

Urban requalification in the Suburbs – development of a
strategic axis in Aqualva-Cacém

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Abstract

Urban centres and cities are par excellence representations of complexity of human landscapes and environments. In the context of a rapid urban growth and a technologic centred world, these places are the stage for dynamic changes, and reveal a heterogenic spatial, human and ecologic composition in both hemispheres of the World.

Having this complex space in mind, the present dissertation intended to frame the field of action of landscape architecture in a specific type of urban settlement - the suburban one, in a way of establishing good quality public spaces while combining social/cultural and ecological concerns. The case study was the “satellite” city of Agualva-Cacém, located between Lisbon and Sintra - an important Portuguese city for its cultural landmarks and ecological context.

In this sense, an analysis of the concept of “quality” in the outdoor space was made, as well as a reflection upon good design practices for public parks and urban streets. Secondly, design strategies in the case of Agualva-Cacém were proposed, considering environmental and social concerns: in one hand, to contribute to a more sustainable management of water, soil and to contribute to the green infrastructure of Agualva-Cacém; in another hand, to change the image of the city and improve the quality of life within a contemporary urban environment characterized by spatial fragmentation, dependency on the use of the automobile and daily pendular movements of people. This was achieved through the proposal of requalification of urban spaces confined in a delimited strategic axis, composed by an avenue and two different public parks.

The three public spaces of this axis are then interconnected, forming a continuous system of water circulation, green continuity, soft mobility and public spaces.

Keywords

Suburban Territories \\ Urban Quality \\ Public Spaces \\ Green Infrastructure

Resumo (Português)

Os centros urbanos e as cidades são, por excelência, representativos da complexidade das paisagens e ambientes humanos. Num contexto de rápido crescimento urbano e de um mundo centrado na tecnologia, estes lugares são o palco de mudanças dinâmicas, e revelam uma composição espacial, humana e ecológica heterogénea em ambos os hemisférios do mundo.

A presente dissertação pretende enquadrar o campo de actuação da Arquitectura Paisagista num tipo específico de aglomerado urbano - o suburbano, de modo a estabelecer espaços públicos de boa qualidade, combinando em simultâneo preocupações sociais / culturais e ecológicas. O caso de estudo apresentado trata-se da cidade "satélite" de Agualva-Cacém, situada entre Lisboa, a capital de Portugal, e Sintra - uma importante cidade portuguesa pelo seu património arquitectónico e contexto ecológico.

Neste sentido, apresenta-se em primeiro lugar um exercício de análise do conceito de "qualidade" no espaço ao ar livre, bem como de reflexão sobre boas práticas de *design* de parques públicos e ruas urbanas. Em segundo lugar, serão propostas estratégias de projecto no caso de Agualva-Cacém, enquanto tentativa de mudança da imagem da cidade e melhoramento da qualidade de vida num ambiente urbano contemporâneo, caracterizado pela fragmentação espacial, dependência do uso automóvel e movimentos pendulares diários de pessoas. Tal é levado a cabo através de uma proposta de requalificação de espaços urbanos confinados num eixo estratégico delimitado, composto por uma avenida e dois parques públicos.

Palavras-Chave

Territórios Suburbanos \ Quality Urbana \ Espaços Públicos \ Estrutura Ecológica

Resumo Alargado (Português)

Os principais objectivos desta dissertação são a abordagem do espaço público num contexto suburbano enquanto instrumento do âmbito da arquitectura paisagista para promover boa qualidade urbana e uma proposta de requalificação de três diferentes espaços. O caso de estudo trata-se de um aglomerado suburbano da área metropolitana de Lisboa – a cidade de Agualva-Cacém, escolhida para o efeito devido à representatividade de problemas urbanos contemporâneos: fragmentação espacial, uso excessivo do automóvel pessoal e movimentos pendulares diários de pessoas, apresentando em simultâneo um contexto social desafiante, problemas estes que se pretendem resolver através do planeamento e desenho de espaço público:

Na primeira parte da dissertação, serão apresentados conteúdos teóricos referentes, em primeiro lugar, ao conceito de suburbanização enquanto fenómeno específico de urbanização do território. De seguida, aborda-se o conceito de qualidade urbana e o seu significado no âmbito da arquitectura paisagista, ao conceito de espaço público enquanto instrumento de promoção de boa qualidade urbana, abordando-se em específico projectos de referência de redesenho de ruas urbanas e parques públicos.

