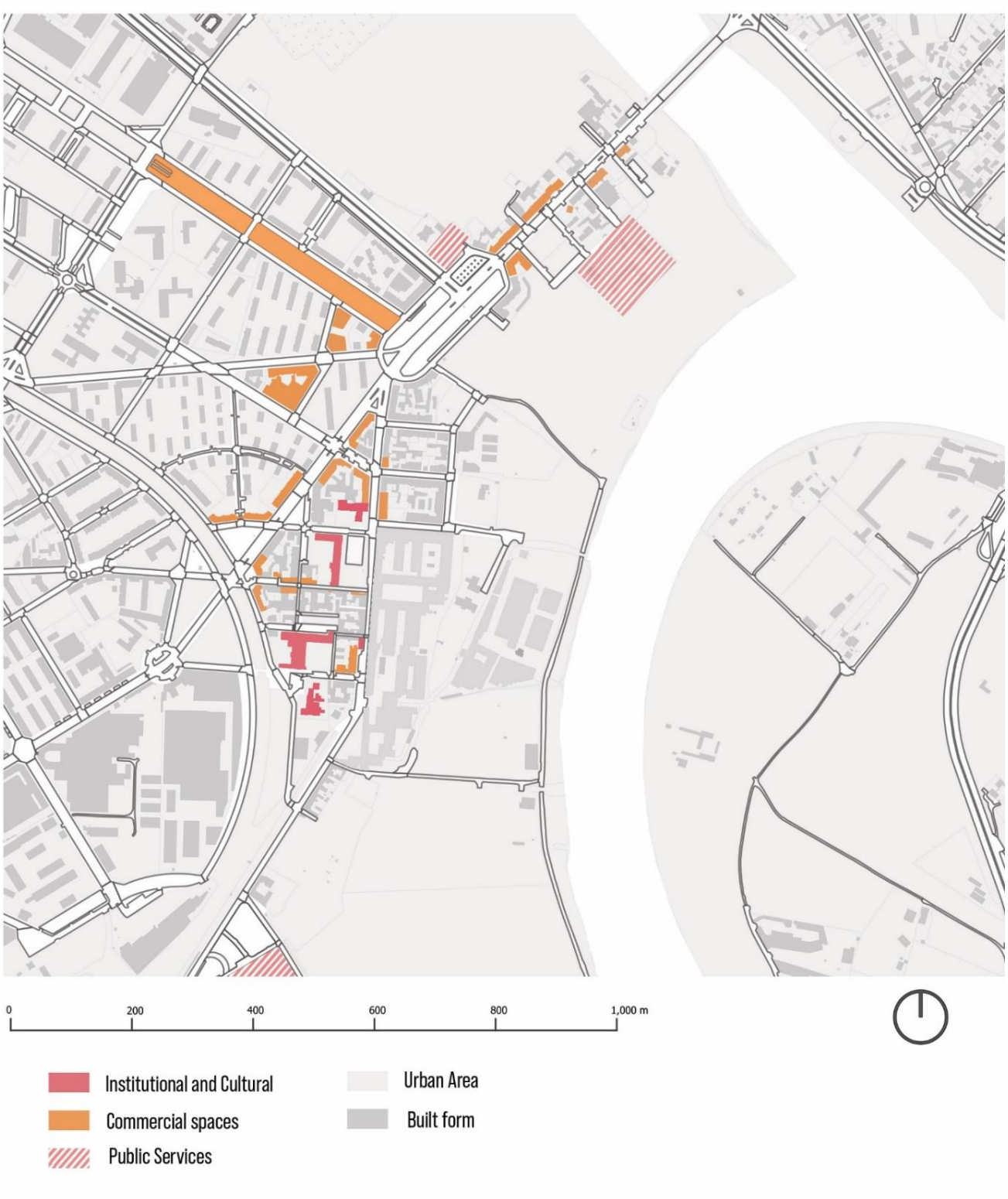


Figure 51 Building Typologies Around the Site

Source: Author

Via Bologna and Piazza Croce Rossa Italiana:

Via Bologna is an important street connecting the city center, towards San Mauro and Settimo Torinese. The vehicular traffic is predominantly higher on the road since the suburbs on the northern part of Turin have fairly poor connectivity to the rest of the city and poor control of traffic that makes the road noisy and polluted. Via Bologna continues along the village settlement until it reaches Strada di Settimo.

Along the axis of the street, there are a few important buildings such as the Italian Red Cross, Einstein High School, and the former wool mill. The state of the art of Piazzetta delle Operaire of the Former Tobacco Factory is a car park, with a SMAT water point and a bus stop.
Situated on Via Bologna is the Piazzale Croce Rossa, named due to its proximity to the Italian Red Cross. There are several entrances to the garden which are of two parts due to the fact that Via Bologna, a high-density vehicular road passes between making it act as two separate elements. The pathways in the garden are not recognizable and are covered with vegetation at the moment. The spaces are not being utilized because of a lack of activities. The only active space is the kiosk overlooking Via Maddalene. The large masses of trees are organically grown on the western side of the road whereas along the former wool mill, more geometrically in an organized manner.
With the development of the Cimarosa-Tabacchi metro, the exits of the station would be on both sides of Via Bologna one in proximity to the Former wool mill and one next to Albert Einstein High School. The potential usage of the Piazzale Croce Rossa Italiana can be improved to transform it into a more usable public garden for commuters and the locals around the area.

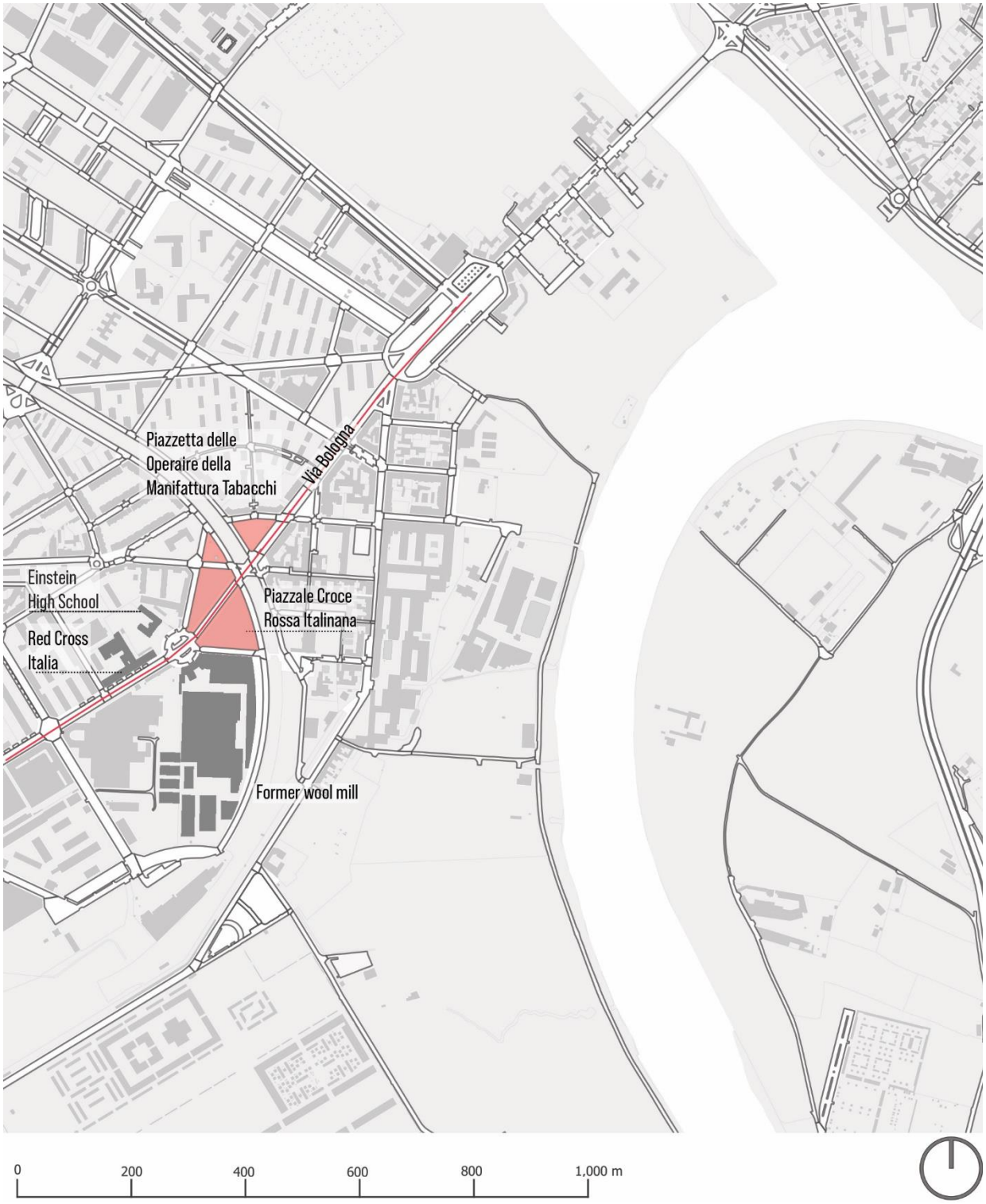


Figure 52 Via Bologna and The squares around

Source: Author

The Village-Type Settlement:

Right in front of the Former Tobacco Factory, there exists a settlement that is distinct from its neighborhood in terms of planning and radial alignment. It consists of two schools which came into existence with the development of the Former Tobacco factory, a church, residential units, and mixed-use spaces. Via Maddalene acts as the central spine for the development of the settlement and is the primary access to commute to the factory, the "Historic access". Towards the end of the road is the Piazza Abba, a public square half of it used as parking, and the rest used for community engagement. The church complex of San Gaetano da Thiene, which has significant importance in the settlement's history is now a mere space that is deserted from the rest of the settlement and has a garden in front of it. To the right side of the church is the Alma Cultural Centre for Women and the eco museum. Though the central core of the village settlement is a pedestrianized zone there are car parking along the roads due to a lack of enough parking spaces for the residents.

With the proposal of the metro stop Cimarosa-Tabacchi and the redevelopment of the historic building, there is a possibility that the uniqueness that the area holds could be affected which is a challenge for us to handle in our design. In addition to that with the increased inflow of vehicular and human circulation Parking facilities and amenities needed for the public should be considered for the region to cater to its services better when the cultural district is fully functional.

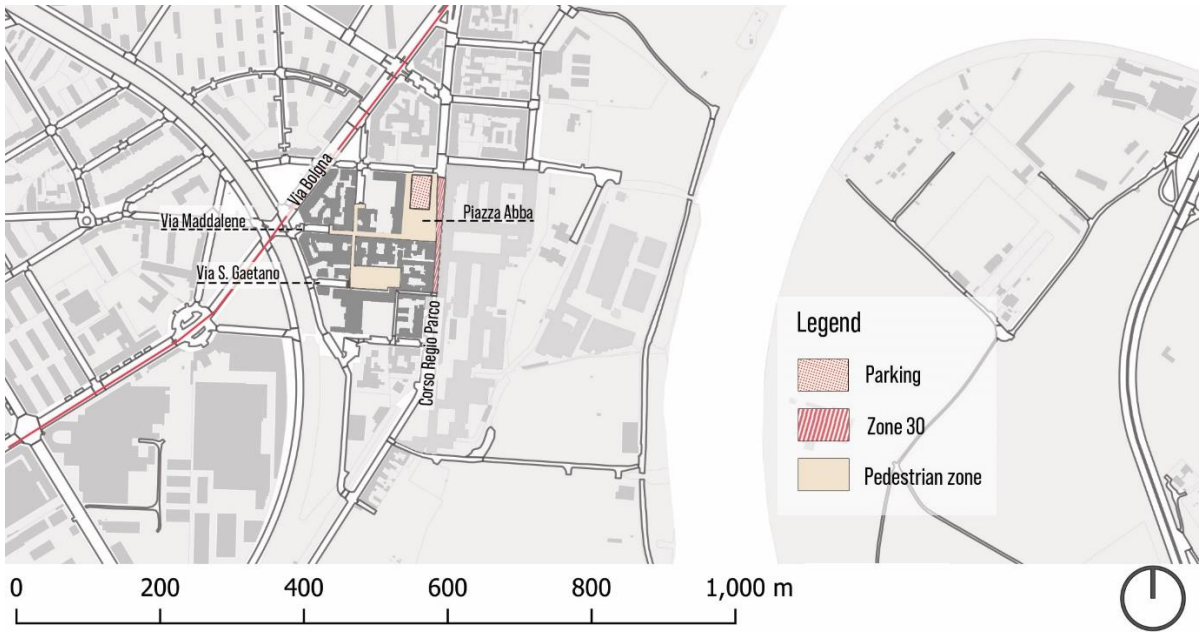


Figure 53 Connectivity on the Site

Source: Author

The Former Tobacco Factory Complex:

Standing on Corso Regio Parco is the important structure responsible for the development of the village, The Former Tobacco Factory complex, a history dating back to the 17th century. The magnificent structure is visible from every street of the village as the development was inclined to the complex. The narrow street of the Corso Regio Parco in front of the complex is now chaotic as it is the main road to reach the Piazza Sofia.

Behind the complex is the car park covered with vegetation and the former FIMIT, a severely damaged non-functional structure that needs to be restored. Towards the south of the FIMIT complex is the proposed nursery. Redesigning the FIMIT complex would be a possible proposal to merge the park system along the river Po.

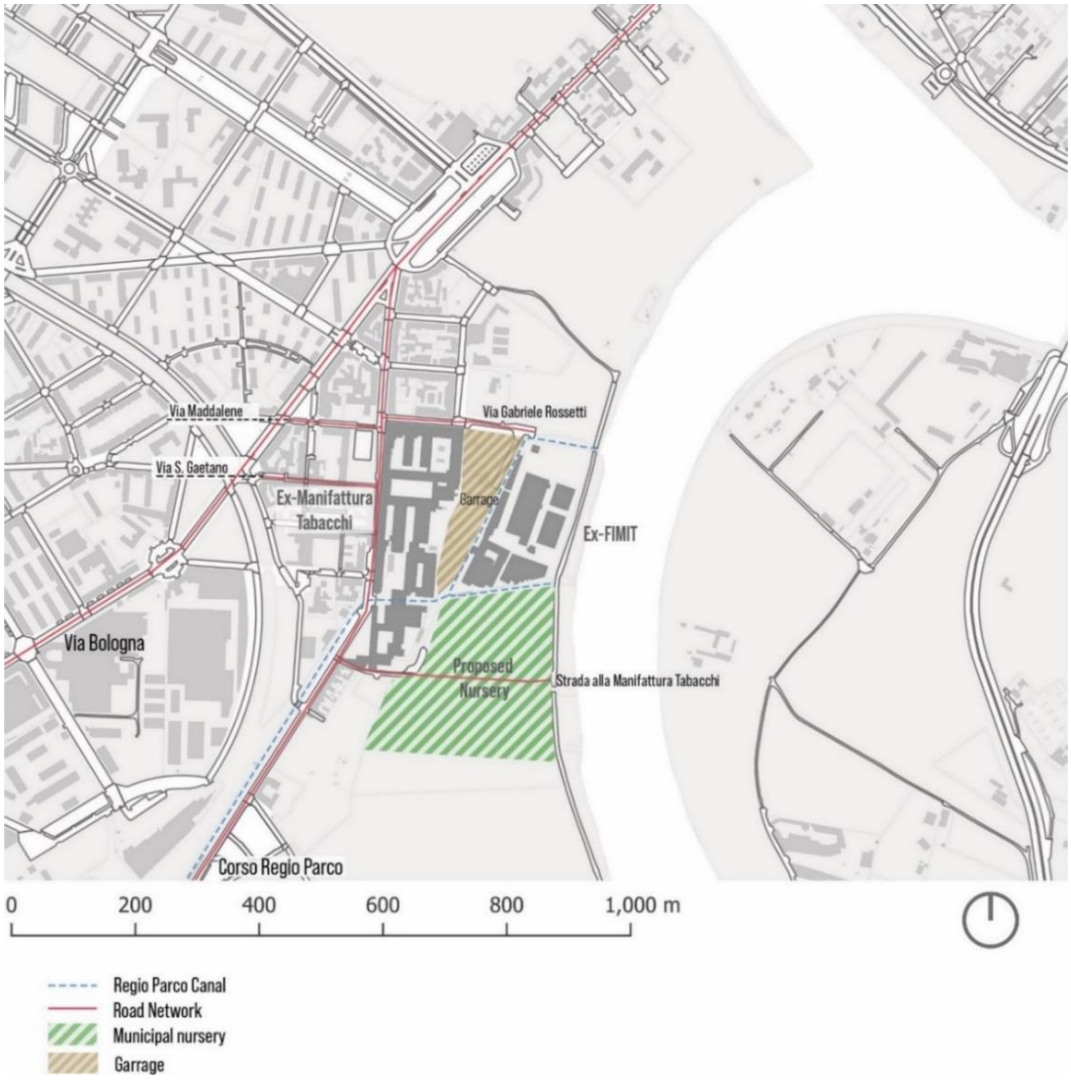


Figure 54 The Former Tobacco Factory Complex

Source: Author

The Cultural District:

The Former-Tobacco Factory is a historic building on Corso Regio Parco. For more than two centuries it housed the production of cigars, cigarettes, and pipe shavings. It now has a proposal for the redevelopment of the Cultural District. The agreement between the various bodies was established to allow the settlement in the recovered spaces of the former Tobacco factory, a University Center with residences, student services, and advanced training classrooms, and an Archives Center with classrooms 2 consultation center, a study center, and a warehouse serving the Institutes of Turin, Asti, Biella, Cuneo and Verbania and the General Directorate of Archives of the Ministry of Culture.[11]

The proposal aims at developing the historic complex in a way that the proposed typologies are strongly related to each other which in turn allows the re-development of the entire neighborhood while being inclusive for the public. The proposed functions of the complex attempt to develop the archive center as a lively space due to the proposed spaces for university activities and being an inclusive proposal for the public.

University Campus:

The expansion of the two major universities located in Turin, the Politecnico di Torino and the University of Turin has planned its Aula rooms and study rooms of the respective universities which would be driving student footfall to the currently abandoned site creating a vibrant neighborhood.

Student Residences:

One of the major crises in Turin at the moment is student housing due to the increase in the number of incoming students every year, research carried out by Ires Piedmont shows that there is an increase in the number of off-site students in the Metropolitan area of Torino is approximately 14,000 and 3,800 more beds are needed to accommodate the students apart from the beds available for scholarship (AY 2019/2020).

The proposal for student housing could accommodate approximately 200 students and also a canteen for the same capacity. The location which is at present the suburbs of the city, needs an improvement in the current public transportation system for students to have enhanced

11 www.manifatturatabacchitorino.concorrimi.it/allegati/2_Relazione%20Illustrativa.pdf pg2

accessibility which can be addressed with the development of line M2 of the metropolitan access.

Archive Centre:

Turin has long struggled with significant shortcomings when it comes to gathering, preserving, organizing, and enhancing its historical and cultural legacy. In recent decades, though the rich history of Turin has continued to grow, the lack of investors and the space to conserve the archives for reference is insufficient. This has resulted in the deterioration of the portions of heritage.

The Archive Citadel built in Milan is an example of archival storage and how the structure can be lively in its neighborhood. The historic building also represents a perspective shift in the existing conditions to the future references it innovates on the level of integration between assets, on the management level, and on that of valorization.[12]

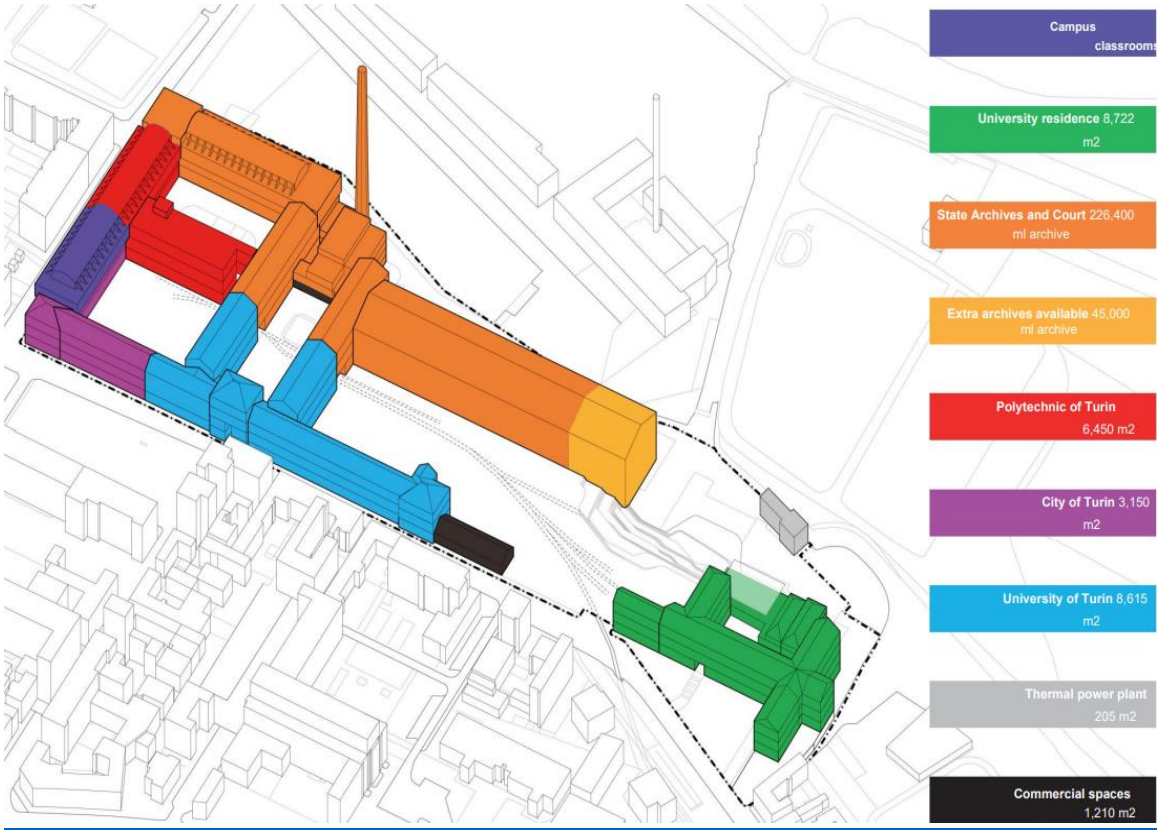


Figure 55 The Cultural District Proposal for the Ex-Tobacco Factory

12 www.manifatturatabacchitorino.concorrimi.it/allegati/2_Relazione%20Illustrativa.pdf pg7

Piazza Sofia:

Towards the end of Via Bologna is a huge square the Piazza Sofia with a central spine which is the continuation of Via Bologna and two streets by its side. The islands create space that is occupied by dense tree cover, Skating rink, and parking.

The island on the east of the Piazza Sofia hosts the skating rink and a dense cover of trees with an entrance to the Confluence Park on the west are residential buildings and Corso Toranto which has the market and leads to Via Sandro Botticelli directly linking to Corso Giulio Cesare. This is the busiest when compared to the one along the confluence park.

The huge square of the Piazza Sofia has the potential to be redesigned and could be more functional as it has the potential to serve better as a public space to the people of Turin and not remain as a mere non-functional square.

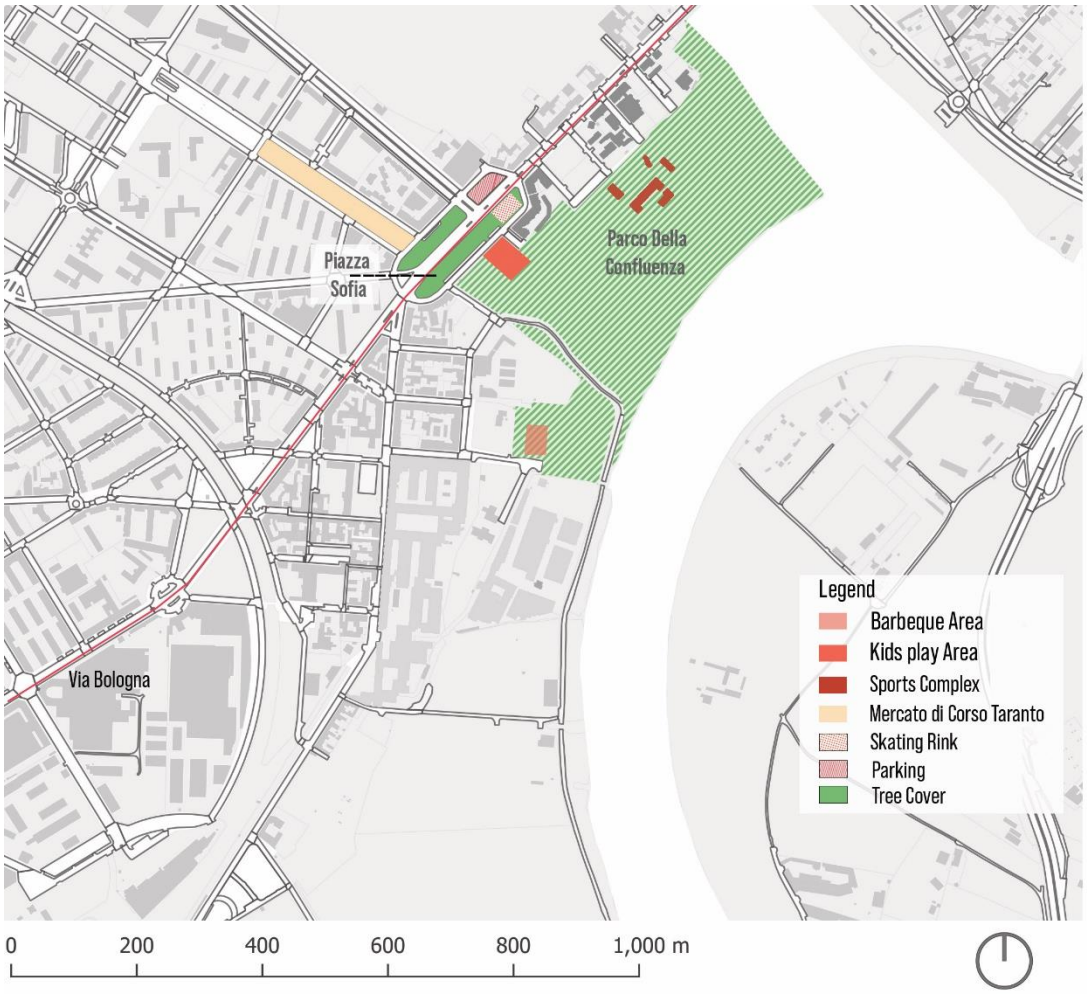


Figure 56 Piazza Sofia and Parco della Confluenza

Source: Author

Road Network:

One of the issues concerning the intervention area is connectivity, in particular with its integration to the rest of the city. The area serves as a pivotal point for movement to the Northern region of the metropolitan area such as the Bertolla, and Settimo Torinese, and to the city center, it is presently served predominantly by private vehicles such as cars and buses. Piazza Soffia, being a focal point within the network where Via Giovanni Cravero, Sandro Botticelli, Corso Taranto, and the two other roads, being an important part of the urban intervention area such as the Corso Regio Parco and Via Bologna intersect.

Corso Regio Parco and Via Bologna being the barriers are a huge stretch of streets, the former being cut into two parts by Corso Novara, the first half staring from the city center and the second half bordering the vehicular access for the monumental cemetery, While the later Via Bologna an important axis for mobility starting from the part of the city near the Dora Riparia and connect Porta Palazzo with Strada di Settimo and the northern area of the city.

The route not only facilitates mobility but also connects the area of the city's industrial roots to the urban sprawl. It acts as a service road for the roads starting from Piazza Sofia and also connects the project to the center. The planned metro stop of the Cimarosa Tabacchi also lies in Via Bologna anchoring the project to the city center and also fosters integration within the evolving transit network of the city.

Taking into consideration the new system of bicycle lanes approved in 2013, the current state of bicycle routes are areas found along a few parts of the river banks. Planning a closed bike lane for the city's bike network would be a possible intervention for bicyclists and would promote green mobility for commuters.

The sustainable feasibility of the project lies in the incorporation of the roadway planned for the transformation area of the Regaldi district, an urban redevelopment zone located between the former Scalo Vanchiglia and Via Bologna. Originally this idea was a part of the Variante200 initiative, which provides this area and now envisions the creation of new road segments and cycle-pedestrian pathways to extend the existing network. Notably, the extensions of Via Domenico Cimarosa and Via Giovanni Pacini are of particular significance, as they will reconnect with Corso Regio Parco, stretching the former Scalo Vanchiglia (Geoportale del Piano Regolatore Generale, Norme Urbanistico Edilizie di Attuazione, pp. 286-287)

In general, it can be concluded that the implementation of a network for a soft mobility system is a way of influencing people's behavior towards promoting sustainable means of commuting there by improving the environment as well as the physical well-being of individuals.

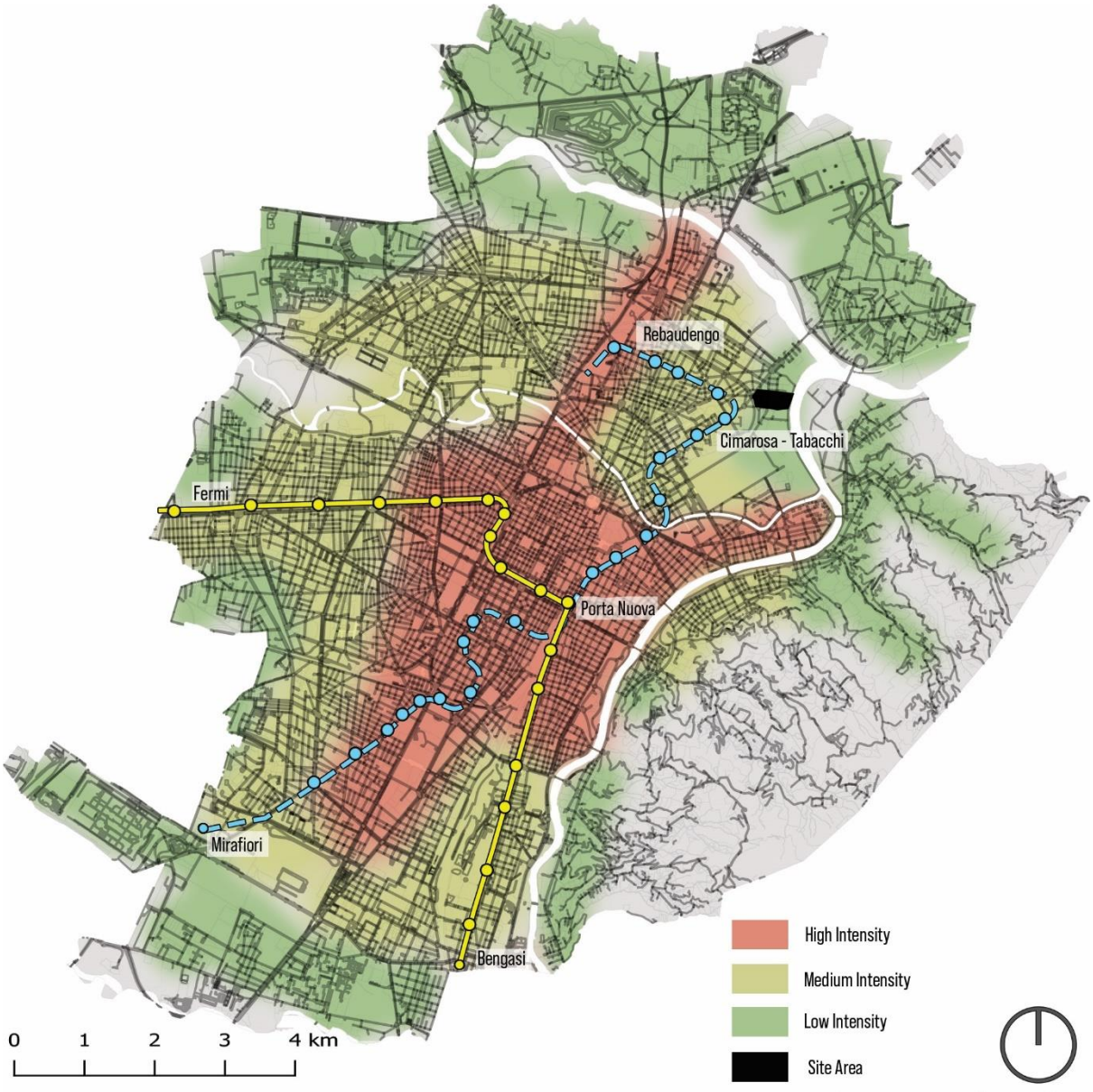


Figure 57 Vehicular Intensity

Source: Author

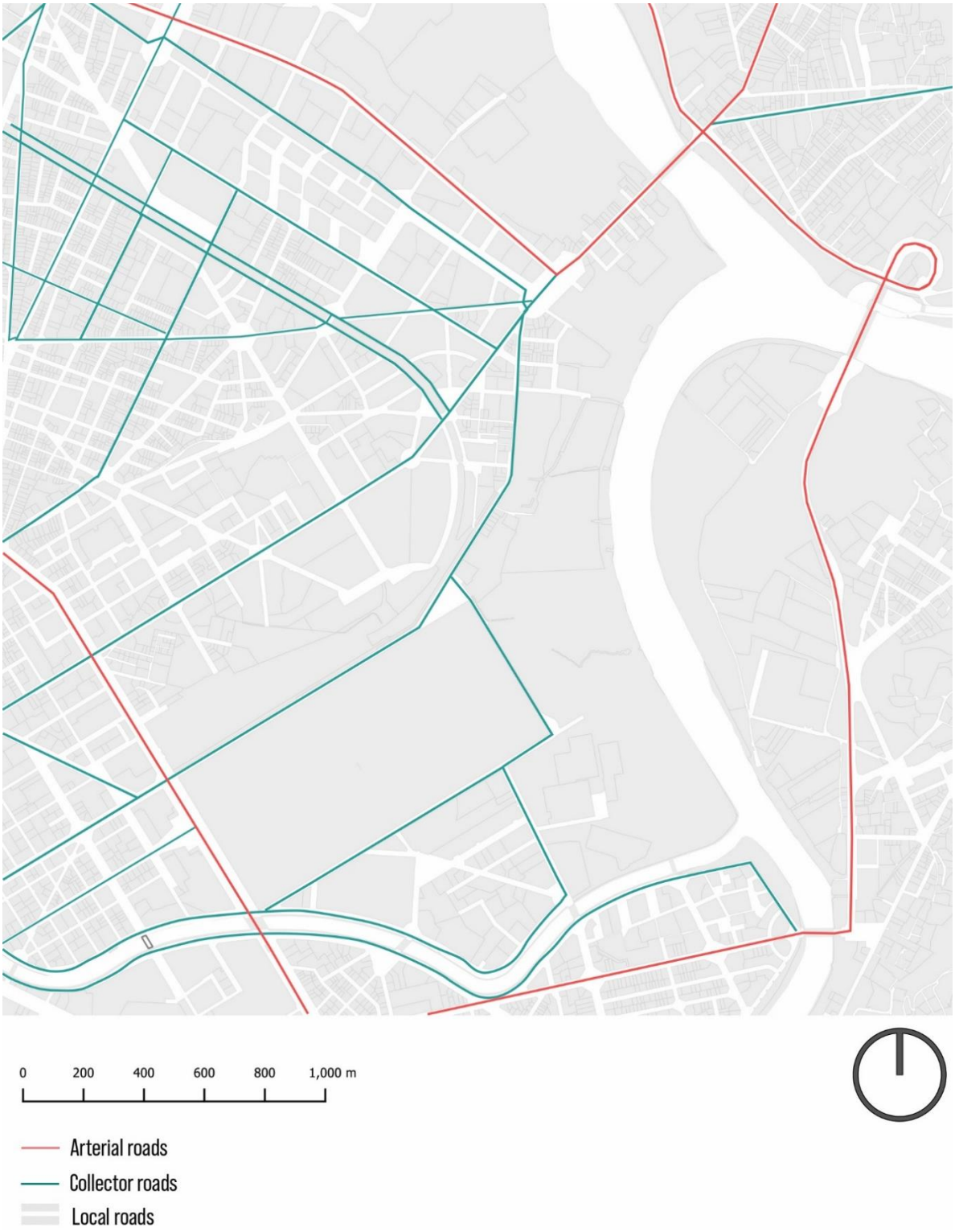


Figure 58 Road Network within the Site

Source: Author

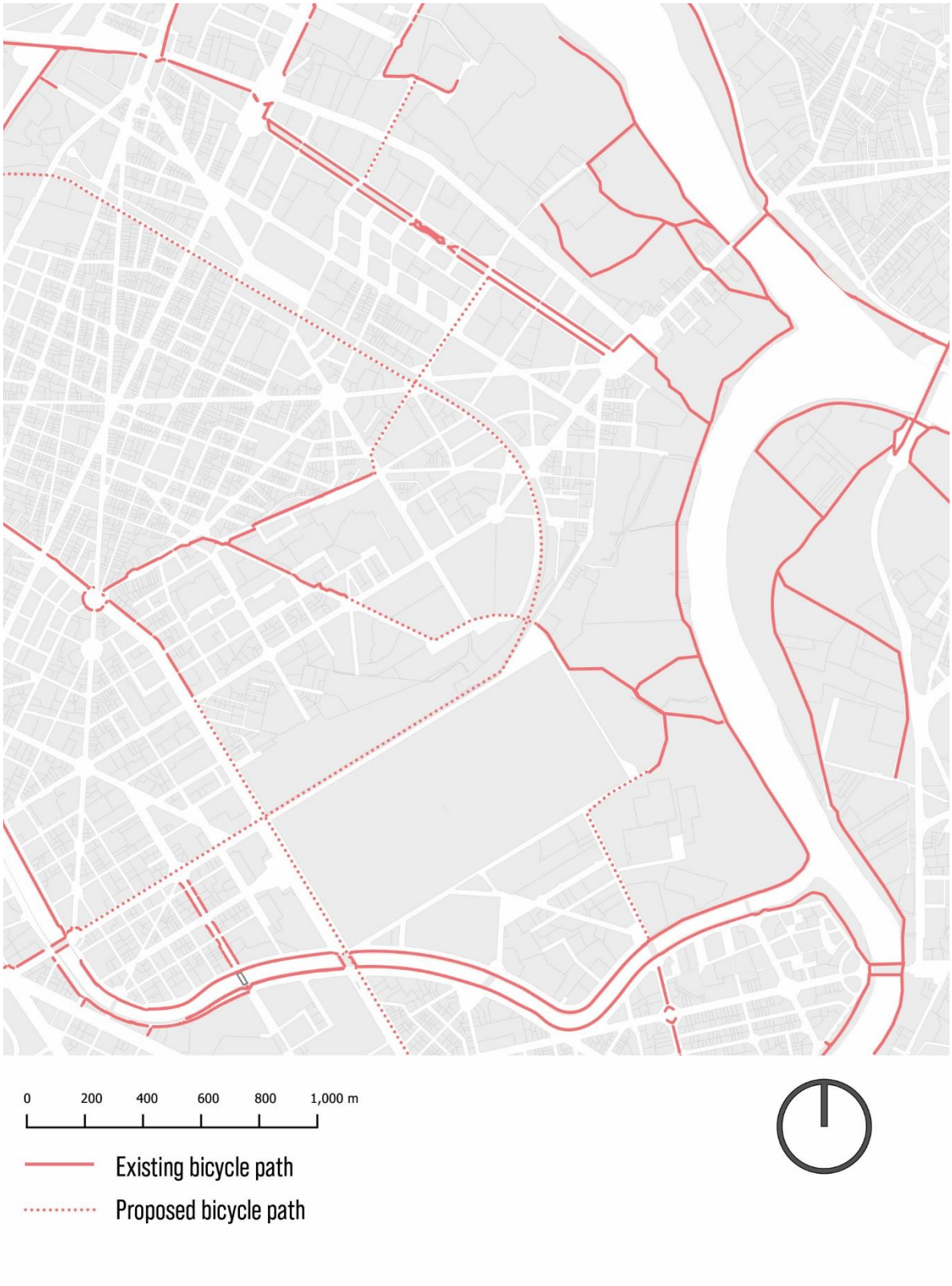


Figure 59 Existing and Proposed Bicycle Lanes

Source: Author

3.2.4.) Natural Domain:

The park system is adjacent edge to the riverfront and is inclusive of several parks, namely Parco Pietro Colleta, Parco Dora on the west bank, and Mesino park on the East bank of the river which is currently of play areas, and open spaces. Strategizing an intervention for the natural domain would bring a balance between the urban edge and the river edge and would also allow for maximizing the interaction between the people and the spaces. These would include measures for providing an experience along the river, an increased sense of security and activity. Eliminating dead spaces through the green scapes would also help in using the open spaces judiciously, along the lines of sustainability. Newer functions will include spaces accessible to the public and open to activities such as recreation, relaxing, playing, cycling, walking, etc.