De modo a materializar as ideias apresentadas, é feita na segunda parte da dissertação a análise do caso de estudo, considerando informação geográfica e propostas incluídas no Plano Verde do Concelho de Sintra, um projecto realizado em parceria entre ADISA/ISA (Centro de Estudos de Arquitectura Paisagista – Prof. Caldeira Cabral) e a Câmara Municipal de Sintra. O método de trabalho neste segmento da dissertação inicia-se com um processo de análise do território, à escala da cidade, considerando aspectos como a evolução da paisagem, estrutura ecológica, dados demográficos e serviços/equipamentos, seguida por uma análise à escala da área de intervenção. É abordada também, de um modo hipotético, a questão da participação pública e de como poderia ser incorporada no design destes espaços públicos. A proposta visa o redesenho do perfil da Avenida dos Bons Amigos, e a criação de dois novos parques urbanos com características diferentes: Parque dos Quatro Caminhos, no qual o elemento da água assume uma especial importância e Parque Norte, parque recreativo e residencial. Estes três espaços encontram-se conectados, apresentando potencialidades e características negativas que serão abordadas nas estratégias de *design*. Intenciona-se aqui promover uma continuidade espacial ao nível dos espaços verdes, da mobilidade suave, da gestão das águas pluviais e de áreas activas.

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1 _ Introduction

1.1. Human Intervention and the Dialogue of Nature/Culture

In order to provide an insight upon the role of Landscape Architecture in a suburban context, an initial introduction regarding the spatial duality of Nature-Culture will be made, in the light of the Anthropocene. It is an epoch pointed by Eugene Stoermer, characterized by an overwhelming influence of the human action on the Earth's ecosystems, climate and geology (UNIVERSITY OF WISCONSIN – MILWAUKEE, 2014). The beginning of this epoch can be attributed to the advent of the industrial revolution, or after the Second World War, when radioactive substances were left over from atomic bombs. This concept has been actively discussed in recent years due to the human impact on climatic changes (SAMPLE, 2014).

In these terms, the concept of “deterritorialization” (GUATTARI, 2014), is characteristic of the “post-modern” society of the last fifty years, and expresses a concern on the direct impact of Man for the deterioration and fragmentation of the social and natural environment. The planet earth is now a stage of intense technical and scientific transformations that unbalance ecological phenomena, and trace a path of apparent uncontrollable and crescent deterioration.

When recognizing the spatial and environmental impacts of the human activities, the duality Nature-Culture duality can be considered, as it defines two main dimensions of the concept “space”- “natural space” and “cultural space”. In one hand “natural space” can be defined as the surrounding and physical space that was not changed by the human hand and exists independently from its activities. Despite its gradual alteration, “natural space” stands for the ground level where human activity takes place, and provides the “raw material”: the foundation layer, with a specific geologic and climatic character, which has its own dynamics and processes (LEFEBVRE, 1991). On the other hand, “cultural space” is the space that was altered by the human hand. Culture stands for human processes that have been developing – intellectuality, language and symbolism. Culture reveals itself spatially in the sense that space is a reflection of social individual and collective dynamics, politics that led to the formation of boundaries and enclosing territories through strict frontiers (LEFEBVRE, 1991).

In this sense, nowadays one can point that a prevalence of “Culture” over “Nature” can be noticed, and a progression from Nature to Culture seems to perpetuate, as societies have evolved over time and materialized their own social rules and meanings in the space, in a way that influences and overlaps the “natural space” (MCCORMARCK, 1980).

The actions upon space and the constant influence of human action towards the natural space are therefore in correlation with the birth of humanity and reflect the human condition in different levels – space progressed from being sacralised to being the ground of contemporary capitalist cities, as well as the different stages that took place in between (JELLICOE, JELLICOE, 1995).

The relation between Man and natural space became extremely close, and after space started to be used for agriculture and after the discovery of fire, the “natural space” became a means for survival and prosperity that could be controlled, and, most of all, space was now consequential and responsive to human inputs. This certainly influenced the fixation of human in the territory, and led to the development of new techniques that would allow to manipulate the rough natural forces, and fight the innate adversities of the site (JELLICOE, JELLICOE, 1995), in the same time that knowledge, political forces, technology and money accumulated over time (LEFEBVRE, 1991).