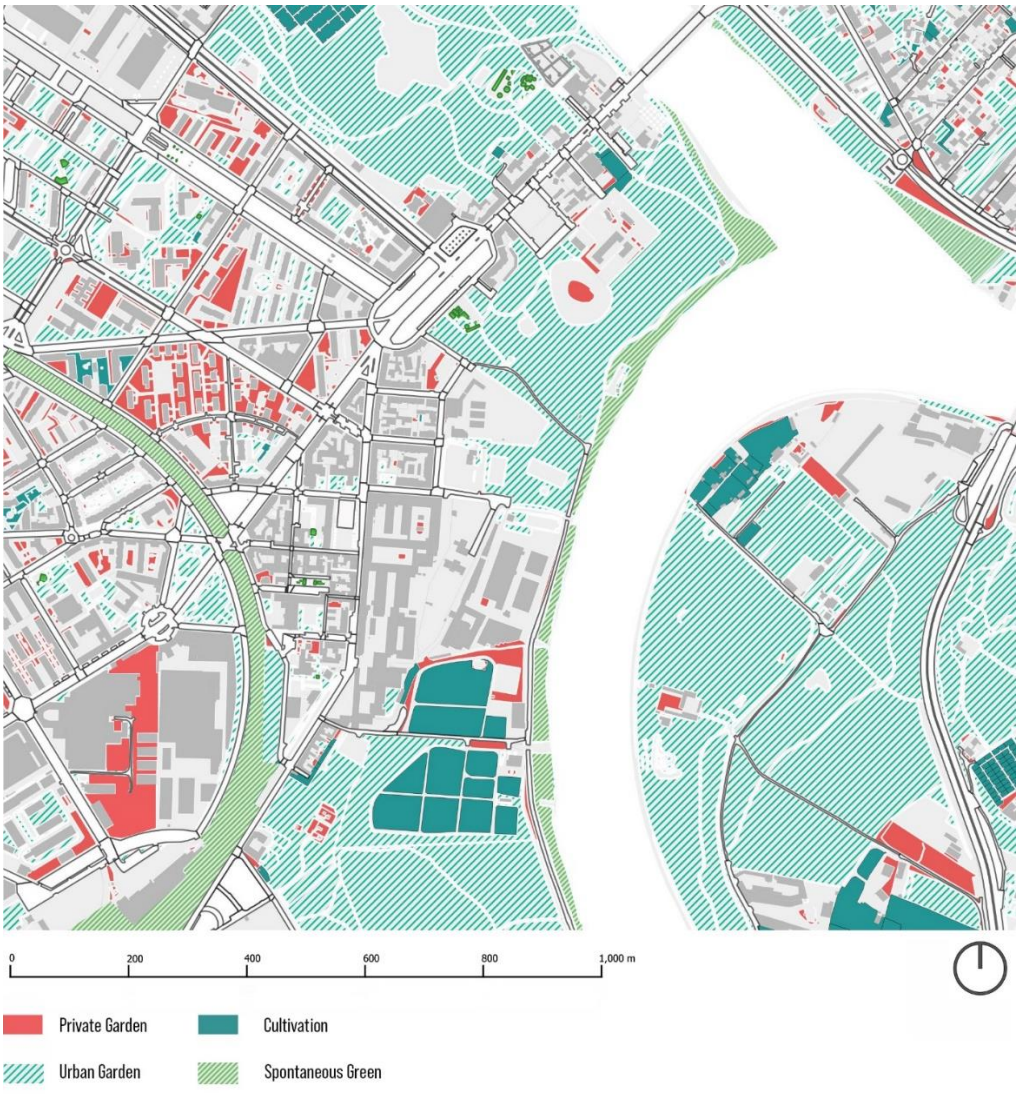


Figure 60 Green Spaces within Regio Parco

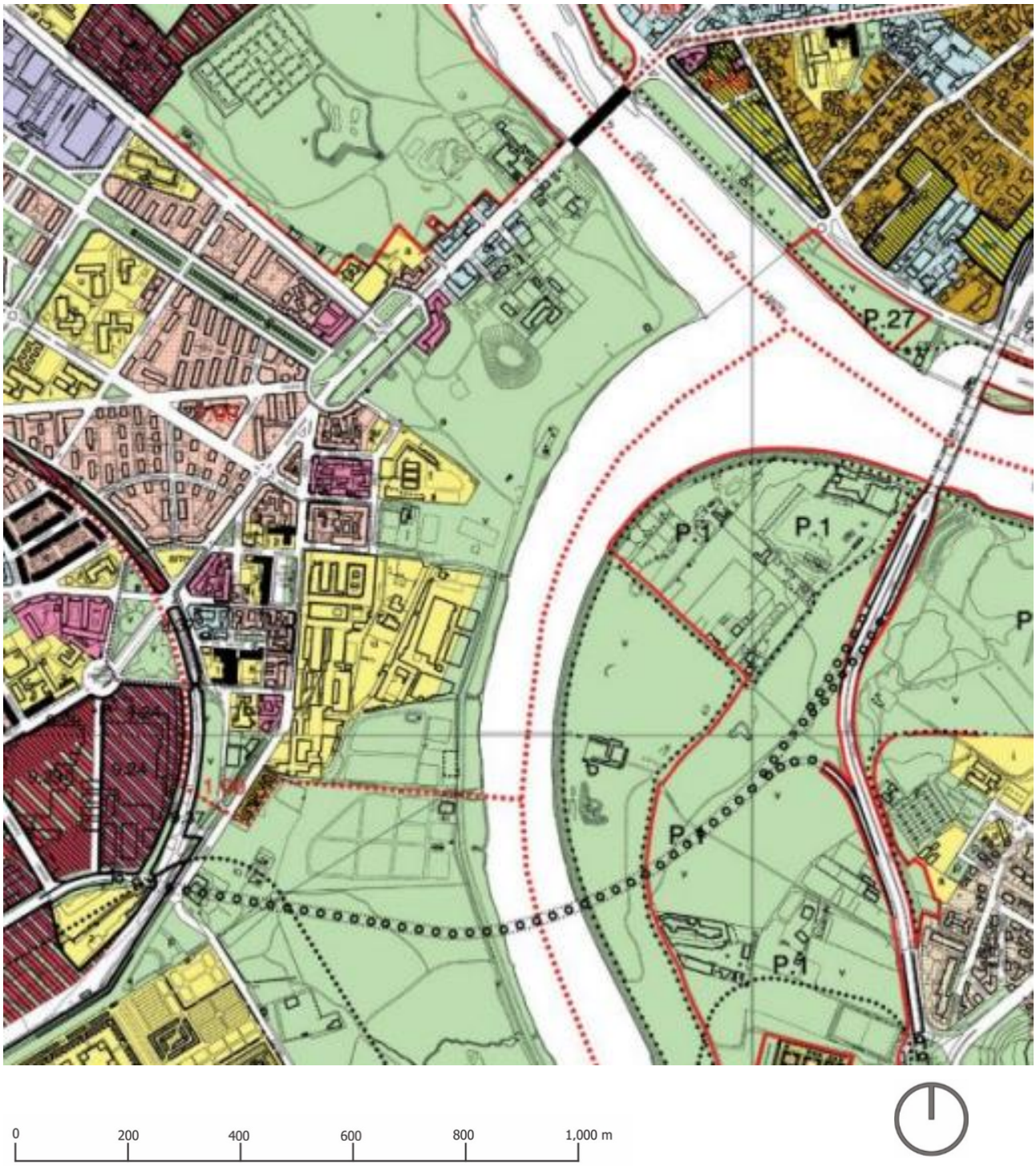


Figure 61 Land use map

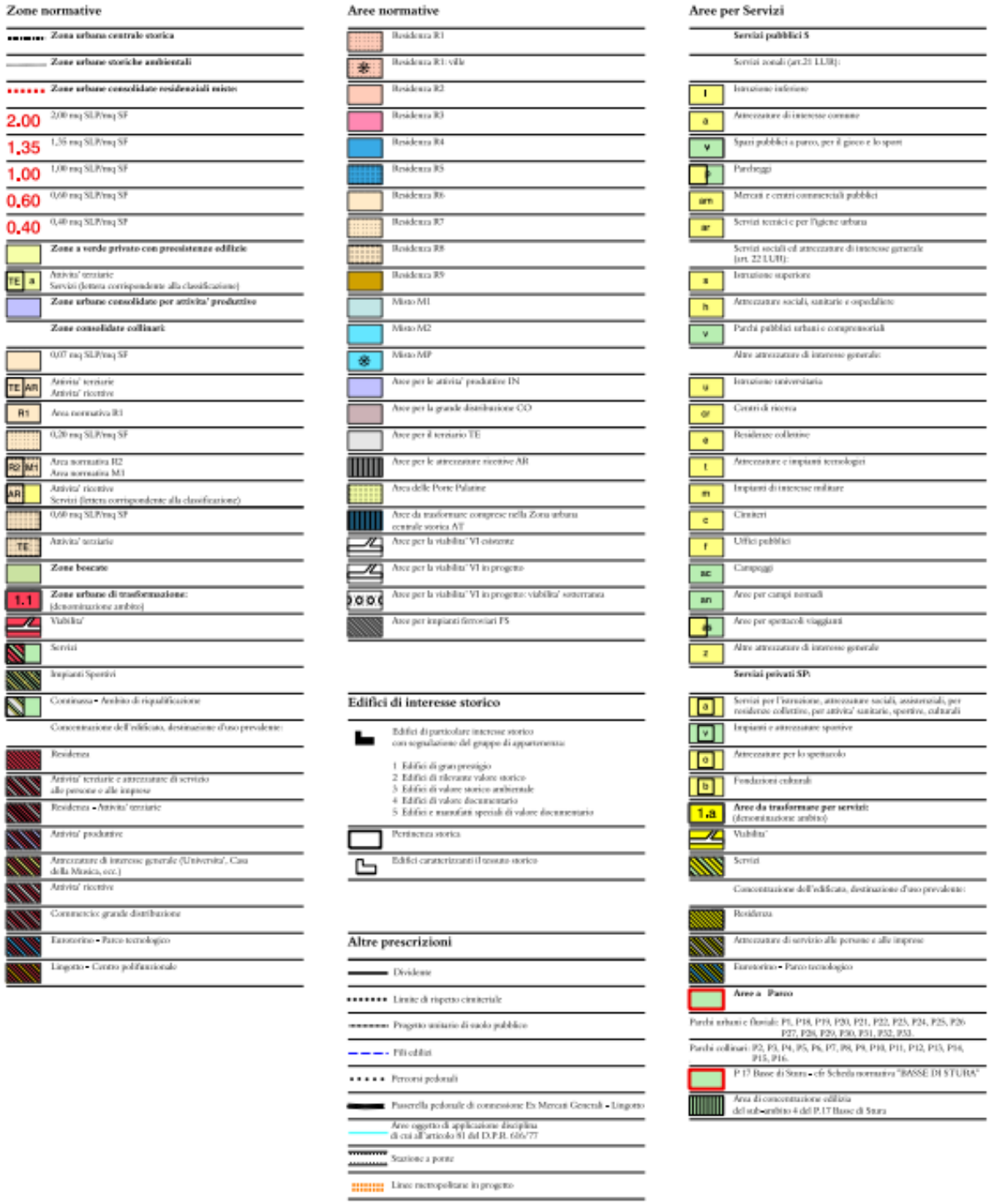


Figure 62 Legend w.r.t. to the land use map (Left)

The Parks:

The park systems around the area of interest are Confluence Park, Colletta Park, and Messino Park. Parco della confluenza and Colleta parks, located along the river Po between the confluence of Dora & Po and LanzoStura, belong to Parco del Po Torinese.

Parco della confluenza has a rich flora and fauna the edges of which are defined by the confluence of Po and Stura and hence the name. It is a home for migratory birds and the river bank which currently has a promenade that is not very well maintained which proves to have a great potential to attract the urban population. Most of the park is currently covered by woods and grassy meadows. Incorporating functions into the meadows can make the urban park more active thereby making a seamless transition from greenery to the river. It is a possible intervention, also since it houses migratory birds there is a potential for bird watchers and other passive sports to be implemented in the park.

At the moment the park is used mostly by cyclists and joggers with the incorporation of other activities a large number of the urban population would benefit from the space. With the proposal for the redevelopment of the historic building and line 2 of the metro, there will also be a significant increase in the footfall to the neighboring facilities and the utilization of the parks in the suburbs and not just the one's in the center of the city.

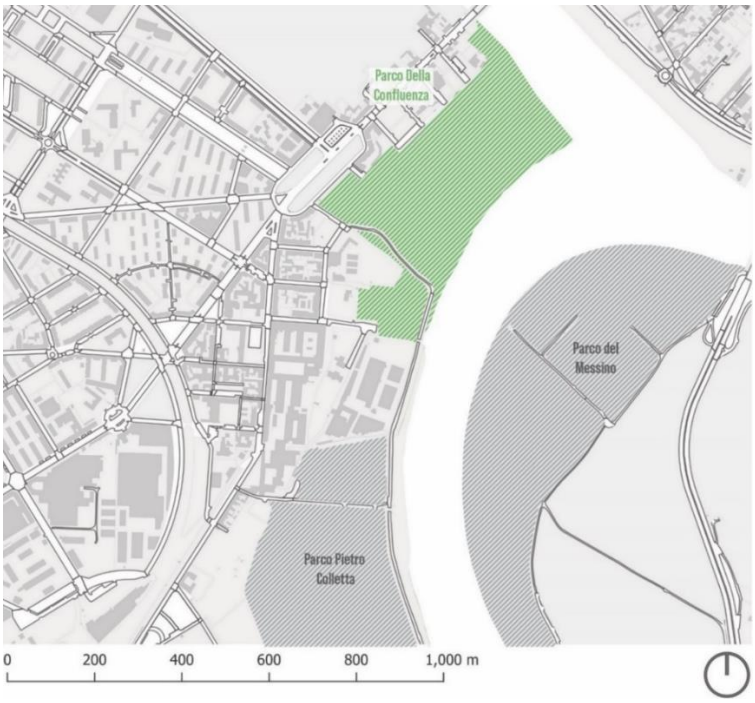


Figure 63 Parks around the Site

Source: Author

Meisino Park:

Located on the east bank of the Po River is Messino Park, a natural reserve area used by the people of Turin for jogging cycling, and bird watching. It also has the Former Galoppatoio militare "Ferruccio Dardi" used as a military range in the 19th century. The Messino Park located near the confluence park does not have direct access from the opposite bank and hence is an isolated area compared to the west bank of the river.

There is an ongoing proposal for Messino Park to be developed into a “Sports and environmental educational park” by Citta di Torino. The Turin park, with a dual objective: to promote sports practice by encouraging social inclusion and integration, and to recover the abandoned area of the former military riding track by transforming it into a sports and environmental education center that includes Cricket, Nordic ski, Pump tracks, Climbing sports, Disk Golf, and Bike lanes. It also has inclusive play and fitness areas. The Former Galoppatoio Militare is redeveloped into Naturalistic educational courses.

The project concerning the development of the left bank must follow the east bank for the areas to function together on an urban scale. Connecting the east to the west bank of the river would be a possible intervention for distributing the footfall and making the east bank of the river where Messino Park is located more accessible.

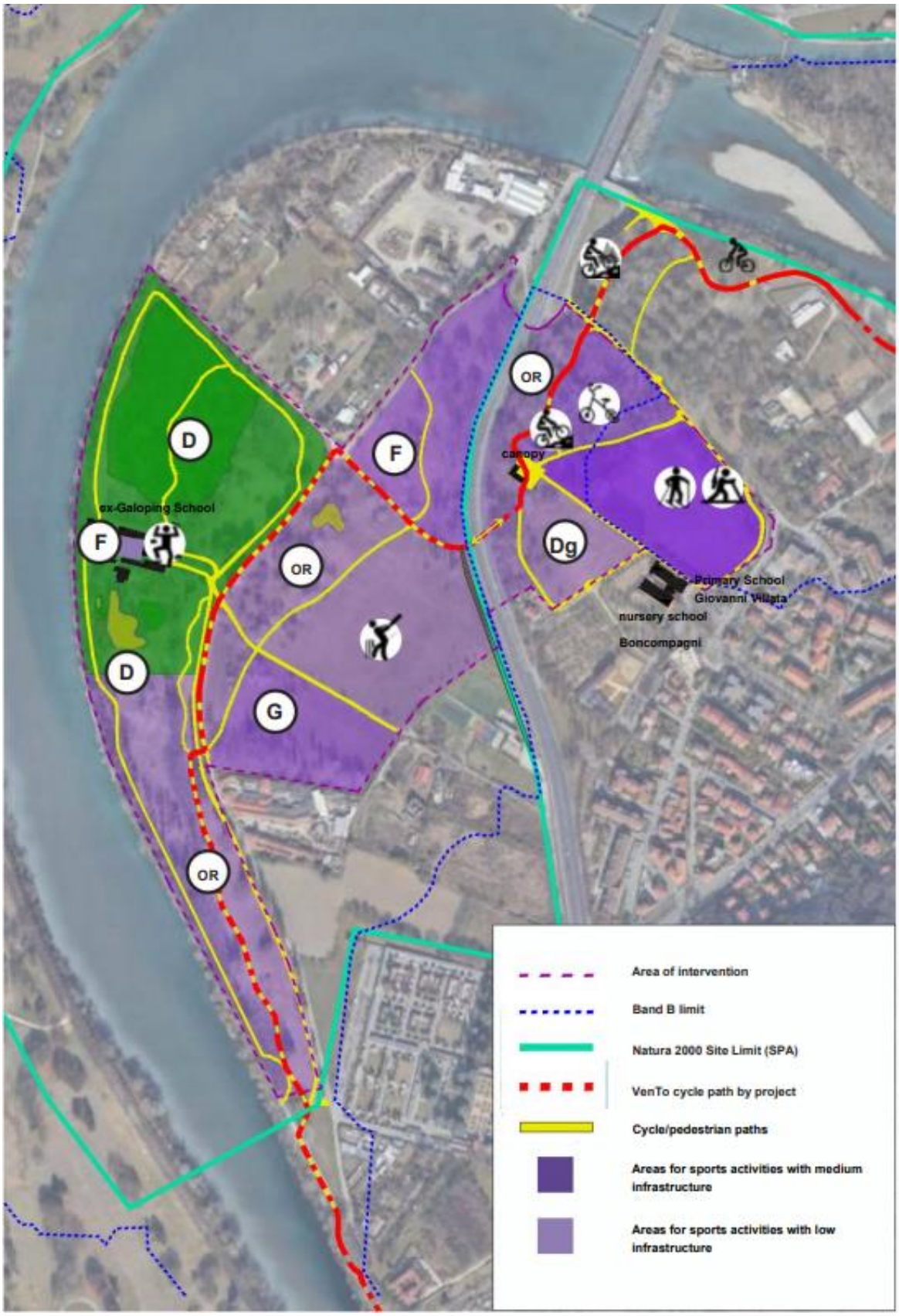


Figure 64 Proposal for Parco del Meisino

3.2.5.) The River (Water Infrastructure) :

The riverfront is one of the edges of the site which solely includes the banks of the river Po, an element that could not be undervalued. Strategies in the domain would encompass a thorough understanding of how the people interact with the river and focus on improvising the existing scenario. This would include rejuvenation of the riverfront altogether, with the addition of spaces (like promenades, walkways, cascades, etc.). This shall also consider the flood lines on the site and try to inculcate the space in such a way that it acts holistically. Treatment of the river-land edge would also help us beautify the course of the river along the site and prevent drastic ecological changes.

Flooding of the Po River:

Taking into consideration the flooding during the rainy period with the curvilinear flow of the river that flows into the Stura di Lanzo stream, the flow of the flooded water runs into the Former FIMIT causing inconvenience to the area. The statement above can be justified by the floods that affected the area in the recent decade from 1993.

The floods in 1993 had a significant effect on the Stura region which affected the parts of Parco Della confluence. In 1994, the former FIMIT area was flooded by the Po River, the flood in the year 2000 was more disastrous and had severe effects on both the right and the left banks of the river. The raised bicycle and pedestrian paths were safe because of the higher altitude compared to the other. The floods of 2016 involved only the east bank of the river which includes the area of the Parco del Mesino and the former Galoppatoio which were along the areas of natural river expansion during the event of flooding. The west bank of the river has parks, the nursery, and the former FIMIT area below the water level concerning the flood reference it excludes the former Tobacco Factory because of its higher altitude of about 5.4 m from the former FIMIT area.

The indication of the interventions that can be made on the river banks is established by the PTO Piano Territoriale Operativo del Po, which includes the creation of a system of parks along the Po River development of nurseries etc…The interventions proposed for this area must cater to the existing flood levels of the region and also the presence of the heritage building of the Former spinning mill should have a pivotal role to play concerning the design proposal

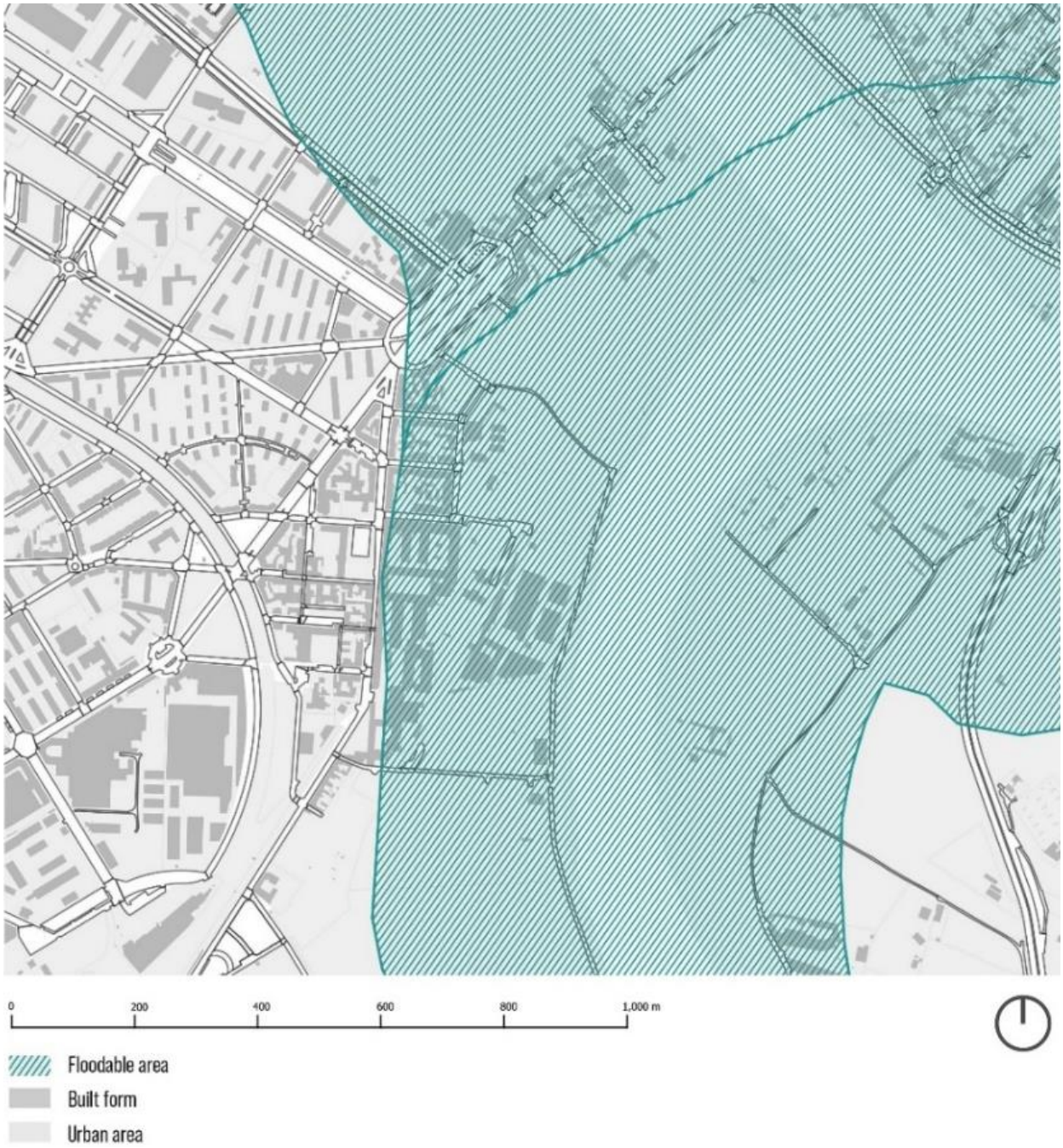


Figure 65 Flood Map
Source: ARPA Piedmont

Figure 66 Flooding Event September 1993 - November 1994
Source: ARPA Piedmont

Figure 67 Flooding Event 1994
Source: ARPA Piedmont

Figure 68 Flooding Event 2000
Source: ARPA Piedmont

Figure 69 Flooding Event 2016
Source: ARPA Piedmont

Chapter 4 –
Towards a New Intervention

4 .1 Devising a Strategy

4.1.1.) The Roadmap:

A Roadmap is a crucial tool that helps identify the various aspects of the project, establish timelines, and demarcate the process until it concludes. Similarly, imposing a strategy towards devising a plan of action for the particular pocket of Regio Parco would require a well-defined Roadmap, with various stages to ensure an organized process.

The primary step towards defining new paradigms for the selected context includes the selection of the intervention area, establishing its connection with the elements in the vicinity, and understanding the relationship between these elements and the people. Identification of the site is crucial as this step helps establish the limits of intervention and solidify the methodology. Another significant aspect of the project is to identify and execute a specific intervention strategy that accommodates the identity of the space and introduces elements and functions to the infrastructure innovatively. The aforementioned steps enlighten the process of developing the schematics, in other words, development approaches and strategies for each of the selected intervention zones, and this concludes the preliminary stage of the roadmap, with the limitations and the execution plan defined.

The secondary stage is more oriented towards exploration and conceptualization. The exploration allows various ideologies to be implemented and checked based on the value they add to the place. This stage refines and filters out various approaches that are not suitable for execution. Once the concept has been established and defined, it makes the process streamlined and unidirectional towards the ultimate conclusion. After the establishment of the concept, the design is taken in multiple parts, based on different scales, which come to be known as the micro and the macro design. after which the finalization of the scheme and design approach takes place thus concluding Stage 2.

Stage 3 marks the finalization stage and ensures the completion of the previous 2 stages. These steps would include reviewing the technical aspects and detailing the work, which would pave the way for further improvisation and rectification if needed. Ultimately, arriving at aspects such as identifying the potential stakeholders and prospects, leading to execution and the analysis of before and after scenarios, thus concluding the project.

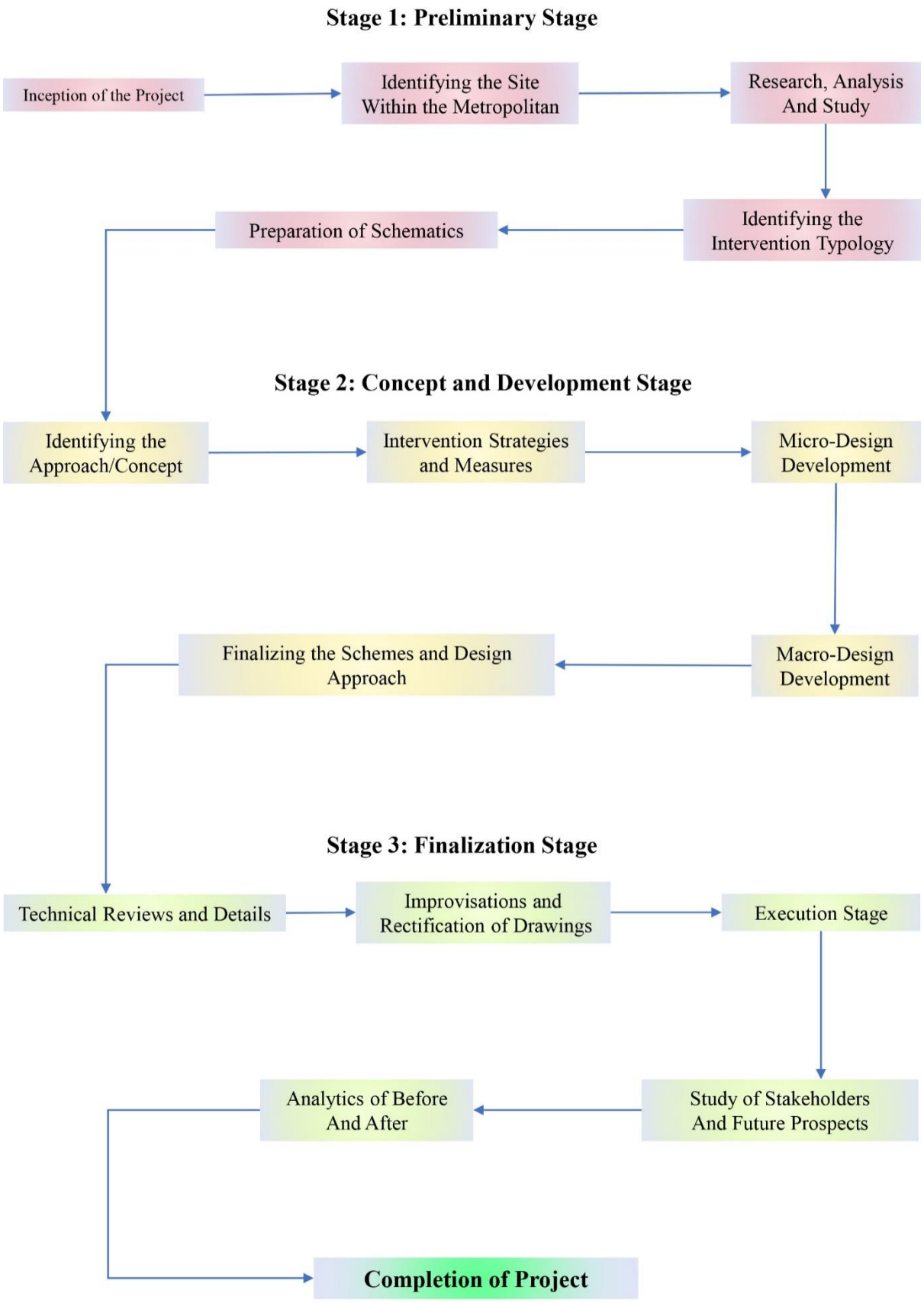


Figure 70 Road Map

Source: Author

4.1.2) Methodology:

Similar to the roadmap, it is extremely important to devise a methodological approach towards the design intervention. It encompasses the intervention limitations and directs the design process until it reaches the desired result.

This design methodology for the selected urban pocket of Regio Parco initiates with the classification of domains, and segregating the various entities of Regio Parco into subcategories defined as urban and natural domains. This categorization helps us initiate the intervention strategy through different mediums that pertain to the two domains. For instance, intervention in the urban domain may or may not adapt an innovative approach such as tactical urbanism, whereas intervention within the natural aspect might include ecological restoration as a design measure.

In the selected context of Regio Parco the domains were segregated into Urban and Natural and the selected spaces were carefully placed into the subcategories based on their attributes. It was observed that the selected site had a culmination of a village settlement which was envisioned as a superblock and the yard located behind the abandoned Tobacco Factory which was proposed as a means of Ecological Restoration through the provision of a stepped plaza and a wetland.

The Superblock was further categorized into the streetscape and the open spaces which helped in identifying the specific intervention zones and establishing tasks that pertain to urban regeneration and revival. These spaces included intervention within the selected important streets of Via Maddalene (The Historical Access), Via Norberto Rosa (The proposed Metropolitan Access), and Corso Regio Parco. These spaces also included intervention within open spaces of Piazza Abba, The core of the Village and the Church Complex.

Along the same line, within the natural domain, the spaces were distinguished into 2 subcategories, each representing the Green (Vegetation) and Blue (Water) Infrastructures respectively. The Plaza area is proposed as a revival measure for commemorating the green infrastructure on a grander scale and the waterfront shall be envisioned as a wetland that substitutes the hardscape with the restoration of green cover and water bodies to ensure ecological restoration, thus completing the dialogue between the built infrastructure and the river.

The Final step of the methodology includes the merger of the two design interventions and introducing a smooth transition between all the elements to provide a seamless connect between the urban and the natural domains, thus concluding the intervention project.

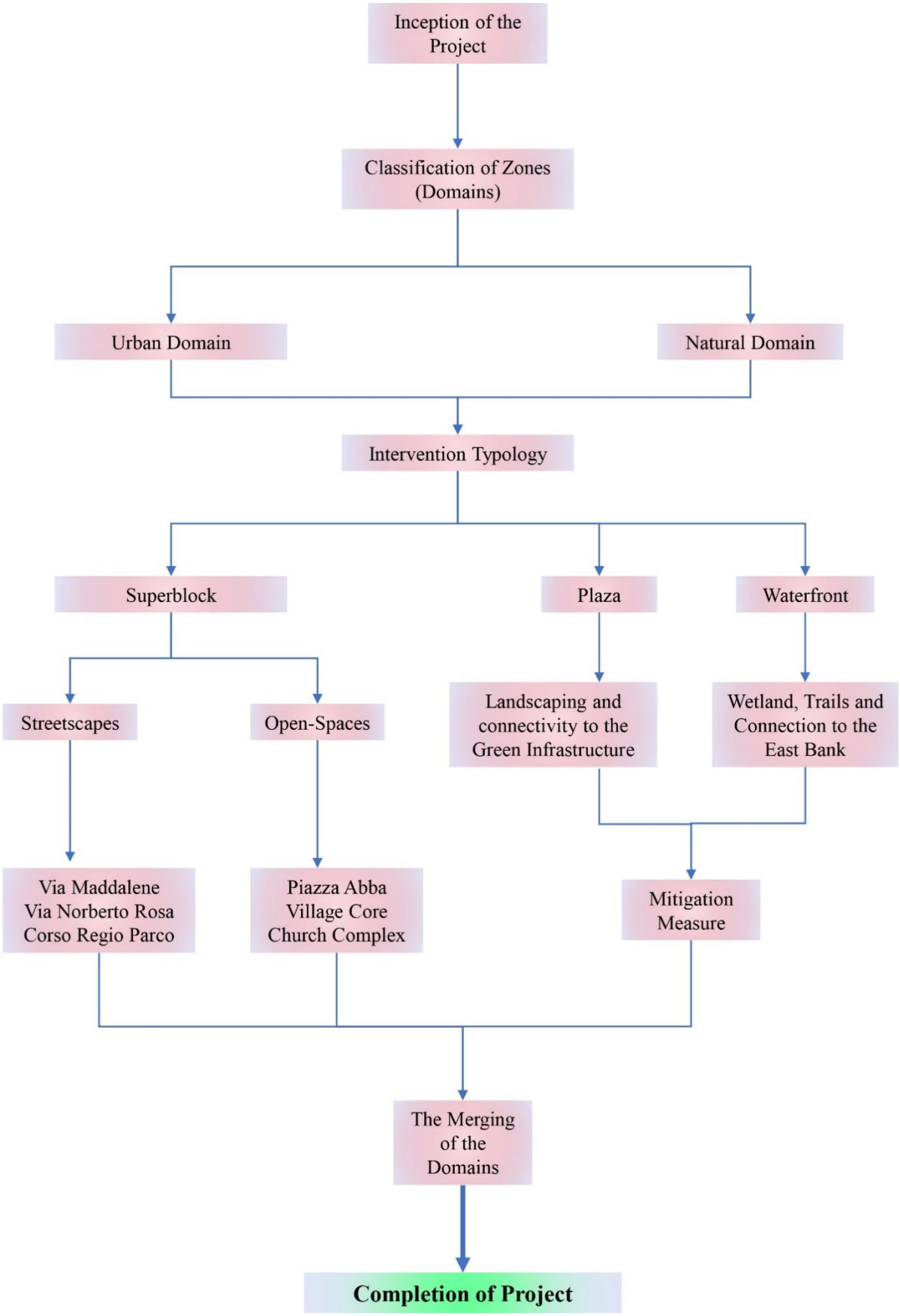


Figure 71 Methodology

Source: Author

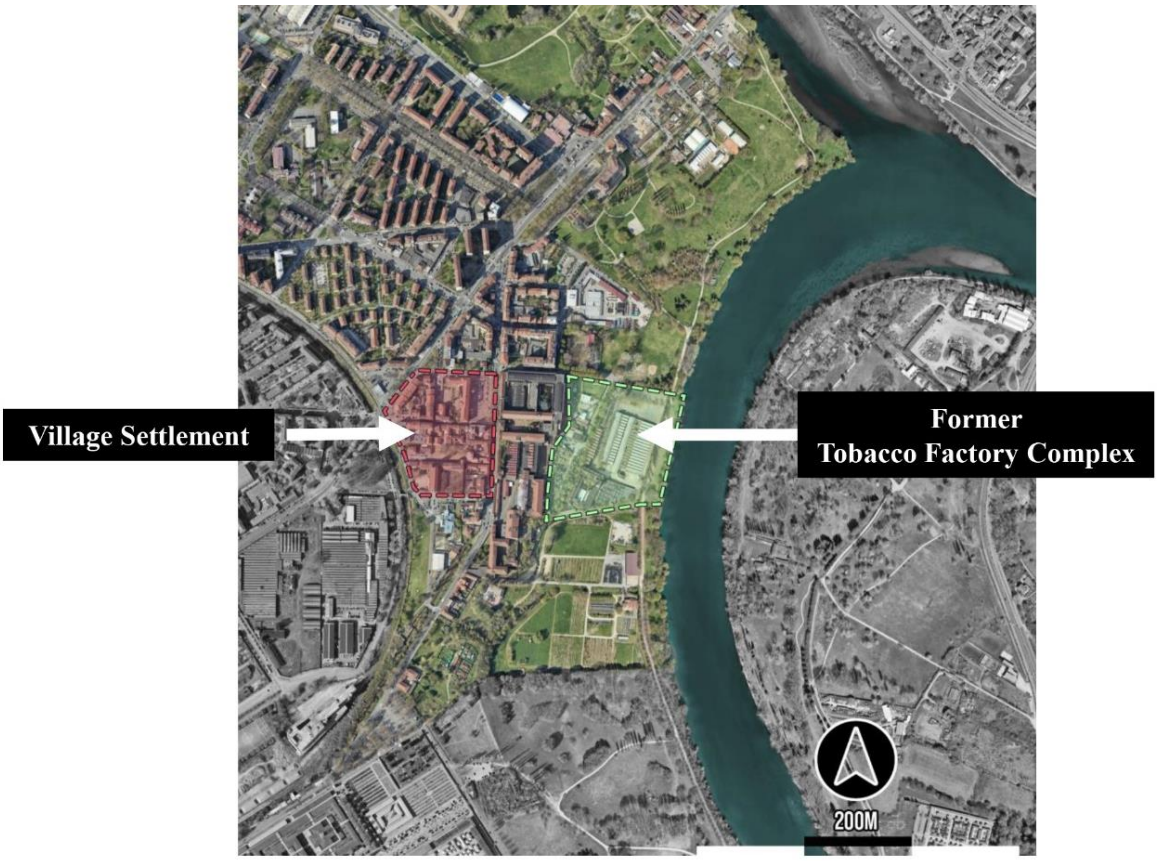
4.2 Reimagining the Domains

4.2.1.) The Initiation:

As mentioned in the previous chapters, the study of domains is crucial for the particular approach adapted for the intervention in the Site. This study helps in identifying the separate entities within the site and devise strategic development plans for each of the elements.

By studying the domains within the selected site, it was observed that the urban fabric constitutes of Borgo Regio Parco (The Village Settlement) whereas the space behind the abandoned Tobacco Factory is proposed for ecological restoration, in the form of a wetland as an intervention.

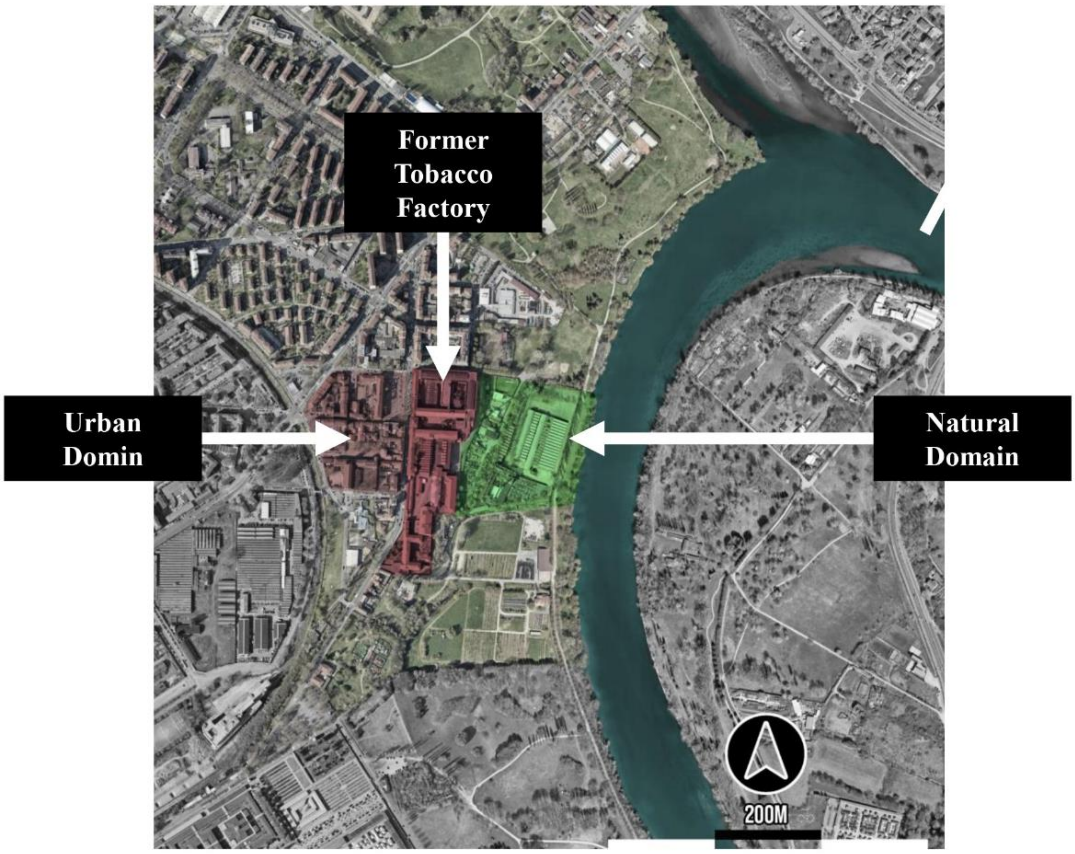
To support the argument, a thorough analysis of the space is required on a grander scale, which helps in identifying these said domains on the metropolitan level. This identification on the urban level marks the domain to be intervened separately yet holistically in order to find a seamless transition.



Selected Area within Regio Parco for Intervention

Figure 72 Segregation of Domains

Source: Author



Domains and Elements within the Selected Area

Figure 73 Classification of Domains

Source: Author

This approach helps in distinguishing between the various elements that are present within the 2 domains of the selected context. For example, within the Urban Domain (The Village Settlement), the key elements were the streets and the open spaces wherein the intervention strategies need to be applied. Along the same line, we observe an area behind the former tobacco factory with the potential for ecological restoration and development of Ecological Infrastructure which also constitutes the Natural Domain. To mark the edge between the two domains, the Former Tobacco Factory (proposed as a cultural district) has been taken as the axis for basing the intervention strategies, from and to the building.

The classification and categorization of the domains and the entities on the metropolitan level give way to much more intrinsic and human-centric interventions. The impact of such interventions within each of the domains shall help in rejuvenating the existing infrastructure, make it much more plausible for the design paradigm, and also serve as a model for alternative intervention opportunities, both on the micro and the macro stage.

4.2.2.) The Conceptual Framework:

To demarcate the 2 domains within the site, the Former Tobacco Factory serves as the central axis and shall also act as a transition space between the domains.

The primary step to establish the framework was based on thorough observation of the entire space in general. This observation helped in identifying the village settlement in the existing cluster of the built infrastructure. Within the natural domain, the area proposed to be converted into a wetland is an adaptive measure to mitigate potential flooding and the underutilization of the spaces altogether.

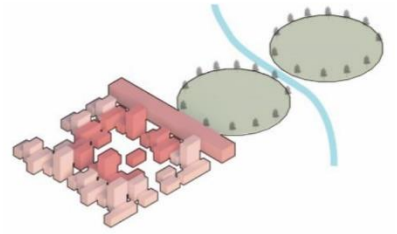
The existing natural infrastructure in the selected site is also present in small portions throughout the site, in the form of flowering plants and trees (particularly within Piazza Abba and the Village Core) besides the vegetation cover located on the riverbanks.

As established, the Former Tobacco Factory, a built entity that is serving as a transitional buffer between the two selected spaces, aids the intervention decisions as the design aims to maximize revitalization in the selected domains concerning the factory, which is proposed to be a cultural district.

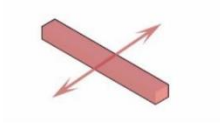
Within the Urban Infrastructure, referred to as the Urban domain, identification of the village settlement from the other buildings is a crucial measure. This measure determines the level of intervention that can be applied in the area without hindering the existing cultural identity of the settlement. Interventions in this domain may solely adhere to the streetscape and the open spaces present within the built infrastructure.

Similarly, to intervene within the natural domain, the demarcation of the Green (Vegetative) and the Blue (Water) infrastructure is crucial. A culmination of the 2 infrastructures within the Natural Domain paves the way for mitigation measures to be applied in the selected portion of the site, without hindering the existing natural setting. This can also be referred to as Ecological Restoration as the chosen intervention aims to tackle the flooding potential of the factory yard, and at the same time, make provision for human-centric activities such as recreation and leisure.

To provide a seamless transition between all the entities (existing and proposed), the connections between the former tobacco factory, the Urban and the Natural domains shall be established and the dialogue between the three shall be reinforced in order to back up the intervention ideology.

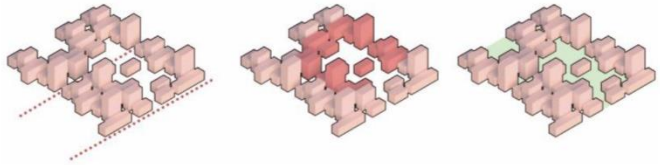


Existing Scenario



Former Tobacco Factory as a
Focal Element which is proposed as a
Cultural District

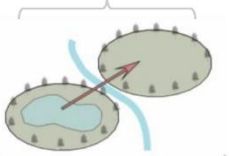
Urban Domain



Built Setting | Village Settlement | Open Areas

Intervention

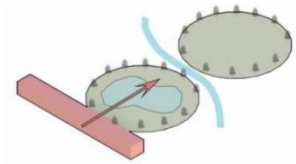
Natural Domain



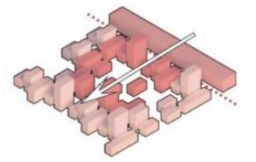
Intervention

Interplay of the
Natural Infrastructure:
1. The Water Infrastructure
2. The Green Infrastructure

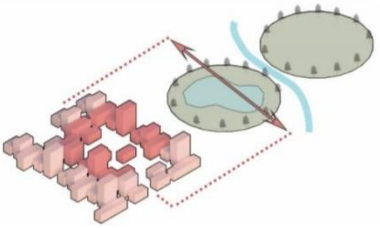
The Merging of Domains



Dialogue between the
Former Tobacco Factory
and the Natural Domain



Dialogue between the
Former Tobacco
Factory and the
Urban Domain



Dialogue between the
Natural Domain and the
Urban Domain

Figure 74 Concept Diagram

Source: Author

4.2.3.) The Intervention:

The Urban Mobility:

The selected intervention area within the much larger Regio Parco is very well connected to its metropolitan counterparts, through a network of arterial roads, secondary roads, and tertiary roads that are intertwined within the tightly packed urban spaces also serving as private accesses.

The understanding of Mobility in the proposed scheme shall aid the intervention in the urban domain, particularly in the Superblock area, with a focus on providing additional vehicular access from the proposed Metro Station (Cimarosa-Tabacchi M2). The superblock is perceived as a pocket of built structures within the existing Urban Fabric, hence an approach towards pedestrianization of the settlement is adopted.

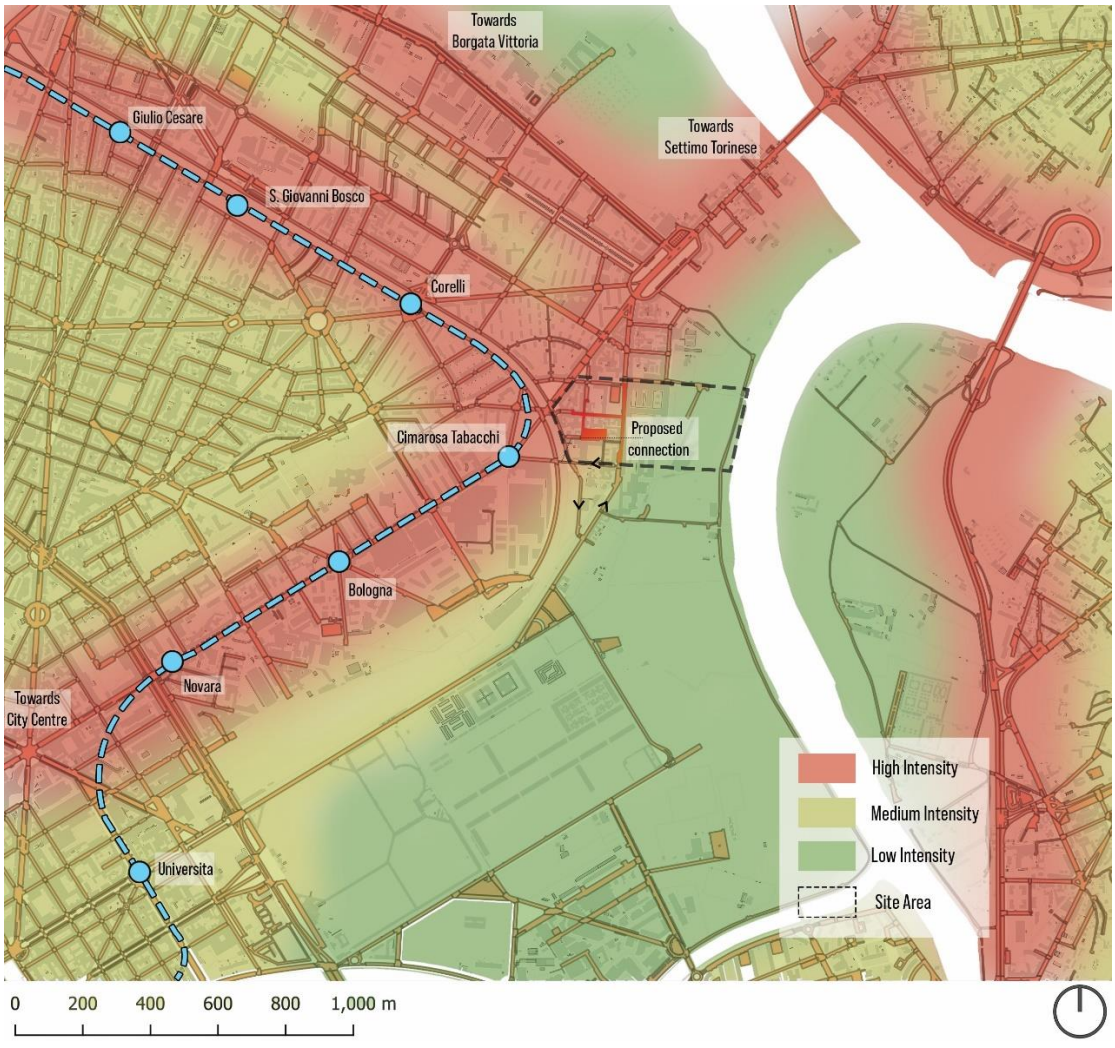


Figure 75 Vehicular intensity w.r.t. Neighbourhood level

With the introduction of M2, metropolitan access is going to face a considerably large amount of influx/outflux of people that want to access the said superblock, especially the cultural district. The diversion of vehicular traffic around the Urban Infrastructure plays a key role in avoiding congestion and concentration of mobile entities (Cars, Bicycles, Public Transport). The introduction of a new road connection from the metro station to the site is proposed which shall aid the vehicular and pedestrian movement alike, with the ability to accommodate the potential traffic, diverting car traffic, thus ensuring pedestrian safety and mobility within the superblock and the cultural district.

Figure 76 Vehicular Intensity w.r.t. Intervention Area

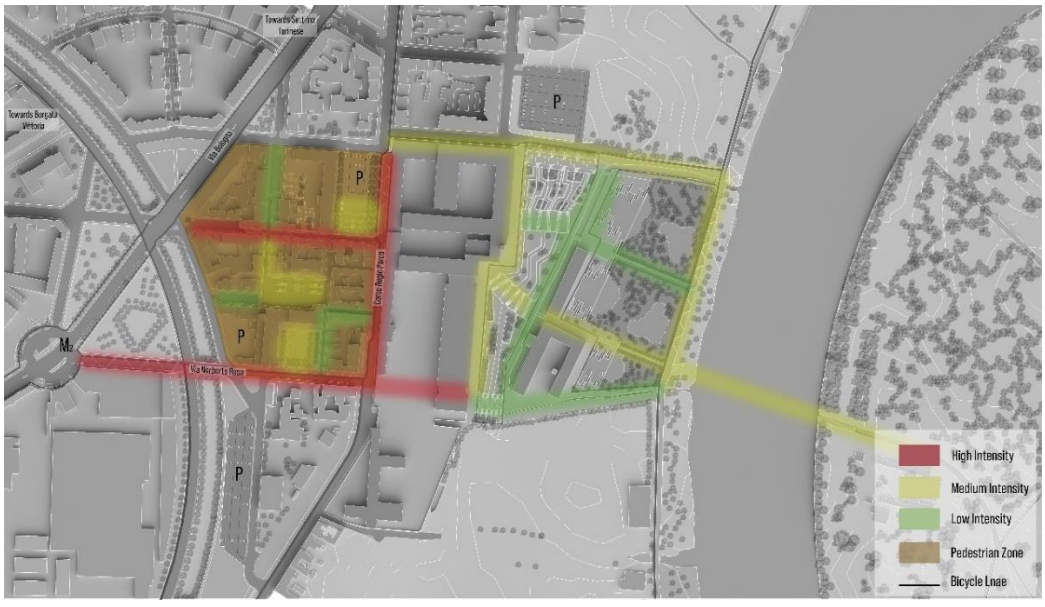


Figure 77 Pedestrian Intensity w.r.t. Intervention Area

The Urban Domain:

The Urban Domain comprising of the Built Infrastructure has several key elements which need to be addressed individually and merged within the existing settlement. They are as follows:

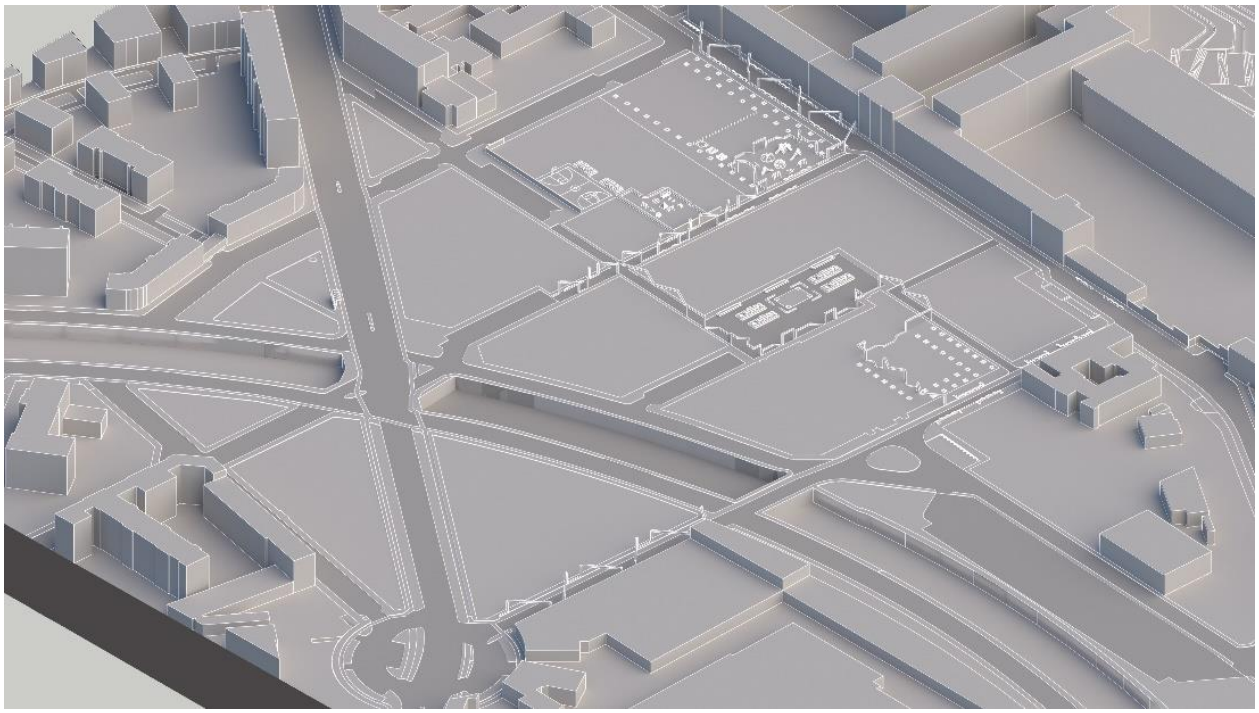


Figure 78 The Existing Settlement

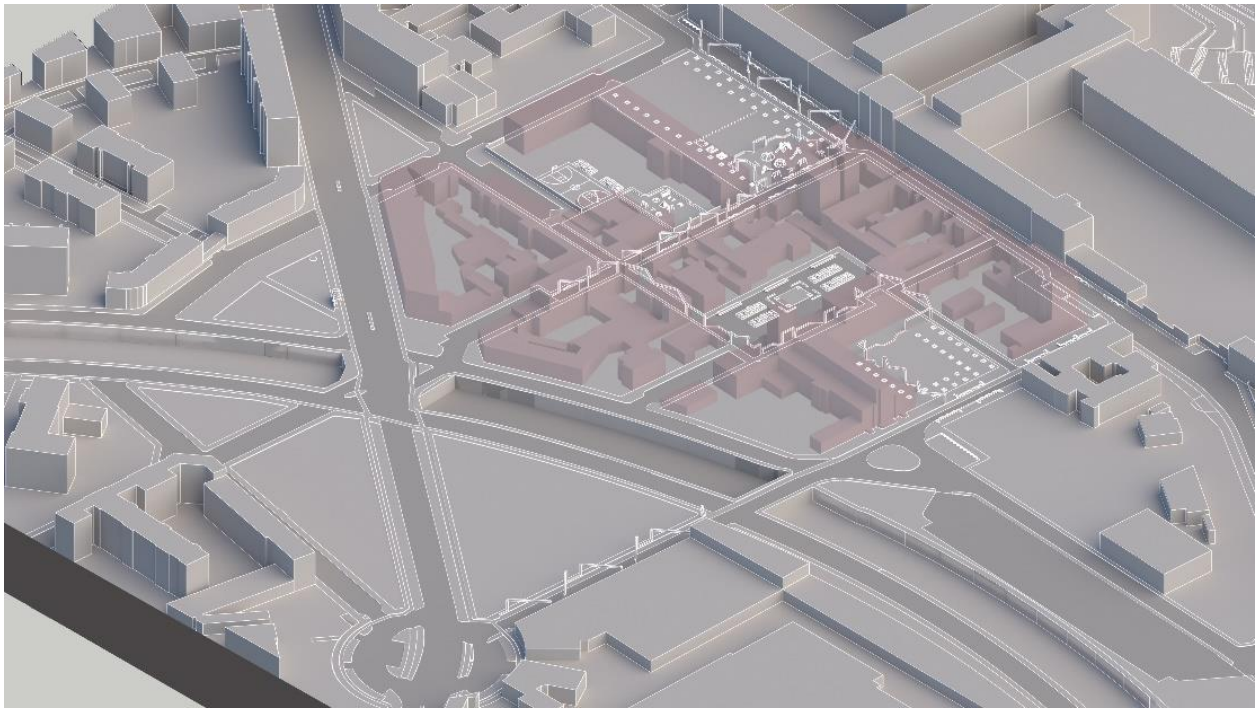


Figure 79 Identification of the Superblock

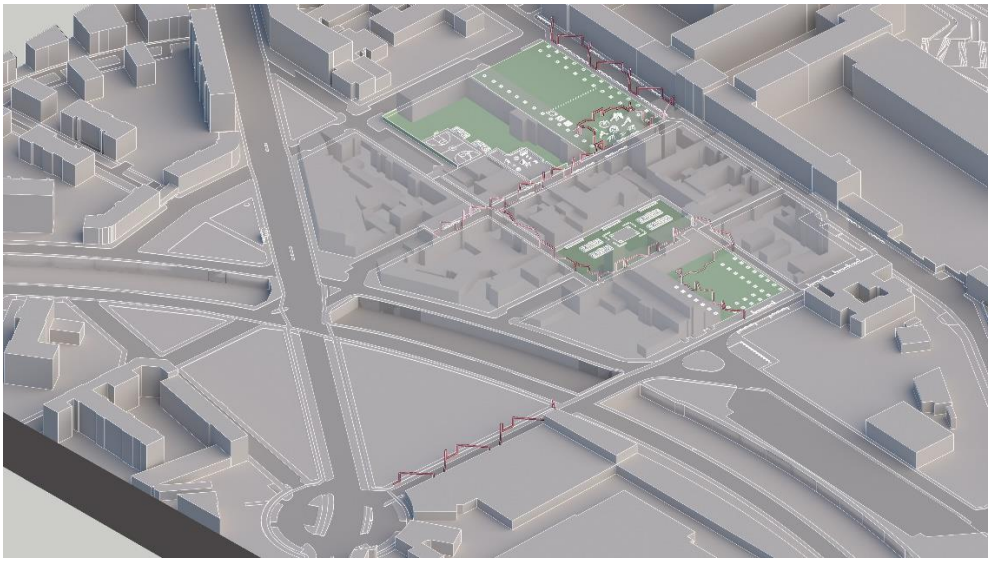


Figure 80 Open Spaces within the Superblock

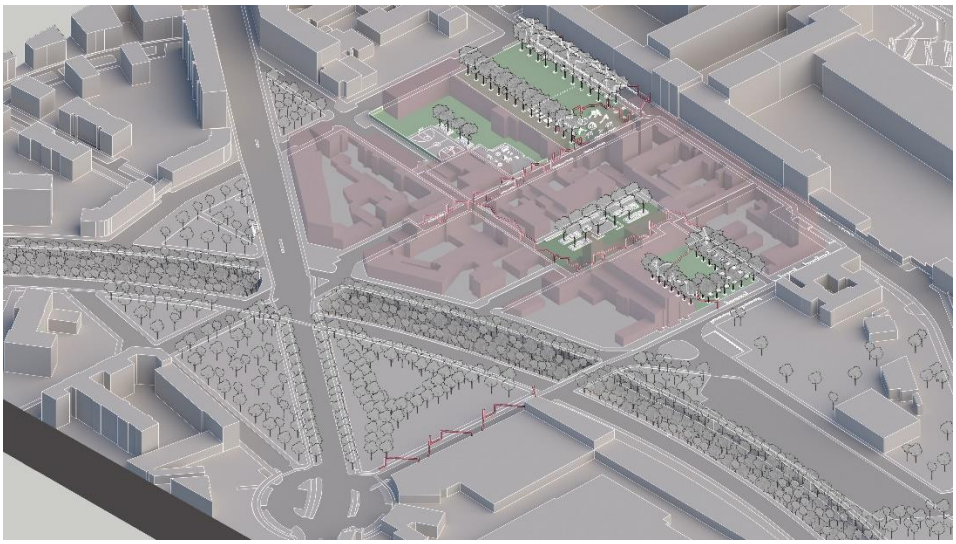


Figure 81 Vegetation within the Urban Domain

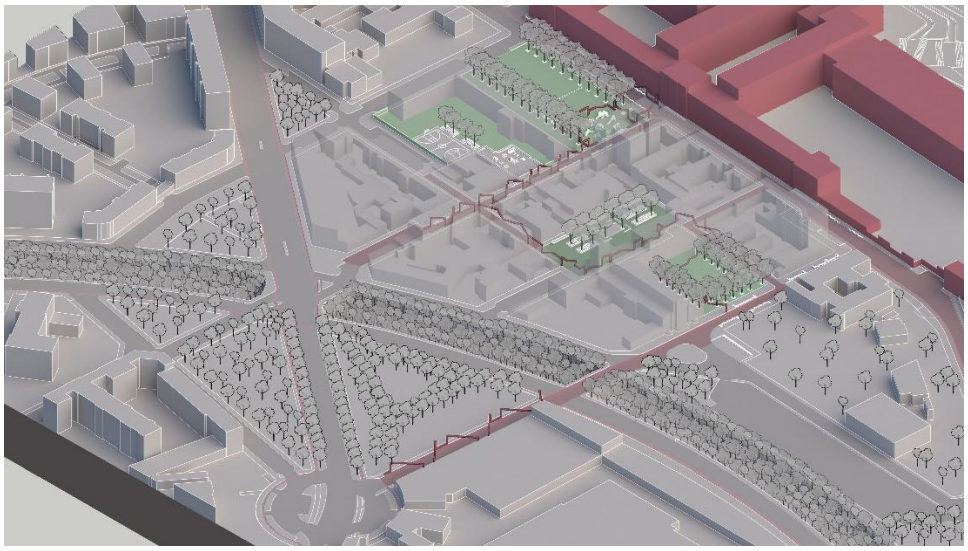


Figure 82 The Approach towards the Site

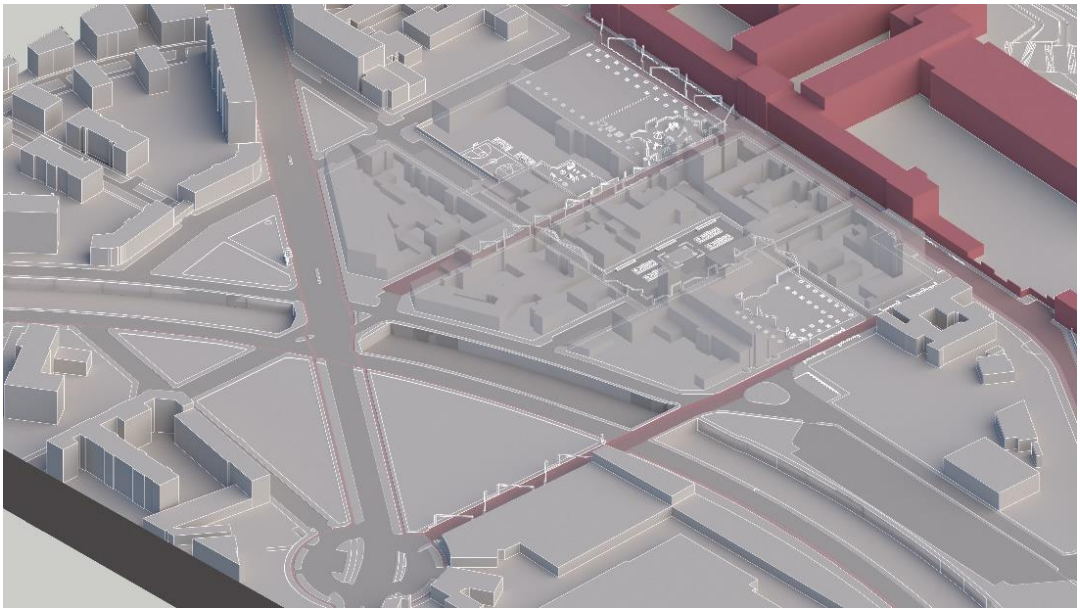


Figure 83 The Historical and the Metropolitan Access w.r.t. The Cultural District

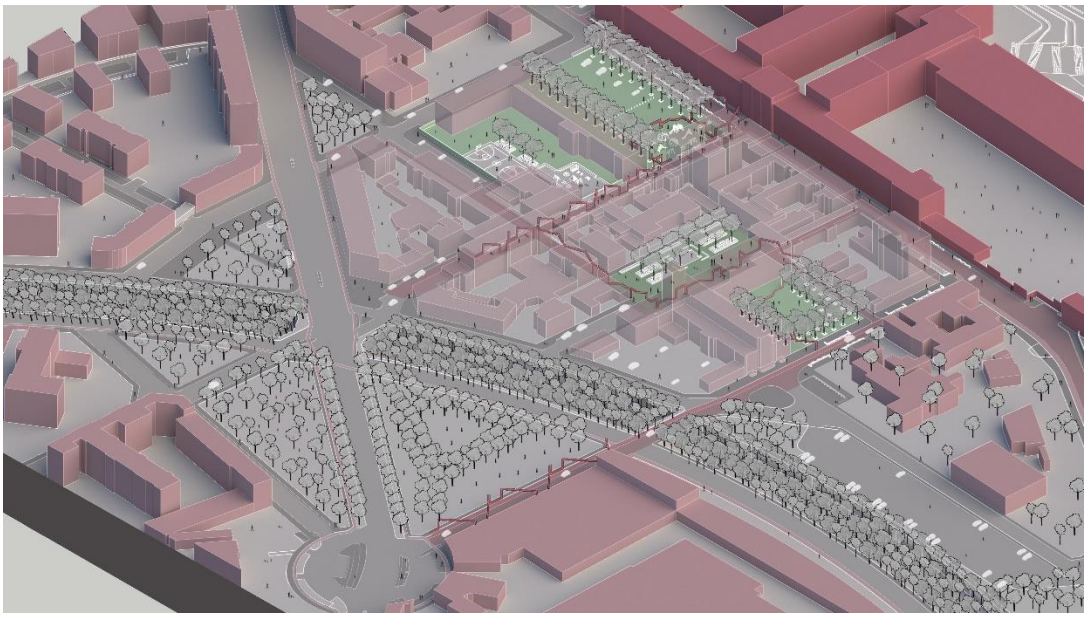


Figure 84 The Urban Domain

Via Maddalene:

The historical access, Via Maddalene is a continuous straight street that connects the cultural district to the primary arterial road (Via Bologna) and it also serves as the primary access for the village settlement. It adorns the streetscape with cobblestone paving and showcases a series of eateries and cafés, commercial avenues, entryways to the residential cluster within the settlement and most importantly, it binds the open spaces such as Piazza Abba, the elementary school compound with the built infrastructure.

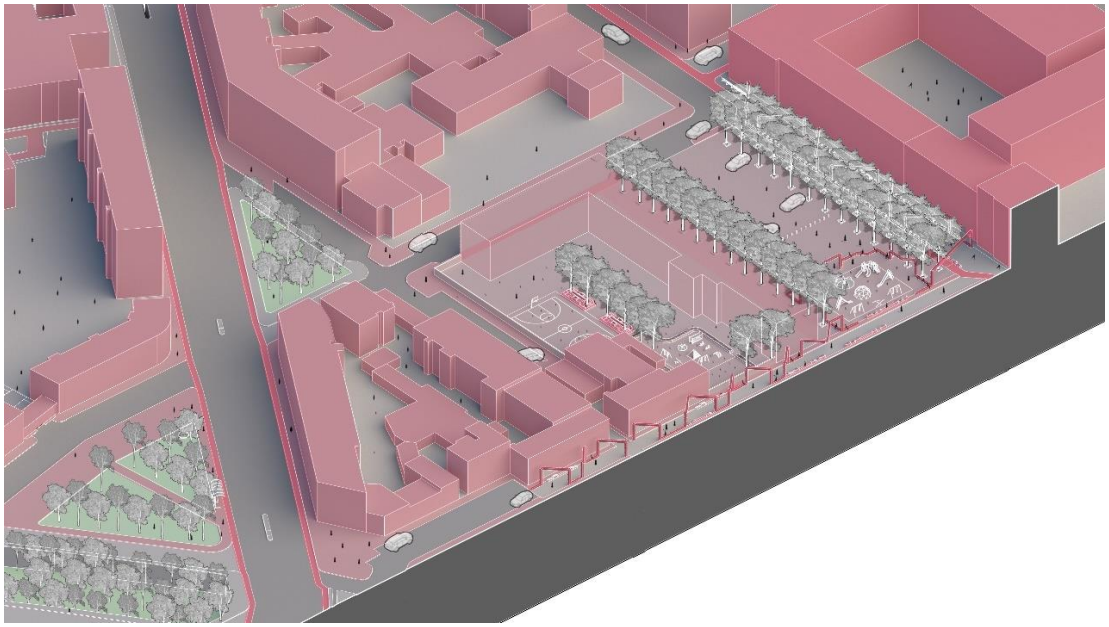


Figure 85 Sectional View of Via Maddalene

Figure 86 Via Maddalene, The Historical Access

Corso Regio Parco:

Corso Regio Parco, on the contrary has vehicular access, currently connecting the north and south accesses of the village settlement. It is proposed entirely as a pedestrian street in order to accommodate the footfall once the cultural district becomes operational. The intervention scheme includes provision of bicycle tracks and urban elements that allow the users to practise sustainable mobility and leisure alike.

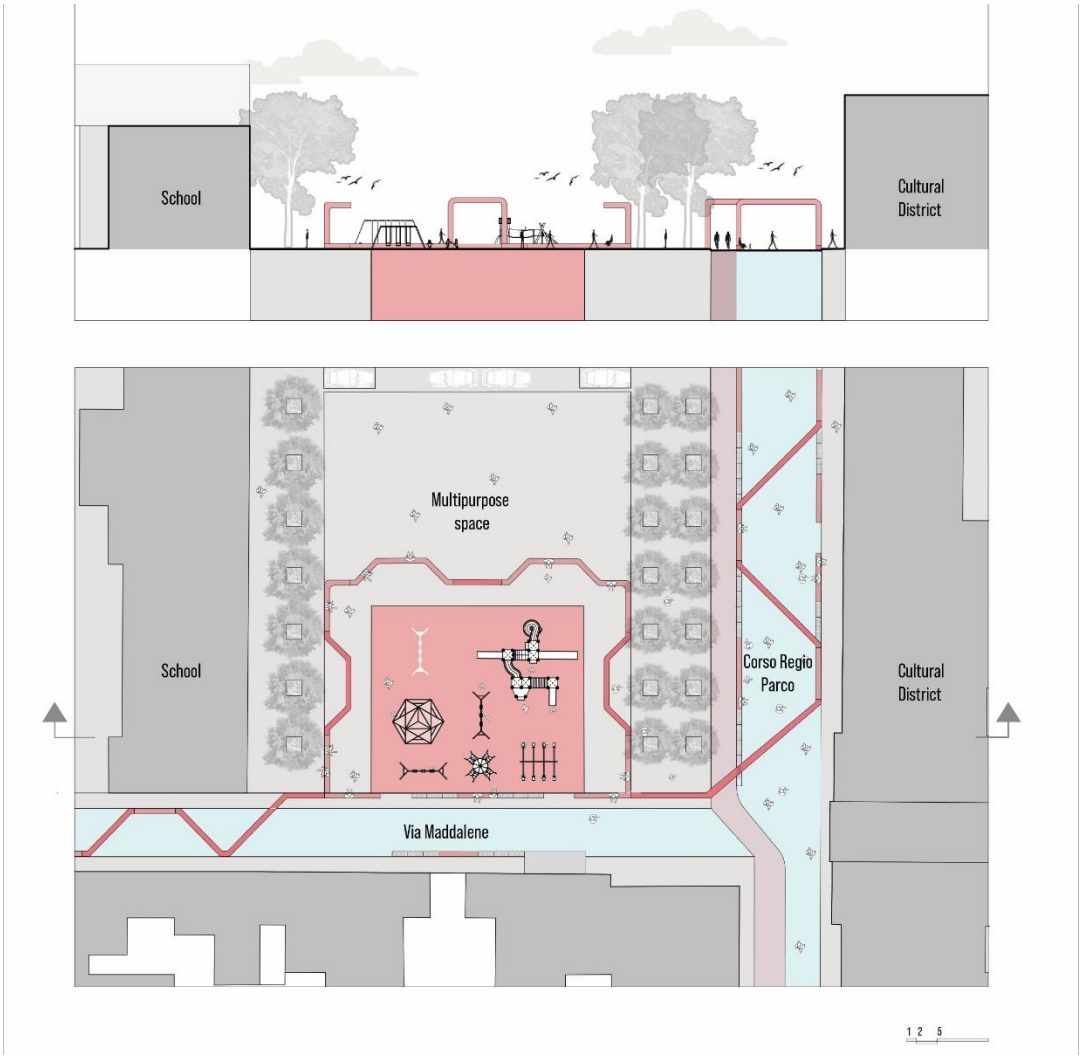


Figure 87 Piazza Abba w.r.t. to the Cultural District

Via Norberto Rosa:

The Superblock is enclosed by Via Norberto Rosa on the southern edge, which currently serves as a vehicular access. It has the Church of Saint Gaetano, the compound of the church as an

open space and an intermediate access to the core of the village. A connection is proposed from the upcoming Metro Station of Cimarosa thus extending Via Norberto Rosa to Via Bologna, and thereafter serving as the Metropolitan Access to the selected site. The street shall play a major role in diverting and keeping the vehicular traffic on the periphery of the superblock, thus ensuring a no car zone within the superblock and pedestrian safety.

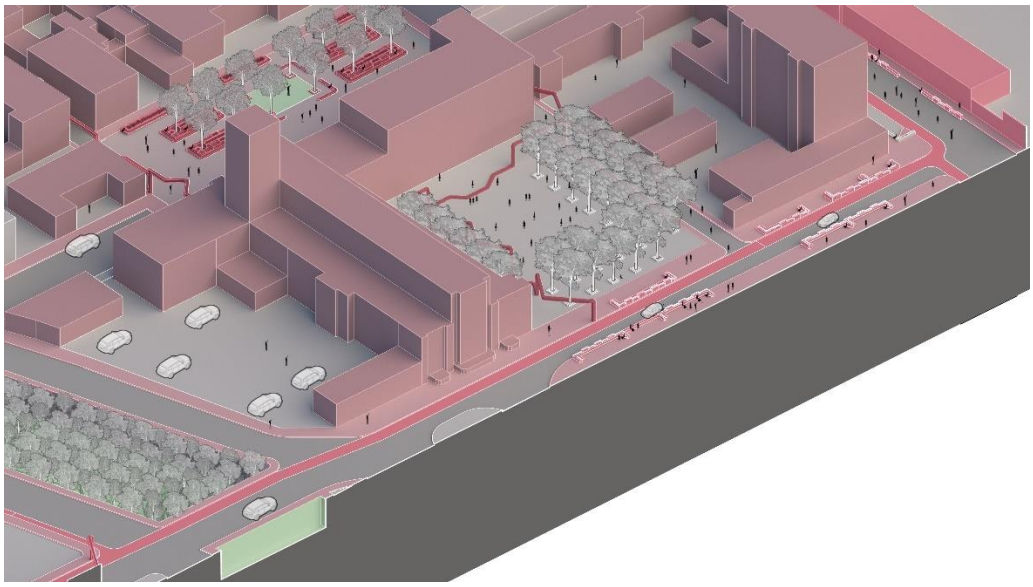


Figure 88 Sectional View of Via Norberto Rosa

Piazza Abba:

The plaza located on the North-East edge of the superblock is an open space that comprises of a parking zone with the presence of trees on the periphery. The parking yard, takes up half of the area whereas the other half caters as an open space where people can explore recreational opportunities. In the intervention scheme, the plaza is treated as an open space within the urban domain that binds the village settlement (Superblock) with the proposed cultural district and acts a transition space between the two. Enhancement of the Plaza is a key aspect of the intervention strategy, in order to ensure judicious use of space and maximise social cohesion.

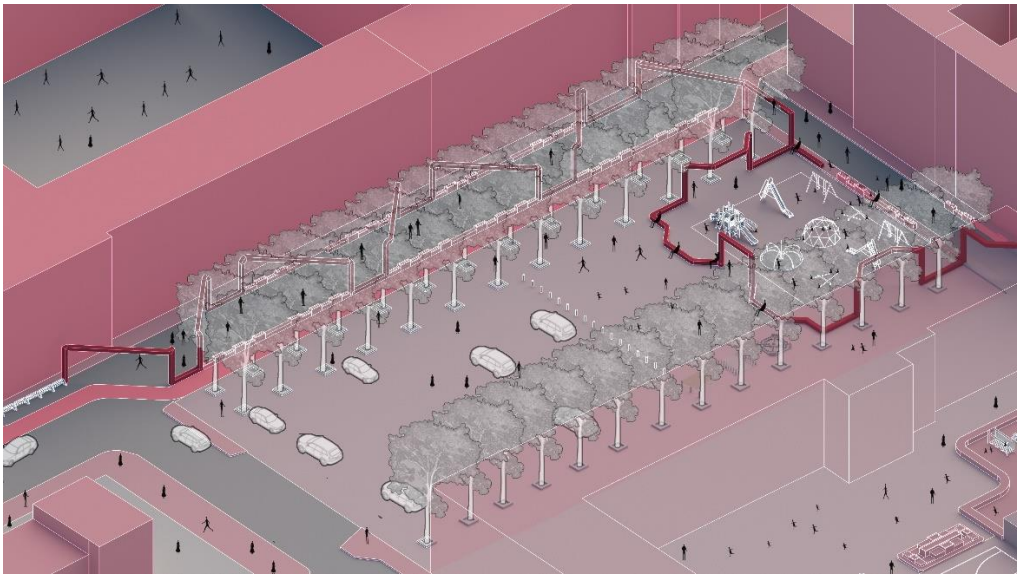


Figure 89 Piazza Abba

Village Core:

The Village Core is an existing open space located in the centre of the residential cluster within the superblock. It comprises of a playground with trees, and the surrounding areas serve as parking for the people living in the surrounding residential structures. The village core plays a significant role in the inclusion of the two accesses (the historical and the metropolitan access) and binds the open spaces (Piazza Abba and the Church Complex) together. Within the intervention, the village core has been proposed as a space that allows the users to exercise communal gatherings and events, thus ensuring social cohesion besides binding the superblock altogether holistically.

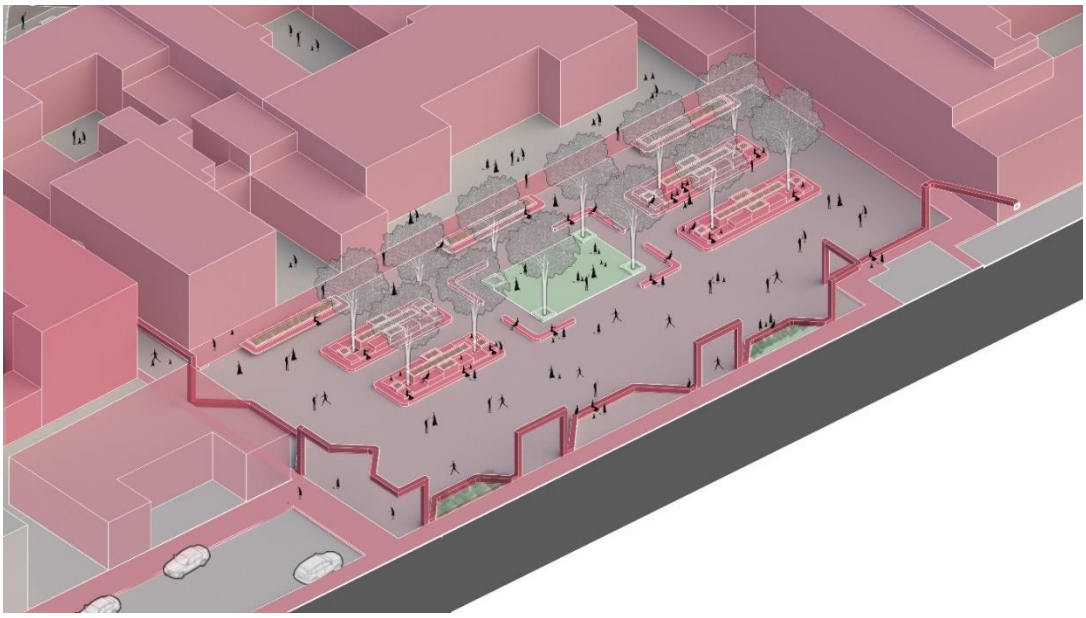


Figure 90 Sectional View of the Village Core

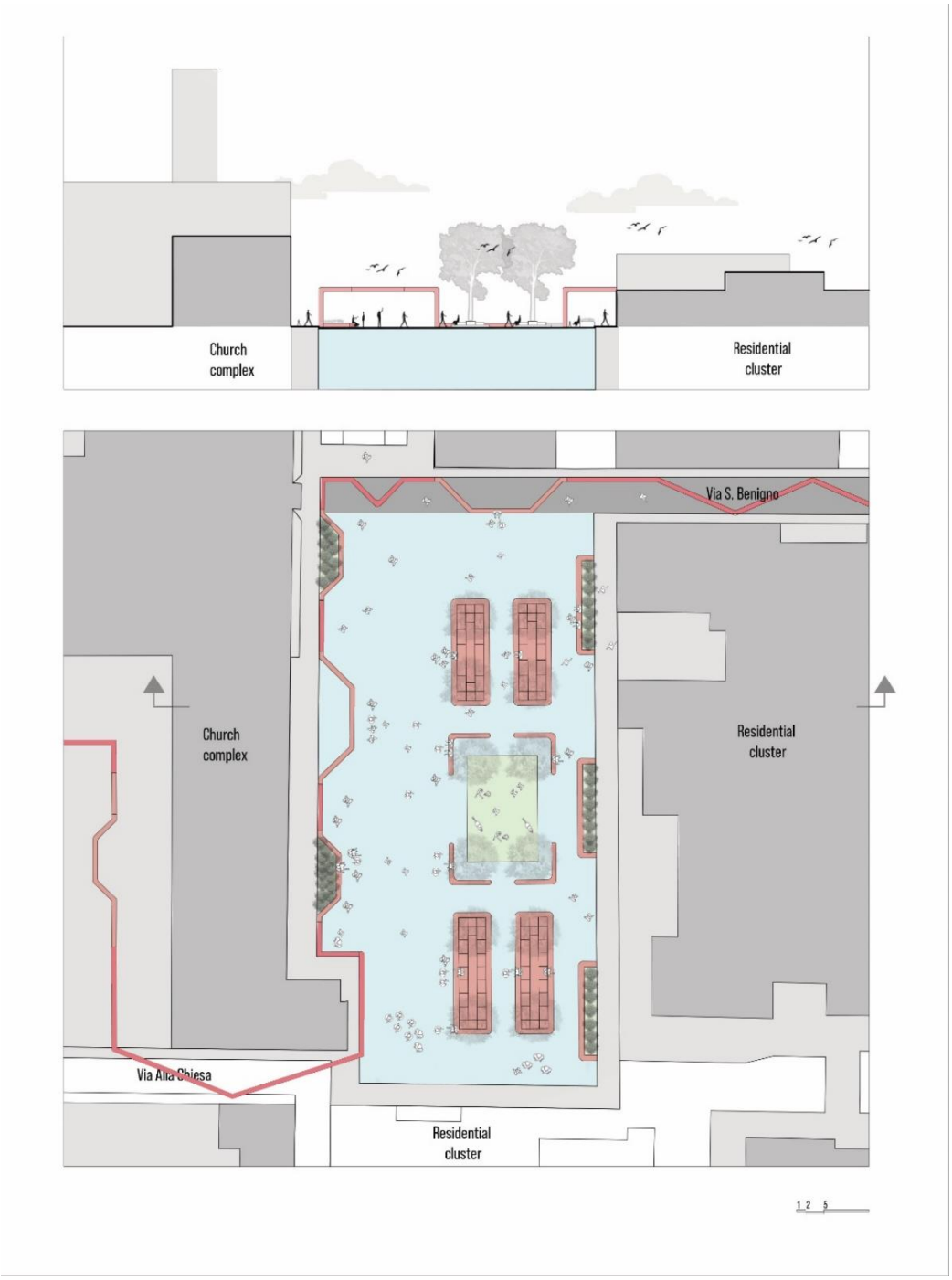


Figure 91 Village Core

The Natural Domain:

Stepped Plaza:

The compound located behind the Former Tobacco Factory currently serves as tow-yard for cars and has vegetation scattered around the periphery. This space is proposed as an

intermediate connection between the Tobacco Factory (The Cultural District) and the River, thus inculcating the transition between the built and the natural infrastructure. The intervention applied for the selected area encompasses a provision for a stepped plaza to connect the Cultural District to the spinning mill and the proposed natural infrastructure, accommodate the change of visual dimensions and facilitate pedestrian movement from the urban fabric to the riverfront.

Figure 92 Section through the Stepped Plaza

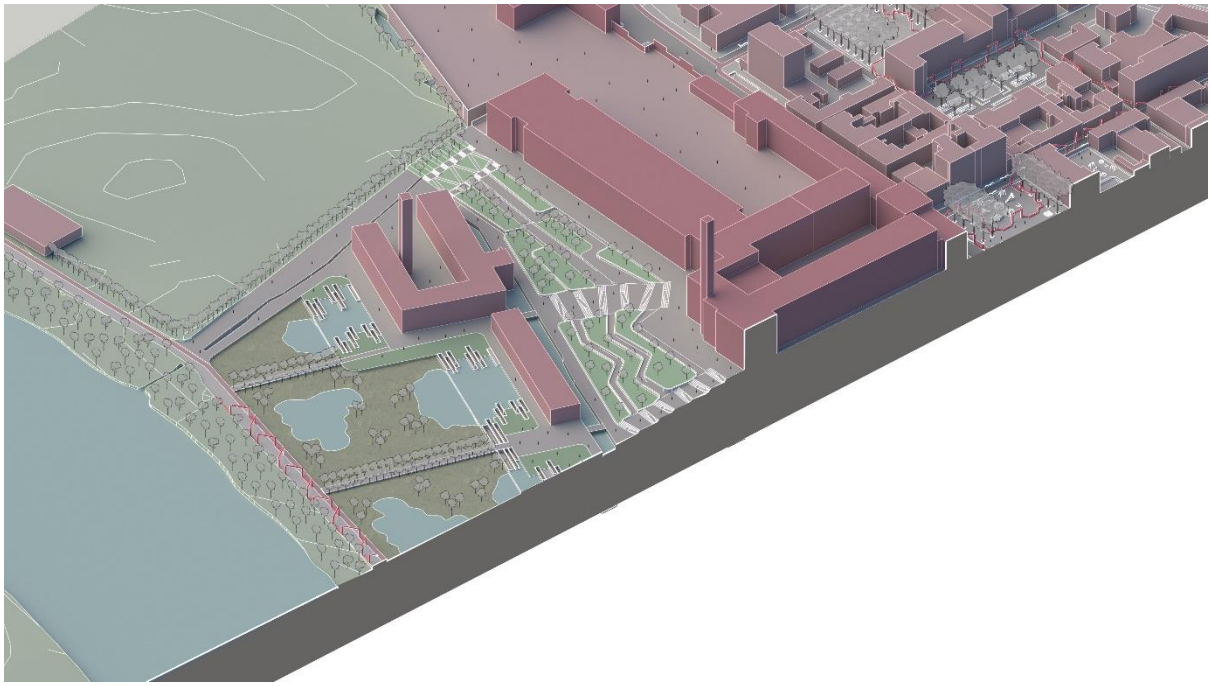


Figure 93 Sectional View of the Stepped Plaza

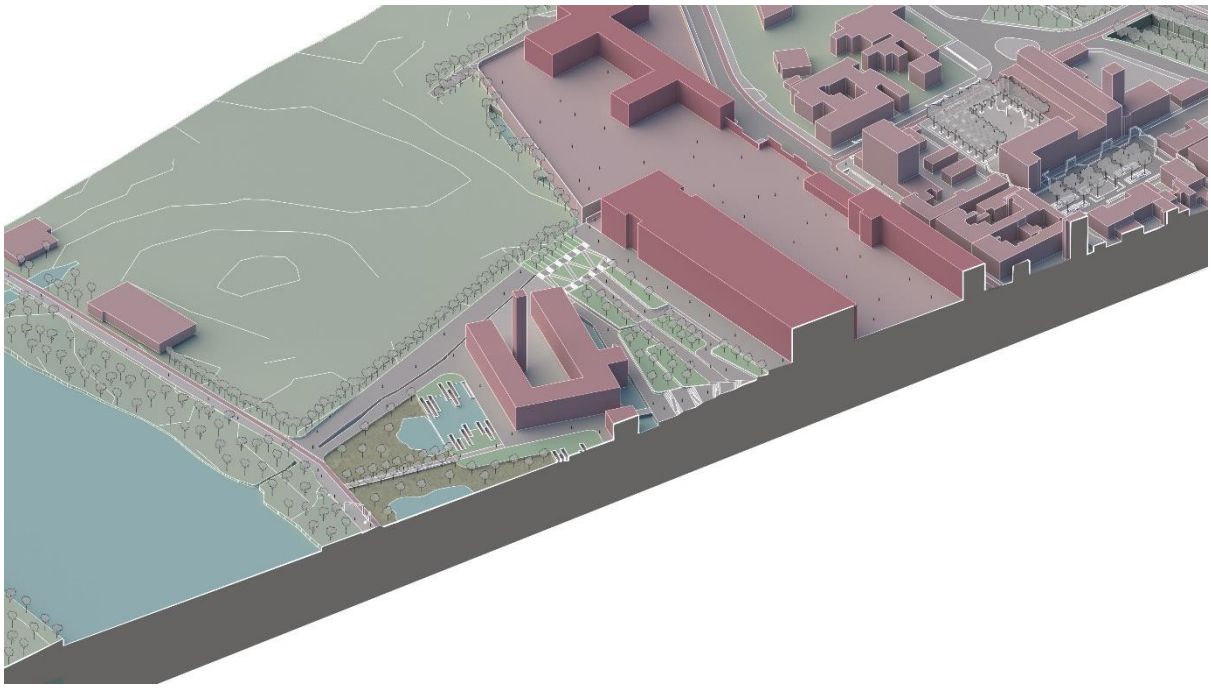


Figure 94 Sectional View through the Spinning Mill w.r.t. the Wetland

The Wetland:

The Shed area adjacent to the spinning mills and the canal is proposed as a wetland, as means of ecological restoration as the space has faced flooding problems in the past. The underutilized hardscape when converted into a wetland shall serve as a space that encourages the people to explore the natural infrastructure in correlation to the river. The wetland shall also serve as an

intermediate medium between the stepped plaza and the riverfront with trails, with the presence of the Spinning mill demarcating the two. This measure would mitigate the flooding issue and shall also act as a reservoir for the green and blue infrastructure on the site, with the presence of vegetation and intermediate canals.

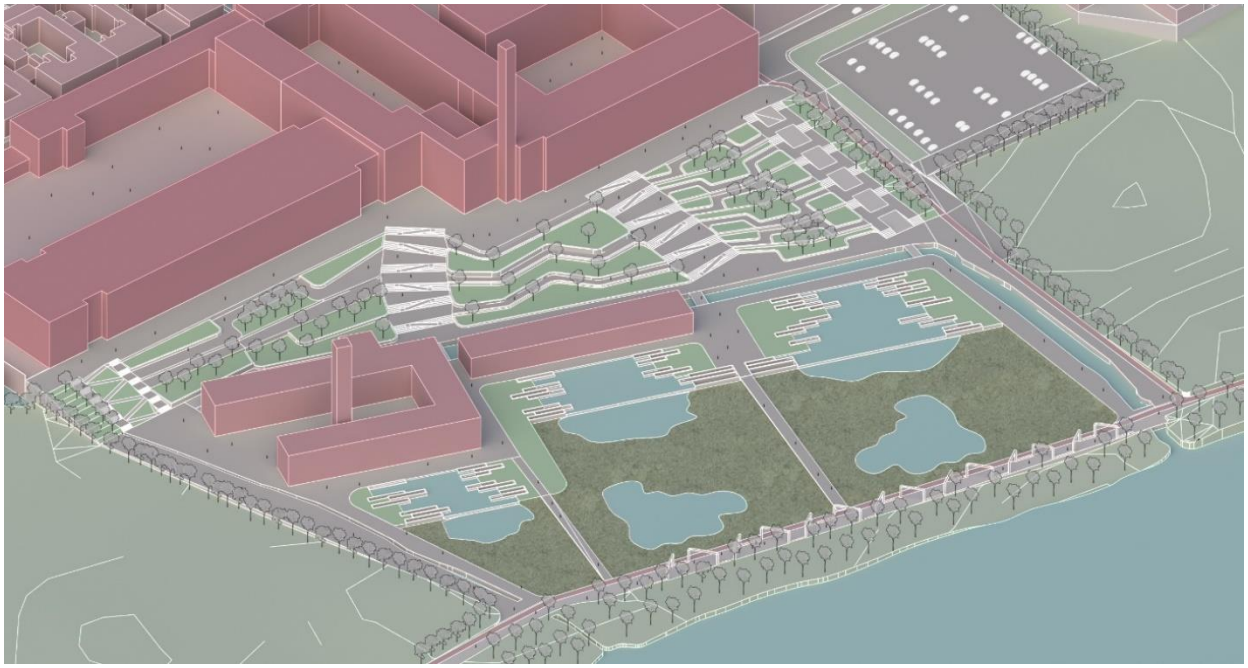


Figure 95 The Wetland w.r.t. The Cultural District

The Promenade:

The promenade is the final space on the site that is adjacent to the canals, the wetlands, and most importantly the river. It demarcates the edge of natural infrastructure in the selected context. By enhancing the promenades and the waterfront, the users can exercise passive recreation and leisure, thus encouraging the exploration of the space. It shall encompass continuity elements from the urban domain, with provision for bicycle lanes, and trails that serve as intermediate connections between the different spaces within the Natural Domain connect the site with the natural infrastructure of the surrounding setting, and pave the way for a potential connection between the two riverbanks.

Intervention Features:

Urban Elements

The intervention strategy introduces several new elements to commemorate the area's industrial past, whilst making provisions for several new functions and aiding in wayfinding. These elements particularly include:

a.) The Urban Thread:

Hollow Steel sections stretch across the selected access routes, connecting the Village Settlement to the proposed Cultural District, and the Urban Domain to the Waterfront. Within the Urban Domain, the thread also plays an important role in creating segregation of spaces, particularly in Piazza Abba where it separates the play area from the parking, and in the village core where it provides niches for multifunctional activities. On the other hand, the provision of Urban thread within the Natural Domain demarcates the stretch of the waterfront and binds the two domains holistically. It also serves as an element of continuity and wayfinding, and at the same time provides opportunities for relaxation, leisure, and lighting, ultimately adding to the aesthetical value of the site.

b.) Parklets:

The parklets are adapted within the Urban Domain, especially in curb-side niches, to tackle the underutilization of these spaces. These parklets are equipped with small flowering plants and seaters and are proposed in Via Norberto Rosa and Corso Regio Parco. Parklets serve as more organized forms of guerrilla gardening and enhance the walkability of the streets while making provisions for relaxation and leisure. These provisions cater to the needs of the residents and visitors alike, making them an important element within the general urban fabric.

The Urban Elements proposed within the superblock shall pave way for further secondary interventions, such as tactical urbanism, which would encourage the residents and the visitors to participate in the process of enhancing the streetscape. Several inferences can also be drawn from the existing Tactical Urbanism models such as open-street initiatives, tactical crosswalks, placemaking installations, street murals, etc., thus, ensuring social integration and cohesion.

The Plaza Area

The towing yard behind the Former Tobacco Factory adjacent to the former FIMIT (The Spinning Mill) is the area proposed for the stepped plaza. This selected area is the initiation

point of the Natural Domain and boasts potential for landscape opportunities. Thus, in order to maximize the functionality of the space, the intervention strategy proposes a stepped plaza, to ease the access from the urban domain (The proposed Cultural District and the Village Settlement) and accommodate the difference of level. This stepped plaza would stretch along the length of the proposed Cultural District, and span across the space, from the proposed Cultural District to the existing Canal. The plaza shall be comprised of terraces on multiple levels, each with different types of vegetation. This shall include lawns, shrubs, and trees that are native to the Regio Parco area. The stepped plaza shall provide opportunities for relaxation, leisure, and passive recreation, and also add an aesthetic appeal to the space. The provision of ramps and staircases along the stretch of the plaza shall facilitate interconnectedness and enhance mobility from the proposed cultural district to the wetland area and the riverfront.

Pedestrianization of Streets

The village settlement that is perceived as a superblock shall be pedestrianized completely, and vehicular traffic shall be restricted on the periphery. The vehicular movement along the edges of the superblock shall be limited to the residents and emergency vehicles, as the roads will serve as neighborhood roads with a speed limit of 30km/hr. Within the superblock, vehicular access shall be limited to residents only and the parking niches shall be made exclusive for them. For the visitors who wish to access the different spaces within the site (The Cultural District, The Plaza Area, The Wetland, The Riverfront) provisions for parking lots along the edge of the site shall be made which shall reduce walking distances and facilitate movement. A network of bicycle lanes is also proposed within the domains, especially on the periphery, Corso Regio Parco, and the riverfront, connecting the domains.

Upon the introduction of the new Metro Line (M2) and the cultural district, the area will be faced with increased footfall and vehicular traffic. Thus, it is crucial to organize and redefine the mobility within the site. Hence, the proposed limitation of vehicular movement shall ensure safety, mitigate noise and pollution, and along with the presence of the aforementioned parking lots and different urban elements shall reduce walking distances and enhance walkability respectively.

The Consolidation of Domains

The Intervention ultimately concludes with the strategies applied to the domains and an approach to infusing the two domains seamlessly bringing them together. This merge shall enhance the perception of the space from the superblock to the riverfront, through different transition areas from the urban domain to the natural.

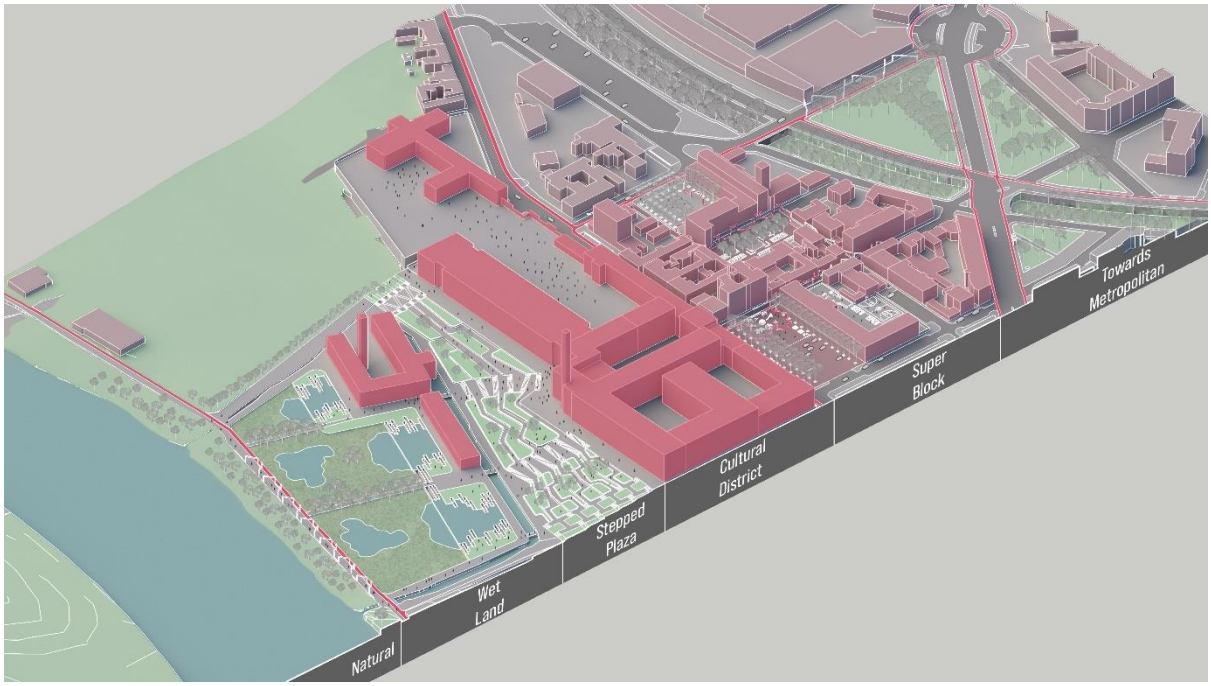


Figure 96 Schematic Section Showing Various Domains

4.3. Stakeholders Analysis

Stakeholder analysis is a tool that should guide the selection concerning the involvement of different groups of people involved in a project. The key strategic choices of the stakeholder analysis by determining who should be involved in the project, their role, and the period that they are involved[13]. Stakeholder is any group or individual who can affect or is affected by the achievement of the organization's objectives Analysis involves identifying the potential group or organization that would be involved in decision-making for the proposed project.[14]
Therefore, a list of possible stakeholders has been determined who could be interested in the redevelopment of the project in the Regio Parco District, specifically the Design of the new metro station, enhancement of Piazza Abba, and the restoration of the former tobacco factory and FIMIT area.

4.3.1.) Resources and Roles:

The possible investors and their level of involvement in the project could be categorized under particular roles as actors. Actors are whoever decides on the project that could have a great impact on the project, whose decisions depend on their interests. Their roles in the decision-making of the project are determined by the resources they use. The four types of resources that can be distinguished are as follows

Political resources, Political resources are the amount of consensus an actor can get. It can refer to the whole population or specific social groups involved in the different public policies.
Economic resources, these resources consist of the ability to mobilize money or wealth in any other form to modify other actors.
Legal resources, legal resources are advantages or disadvantages, attributed to particular subjects by legal regulations and in general by legislative and administrative authority's decisions.
Cognitive resources, The availability of important information or conceptual models for the decisional process.[15]

13 Bryson J.M. What to do when stakeholders matter: A guide to stakeholder identification and analysis techniques, Presented at London School of Economics and Political Science, 2003.
14 Freeman, R. E. Strategic management: A stakeholder approach. Boston, MA: Pitman, 1984.
15 Dente, B. Understanding policy decisions. Springer,2014, pg. 29-36

ROLES:

The recognizable roles are promoter, director, opposer, ally, mediator, and gatekeeper. Promoter, actors who are involved in identifying and stating the need for the project and constantly support the project. They have higher levels of interest and influence in the project. The director is the actor who supports and promotes the project from the initial phase until the project execution.

Opposer is the actor who commits all their efforts against the project and its objectives. They have a high level of influence on the projects but in a negative direction.

Ally is the actor who brings his resources to the innovative coalition by carrying out actions, or even just by declaring his support.

The mediator is the kind of director who only pursues process-related goals and is only interested in favoring an agreement among the actors.

The gatekeeper is the actor who has the power to stop the decisional process with his veto power (Dente B., 2014, pp. 54-58).

4.3.2.) The Stakeholders:

Local business

Local businesses and other companies located in and around the area.

Economic interest:

They are interested in improving access i.e. roads and traffic, along the commercial spaces thereby benefiting their businesses.

Private Investors

Stakeholders who willingly invest in initiatives that are private around the areas of redevelopment projects.

Economic interest:

Earn through the smaller interventions that they invest in the redeveloped area of the project.

Residents

The residents could express their support for the project positively or negatively to the project by responding to the redevelopment area to the Municipality.

General Interest:

Reduction of traffic problems would be a concern with the redevelopment of the project as the footfall of the project is expected to be higher, and lack of public spaces for quality living.

Students

With the development of university residences in the cultural district, students will be interested in the development of the project.

General Interest:

Development of Coworking spaces and spaces for relaxation.

R.E.A.M SGR

Real Estate Asset Management is a company working on public and private projects for its development.

Economic Interest

An actor interested in developing the Cultural District, and improving the area around the former tobacco factory is optimistic for the company.

State Property Agency

The public economic body of Italy responsible for the management, rationalization, and development of all State-owned properties, which currently owns the Former Tobacco Manufacturing complex and FIMIT area

Professional Interest:

Development and promotion of the project thereby contributing to enhancing unused spaces.

State Archives & Ministry of Culture

The General Directorate of Archives (Direzione generale per gli archivi (DGA), a Ministry of Cultural Heritage, Activities and Tourism department, controls the Central State Archives. With the proposal for the largest archives in the cultural district, DGA would be interested in developing the same.

Professional Interest:

Development and promotion of the project for storage of archives.

Regione Piemonte

Responsible for the development of the development of areas and activities within the territory of Piemonte.

Political Interest:

Develop the area in and around the Former Tobacco Factory Manufacturing taking into consideration the traffic and footfall for the redevelopment of the neighborhood.

Municipality of Turin

The authority is responsible for the well-being of the residents of the area.

Political Interest:

With the improvement of the mobility conditions in the redevelopment project, new job opportunities and economic incentives increase leading to economic growth of the area.

Gruppo Torinese Transporti (GTT)

The company is responsible for public transportation in Turin.

Economic interest:

With the proposal of a new metro station, increase in profit of the company by improving the transportation network, enhancing connectivity, and making it accessible for its users.

Politecnico & UniTo

Major universities of Turin would be interested in the development of the cultural district and its surroundings

Economic interest:

With the development of the student residence and office spaces of the institute, promoting the city's welfare would be a boon.

AIPO

The Interregional Agency for River Po is responsible for the hydrologic network of the Po River which is responsible for its safety, health, and the ecosystem.

Professional Interest:

Improve the relationship of the river with the city and create livable spaces along the riverfront.

Real estate owners

Actors owning their properties in the area of redevelopment that are not necessarily a part of the local community.

Economic Interest

Interested in the redevelopment of the area which includes infrastructure development thereby increasing the value of individual properties.

Soft Mobility Services

Lime, Go, and Bolt are a few private businesses dealing with sustainable mobility-sharing systems.

Economic Interest

An increase in the connectivity concerning the mobility sector and creating awareness and dedicated parking space for E-vehicles along the proposed Metro station increases their profit.

Private property owners

Owners of the immovable properties around the development area. The promotion of the project will lead to the closure of the activity currently taking place in their respective properties thereby affecting their economy.

Economic Interest

By making a considerable profit from the closure of the garage between the former FIMIT and the former Tobacco factory these actors will have a positive effect on the redevelopment of the project.

Stakeholders	Interest	Role	Resources
Local Business	Economic	Ally	Economical
Private Investors	Economic	Ally	Economical
Residents	General	Ally	Cognitive
Students	General	Ally	Cognitive
R.E.A.M sgr	Economic	Promoter	Economical
State property agency	Professional	Ally	Legal
State Archives & Ministry of Culture	Professional	Mediator	Cognitive
Regione Pieomonte	Political	Promoter	Legal
Municipality of Turin	Political	Director	Political
GTT	Economic	Ally	Economical
Polito and Unito	Economic	Ally	Cognitive
AIPO	Professional	Mediator	Cognitive
Real estate owners	Economic	Ally	Legal
Soft mobility services	Economic	Ally	Economical
Private property owners	Economic	Opponent	Legal

Figure 97 Stakeholder (Roles and Interests)
Source: Author

The methodology used for the analysis follows Ackermann and Eden's method. The analysis includes Power interest grids, the stakeholder-influence network, and the stakeholder-management web (Ackermann F.& Eden C., 2011).

4.3.3.) Power Interest Grid:

The next step after identifying the actors, the roles they are responsible for, and the resources concerning the project are to create a power-interest grid. The power interest grid is a matrix in which the stakeholders are placed based on their interest in intervening or not in the project and more or less power they can do to be able to influence it (Bryson J. M., 2004).
The grid is internally divided into four quadrants in which the actors are defined as crowds, subjects, context setters, and players.

- Crowds exhibit neither interest in nor power to influence strategy outcomes. They can be seen as potential rather than actual stakeholders. Interest and or power could be raised, but unlikely to be worth management time or effort.
- Subjects have less influence on the project since they have low power and high interest and can encourage possible coalitions
- Context setters are the ones who have lesser interest and higher power and can influence the context of the project not aiming at management.
- Players have high interest and power to decide whether to support or disrupt the project (Ackermann F.& Eden C., 2011, pp. 182-183).

Among the identified stakeholders of the project, the players of this project are R.E.A.M. sgr who initiated the redevelopment project and then taken over by Former Tobacco factory for the welfare of the city[16]. The municipality of Turin must be in the frontline for the city's development projects, and the state property agency possessing the largest property of the development area must act as a player in the project execution. The actors who have less power but with a higher interest are the subjects, AIPO for the betterment of the relationship between the river and the city with the reclamation of the wetlands have a higher interest in the execution of the project. Actors like local investors and real estate owners have less influence in the project but the development of the area will increase their economic wealth. Whereas the

16 REAM Sgr, Valorizzation Piemonte, Studio di fattibilita_ Progetto di Valorizzazione, 2018

private property owners of the garage between the abandoned factories would be interested in a good reimbursement for their land to continue their activity elsewhere. Soft Mobility services also come under this sector.

The context setters the ones with less interest but higher power for the decision-making of the project are the universities with the initiative to include facilities for students, GTT with the development of Metro lines, Regione Piemonte with the development of the city for its political reasons. The Ministry of Cultural Heritage and state archives also come under this sector.

The crowd is the choice of the main actors which includes residents, and students who have no power but a higher interest in the development of the project.

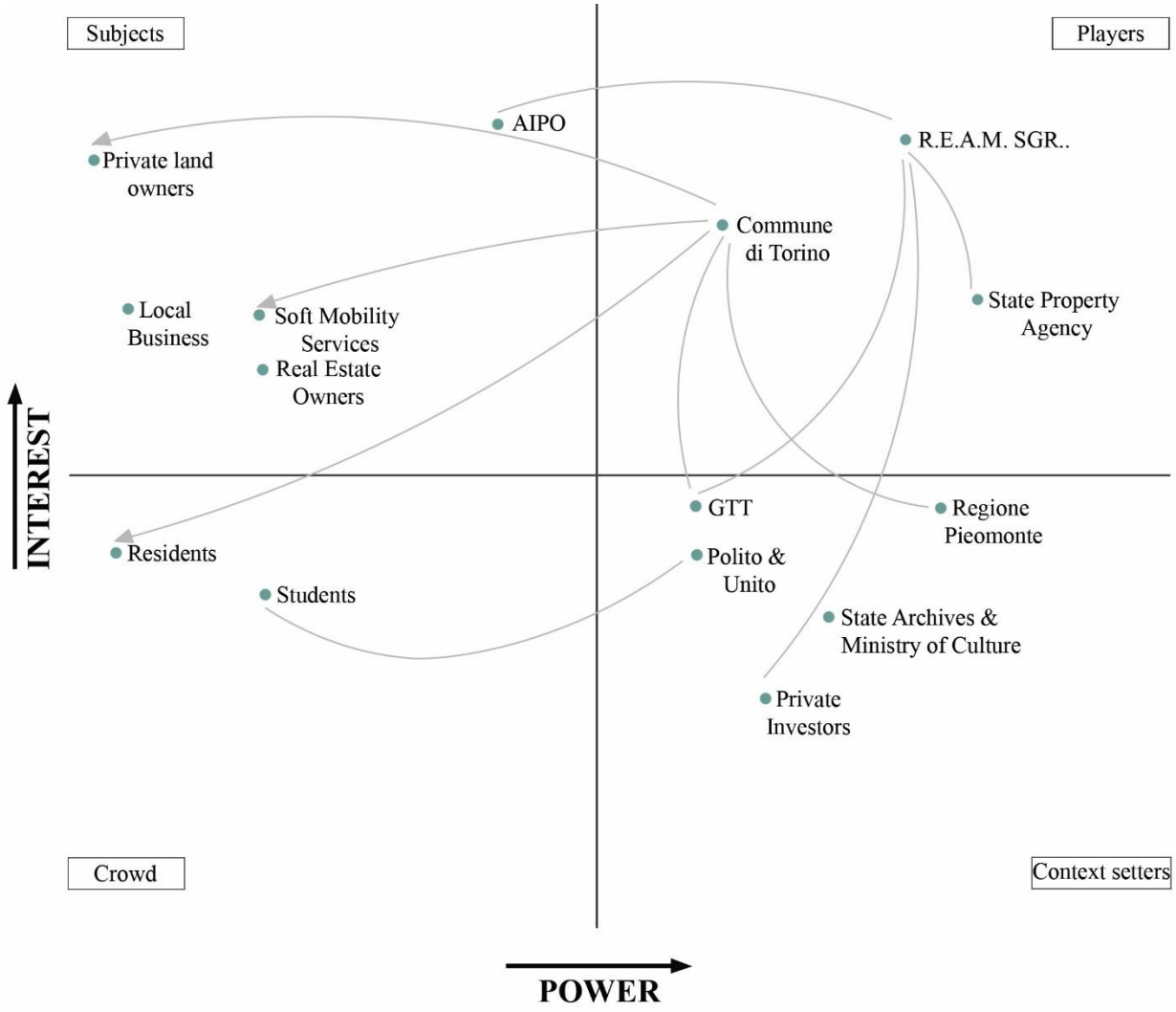


Figure 98 Power-Interest Grid
Source: Author

4.3.4.) Influence Network Diagram:

The relationship between the different actors is crucial for the analysis. One stakeholder's action can create a varied range of responses among the other stakeholders as well as the project. This interactional aspect of the analysis is referred to as the Stakeholder's Influence Network. The two types of connections are the Formal and informal connections (Ackermann F.& Eden C., 2011, p. 186).

The formal connections are direct which provides documentation and reports to maintain the relationship between the different actors. These are identified with continuous lines in the diagram. On the other hand, informal connections are formed when the stakeholders are known to each other which leads to the formation of a simple relation between them.

The relationship of Comunce di Torino is fundamental in the development of the project as a consequence of which they have the greatest number of connections among the stakeholders. The next highest is the REAM., which majorly has connections with private investors involving the financial entities, Aipo, and the Ministry of Culture and state archives which may play a major role in binding the project all together. Comune di Torino on the other hand has connections with multiple stakeholders of different hierarchies who may or may not be profitable to the project. The private landowners have a direct one-way relationship with Comune di Torino who have to vacate the garage and any other properties existing in the area of development. Whilst, the two-way relationship existing between the GTT and the soft mobility services brings positive development to the neighborhood in terms of connectivity.

Stakeholders such as private investors may be interested in the development of the project as their investments would be financially beneficial to the development of the project. Concerning residents and students they might have a direct impact which may be positive or negative due to the way each user group perceives the possibility of communicating their needs which creates opportunities to organize events specifically to create awareness for the goals of the project.

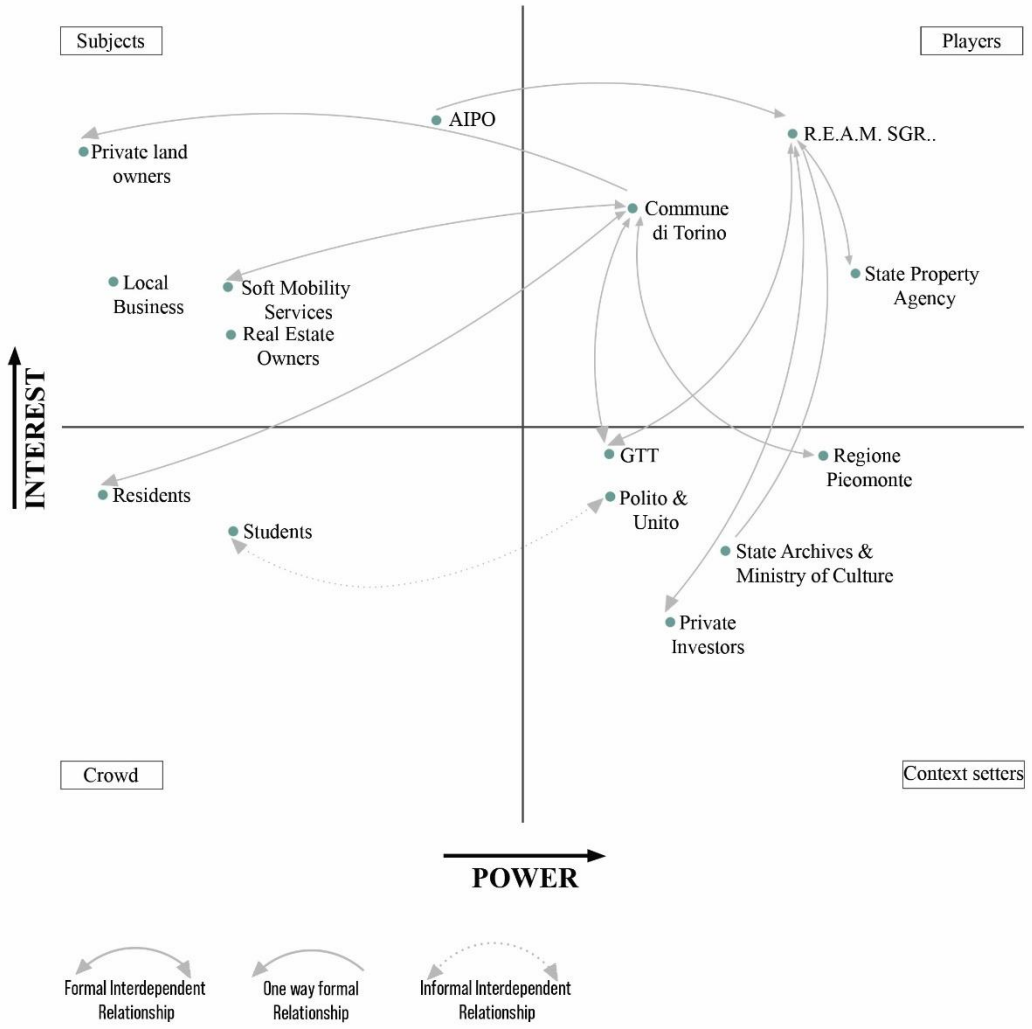


Figure 99 Influence Network

Source: Author

4.3.5.) Stakeholder Management Web:

From the analysis mentioned above the determination of the relationship between the grids and the influence of the stakeholders is visible, but in the success of the project, the management of the stakeholders plays an essential role. Key stakeholders help in developing stakeholder management strategies that revolve around power and intrest.it is again divided into two parts the top part called the base of power and the lower section relating to the base of interest (Ackermann F.& Eden C., 2011, pp. 188-189).

The power base takes into consideration the action of how the stakeholder acts also based on their relationship and influence with the rest of the stakeholders. While the interest base takes into consideration the interests for the project to progress.

From the influence diagram, it is inferred that the key stakeholder is Comune di Torino the responsible municipality, and is in contact with most of the stakeholders of the project which helps promote the success of the project. Comune di Torino is in a close relationship with REAM since it shows interest in the development of the project the owners of the garage, and the private land owner in order to enhance the area along with the development of the cultural district. The power of the municipality to buy or sell the land for public interest in the development of the project. One other interest is to focus on environmental sustainability and supporting the implementation of the proposed wetland maintaining a relationship with the surrounding thereby addressing the flooding issue and the AIPO being interested in such aspect can prove to have a positive impact on its execution.

The choice on the mobility infrastructure concerning improved public transportation to enhance the connectivity of Regio Parco with the rest of the City through the implementation of M2 and promoting soft mobility services for improved air quality

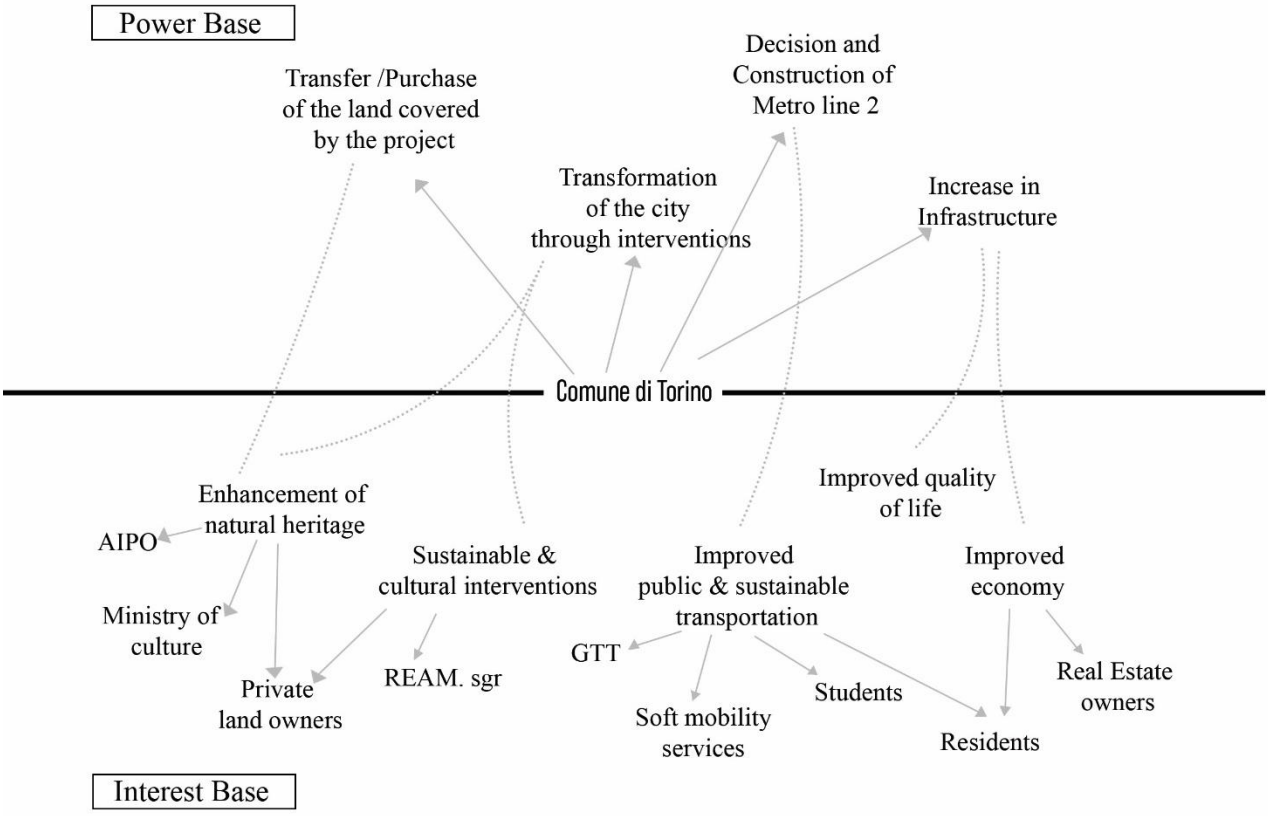


Figure 100 Stakeholder Management Web

Source: Author

4.3.6.) Conclusion:

Through the stakeholder analysis, it can be stated that the Comune di Torino i.e. the Municipality of Turin is one of the major stakeholders responsible for the project's success. The major funding partners would be the R.E.A.M. and other private investors who will be responsible for the redevelopment of the project as funding acts as a key for the execution of any project. The analysis has also revealed a varied level of interest of the different stakeholders and how they influence the project. Though a few actors like the AiPo and residents have a higher interest in the project they have a lower power when comes to the decision-making of the project as they are controlled by the authorities. Here the Comune plays a role in organising meetings with various stakeholders and will help in the progress of the project as it acts as the primary actor responsible for the project which is evident from the stakeholder management web. Hence, it can be concluded that the interest of the municipality is in the improvement of the life of the citizens through improving public amenities by collaborating with various stakeholders to raise funds for the same.

4.4 The Conclusion

Finally, the project devised for the Regenerative Intervention of the selected Area within the Context of Regio Parco helps us evaluate and understand certain aspects of the urban and the natural environment within the city. Moreover, the chosen approach can also be applied in much broader contexts in order to redefine the spatial aspects and quality of the environments for cities worldwide.

As Cities are intricately fabricated and composed of these infrastructures (domains), it is of paramount importance to gauge and understand how the entities within the domains interact with each other, and the people associated with them. By carefully making distinctions between the domains and their attributes, the project is an attempt to merge and infuse the two seamlessly. With the upcoming proposal of the Cultural District within the former Tobacco Factory, the neighbourhood is going to experience an extensive amount of inflow and outflow of people as it is on the fringe located between the metropolitan and the proposed cultural district. To accommodate this, the rejuvenation of the village settlement shall prove as a transition space for the residents and the pedestrian mobility alike.

The enhancement of the Urban Domain shall portray how intrinsic spaces and streets can act as portals from one point to another. Striving to be a model of sustainable regeneration, the intervention strategy shall pave way for a creation of a serene and adaptable environment. The pedestrianization of the perceived superblock, besides regulating traffic shall also support means of more active mobility. The intervention also enhances the spatial attributes of the perceived superblock, the visual dimensions and the dialogue with the people. It redefines spaces for gatherings with different functions, introduces lanes for bicycling and walking, and at the same time, makes provisions for leisure, recreation and relaxation. Addition of elements such as the Urban Thread, Planter Beds, etc. bind the built infrastructure with the industrial past and the natural domain altogether.

Similarly, the intervention within the Natural Infrastructure, the Waterfront which is comprised of an abandoned yard that is proposed to be converted into a wetland shall act as a medium of ecological restoration, given that the area has faced flooding issues in the past. The introduction of the wetland shall redefine the ecological aspects of the area. As a natural entity, the wetland shall enhance and support the native biodiversity, and also provide recreational opportunities

to its users. The waterfront shall be the focal point of the intervention within the natural domain. The transition from the proposed cultural district to the wetland area shall be met with a series of stepped plazas, with lawns and vegetation to present opportunities for people to practice passive recreation, leisure, etc.

This transition shall be supported by Urban-Natural elements from the village settlement to the Wetland, from the spinning mill to the waterfront area, paving the way for a possible connection from the west riverbank to the east.

Altogether, the intervention altogether shall have a significant impact on overall status of the area. With the proposal aiming towards a subtle renovation of the area, the users will benefit from the regeneration. With a promise to ensure the longevity of the neighbourhood and making it more accommodating for the future, the intervention also tries to bind its users with the domains by creating nurturing environments that foster a sense of community and also garner well-being.

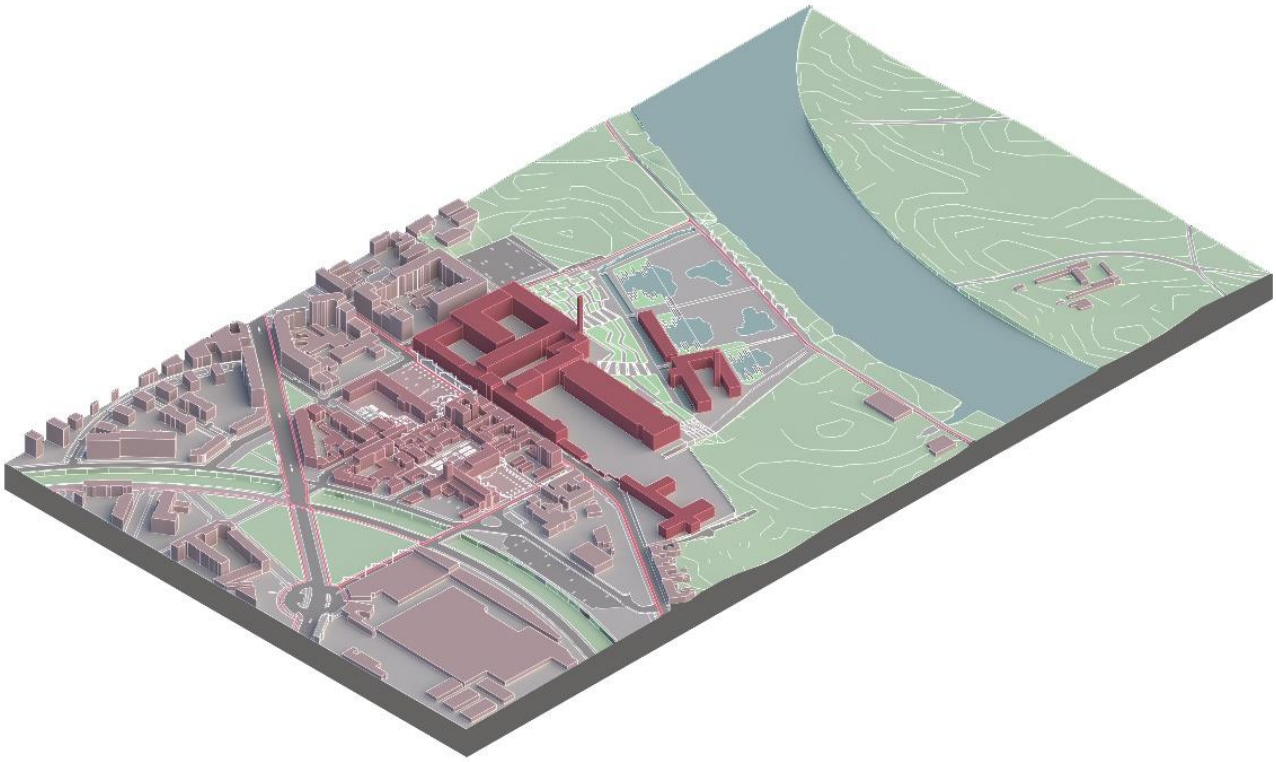


Figure 101 The Site from the Urban Edge

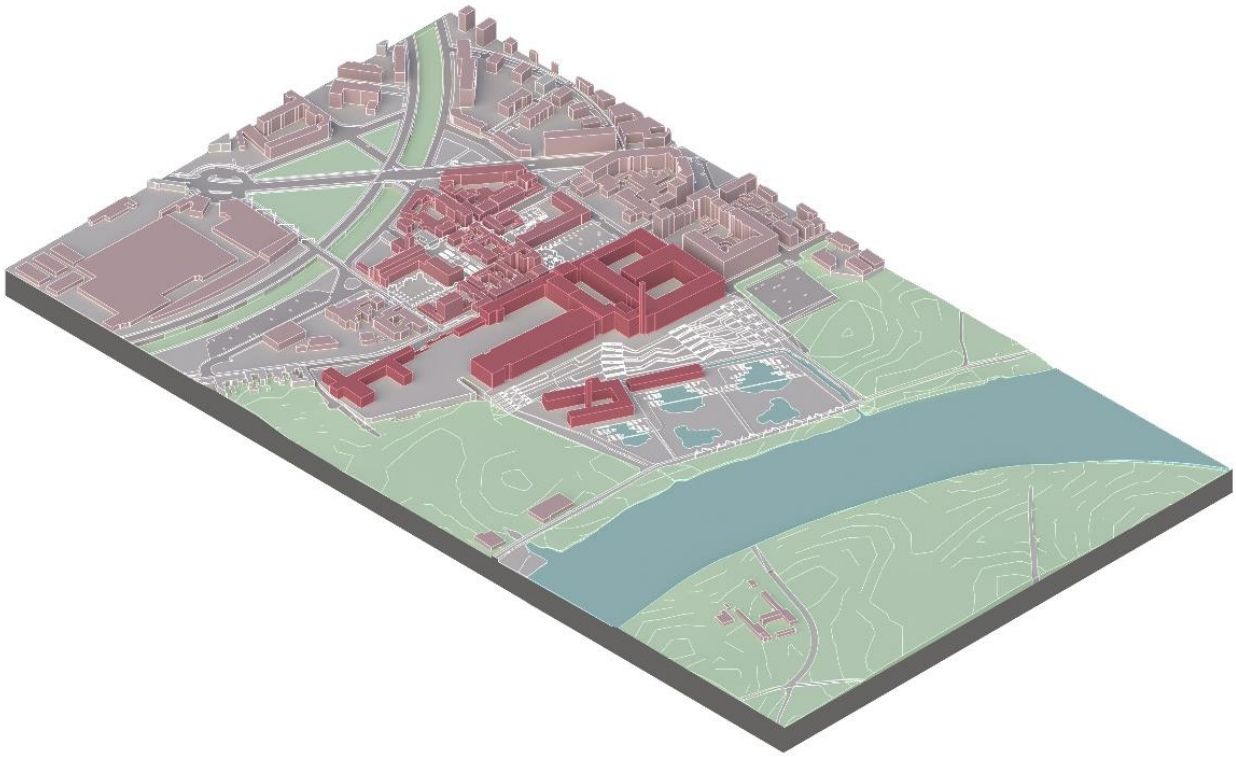


Figure 102 The site from the Natural Edge

The ideology can also be applied to several different places within the Torino. To name a few, there are other spaces within Regio Parco such as Piazza Sofia, Stura Riverfront, Parco Pietro Colletta, and Parco dell'Arrivore wherein the project methodology can be applied in the future, given the pretext of expansion. It could also be adapted in the metropolitan part of Torino in places such as the Sangone Waterfront, Millefonti, or abandoned spaces such as Italia 61 (Palazzo del Lavoro) to add a few.

For example, in case of regeneration pertaining to the vicinity of the site, components of the Natural Infrastructure which face negligence such as Parco Pietro Colletta and Parco dell'Arrivore along with the built infrastructure (Area around Piazza Sofia), can draw inferences from the approach. Identification of Intervention Spaces for regeneration would include an extensive study of the history and the interplay within the said infrastructures in order to achieve commendable sustainable development. On the contrary, existing proposals such as the one for Parco dei Meisino can also draw inference and establish connections with its regenerated areas within the vicinity. Similarly, the abandoned structure of Palazzo del Lavoro can entirely be perceived as a component of the Built Domain, along with the Monorail

Structure, and the constituents of the Natural domain such as the garden and the lake within 'Giardino Corpo Italiano di Liberazione' can be addressed for a regenerative intervention. In this case, regeneration can be implemented independently and the underutilized spaces can be repurposed with new functions that aid in environmental quality, while creating opportunities for its users.

Cities, just as Torino, that have an abundance of neglected spaces can draw inferences from approaches corresponding to the one adapted in the thesis project. Certain attributes of the built and the natural infrastructure are often related to each other if not at all. The convergence of these infrastructures, also known as domains, are the entities that breathe life into any city. It becomes crucial to understand the interaction of these domains in order to proceed with a concrete intervention, after a series of evaluations and analysis within the domains.

Although, in summation, there are a few measures that must be considered while concerning intervention strategies such as this, especially when it comes to regeneration of spaces in existing infrastructures within cities.

Applicability of the Approach and Way-Forward:

While approaching regenerative design, understanding of the Existing Infrastructure to help evaluate the intervention potential becomes crucial. In general, the infrastructure within cities is composed of two domains, the built and the natural with further sub-categories. This categorization of infrastructures within domains helps in evaluating several aspects of its constituents, such as their importance, relevance and the dialogue they have with the people. And at the same time, identification of the domains on typology and devising an intervention strategy helps in merging the two domains better, in a seamless manner.

The ideology can be applied to similar projects that need design interventions to make them better, in terms of spaces, liveability, and enhance the dialogue these spaces have with the people. Certain aspects of the ideology can also be applied to projects that deal in habitat restoration, adaptive reuse, land reclamation, and projects involving regeneration of the urban fabric (through the means of tactical urbanism). Specifically, within the underutilized spaces and natural pockets around the world, it is crucial to understand the composition of the space, how the space is intertwined within the infrastructure (built or natural) and the dialogue it has with the people.

The project conclusively acts as a tool to evaluate and intervene in underutilized spaces like the one chosen within the context of Regio Parco. The research of the area reflected the existing scenario which helped us imagine the potential need for intervention and the cases that were studied to present a solution were taken from various aspects that corresponded to our mission statement. The aforementioned studies included feedback from the people and real-time cases that were executed in the direction of regeneration of urban and natural spaces. Ultimately, the analyses of the present scenario along with the potential paths for revitalization helped us strategize our intervention better, in an attempt to accommodate future needs in the selected context.

Moreover, this cohesive approach that demands such extensive research of various fields helps us understand how important it is to maintain and manage spaces, on a grand scale, in order to facilitate healthy environment, infrastructural development with innovation alongside the means of well-being.

To conclude, the urban and natural environments, play a crucial role within cities around the world. Their upkeep is of utmost importance as they bring balance and harmony to all the entities that are associated with them, which include the people and the biodiversity, and foster other factors such as well-being and interconnectedness, without impeding room for future development.

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