For this reason, cities are not isolated entities, they are landscapes, as they are integrated in the planet Earth’s intricate biologic and geologic systems, and reveal equally cultural complex networks (FOXLEY, VOGT, 2010). Cities are the paradigm of the manipulation of these natural processes, as they are complex bodies of human settlements, a spatialized result of successive events of migration and fixation, an organized solution to achieve a secure life through dynamics of production, exchange, consumption of goods, information, as well as movement of people. Urbanization implies the movement of people from rural settlements to bigger ones, which implies the intensification of the built-up area and a greater consumption of natural resources. This process has lately intensified in different cities in the world, leading to the discussion of the duality of nature/culture, as these resources may not follow the massive demographic worldwide growth. Construction and transformation of cities represent extreme changes locally and globally, therefore it is important to think about spatial practices that deal with rapid growing urban developments and protection of natural resources (BURDETT & SUDIJC, 2007).

Landscape architecture is therefore a practice to be referenced as "...Culture and Nature come together in Landscape Architecture, in the sense that this activity merges these two spheres to form a meaningful, functional, cogent relationship (EISINGER, in LIEDTKE, SOERENSEN, 2014: p. 67).

The concept of "landscape" can be here equated to the concept of "space", given that landscape is a spatial entity that has been transformed into an increasingly dense, Nature-Culture amalgam, as its definition goes beyond the physical space where energy and matter circulate. Landscape can be defined as mesh of signs and marks which demonstrate an intention, and which encode cultural networks of individuals of the same or of different communities, in an individual and collective level within the territory (PROAP, 2011).

Landscape is nowadays a spatial entity which encodes more than environmental ecology and natural processes. As a mechanised world rises over time, the concept of "ecology" is broader, as environmental ecology should not be considered as an isolated concept and practice, but also "social ecology" and "mental ecology" and their connections (GUATTARI, 2014). These concepts are important to face a fragmented urbanised society which is constantly dealing with issues such as unemployment, neurosis and environmental decay. Social ecology aims to develop practices which regards people in their collective form – communities, families, workers, citizens, while mental ecology addresses the individual and his connection with his body, with time, and life/death mysteries, and integrating him in the surrounding space (GUATTARI, 2014).

Designing a landscape equals to constructing a narrative, to assembly networks and setting systematic relationships, and to prefer systematic and integrated solutions rather than formality (FOXLEY & VOGT, 2010). If the landscape is considered as a metabolic system, on which changes and discontinuities are powerful elements, then its image is a result of its functioning. The design of urban settlements and the work of landscape architects in a context of fragmentation, therefore, matters, as it will be further developed along this dissertation.

2_Suburbanization

Suburbanization is, above all, one form of production of space: is a result of the process of urbanization, of growth and decline, expansion and stagnation (BLOCH & KEIL, 2013). A suburban city can be broadly defined as an urban settlement located in a peripheral location to a dominant urban centre, with which a strong connection of dependence is maintained. These settlements have a prevailing residential character and exhibit a distinctive culture or way of life as well as a community identity (MUMFORD, 1961).

The term “suburb” corresponds to distinct imageries of territories in different regions of the world, however the term broadly refers to residential satellite towns which resulted from industrial expansion, real estate speculation, and its image in the public opinion is often negative and based on stereotypes (FLANAGAN, 1990). It is relevant to notice that a large part of the world’s urbanization is in fact a result of this type of urban sprawl, and that the “suburban” population is in many cases larger than the “urban”, due to mostly lower housing prices and democratization of communication routes to the city centre (PHELPHS, 2015).

2.1. Suburban territories throughout the times

2.1.1. Industrialization

After the second half of the 18th century, the Industrial Revolution found its course, starting in England, leading to an intense phenomena of rural exodus. This phenomena happened due to the increase in population, to the longer average life expectancy, and to technological advances. All these factors led to a new lifestyle of high demand of services and goods, and therefore to a wide development of unprecedented abundance. The steam engine invention triggered the emergence of new factories in areas surrounding the city, which would be strategically located near waterways and coal deposits. Therefore, new urban settlements grew beyond the existing “nuclei” of the old city shaped during Middle Ages. This old urbanism form was characterised by narrow and puzzling streets, incompatible with the recent intense traffic, and dense housing system, unable to offer enough space and comfort for the new housing demand. These industrial cities became dense urbanized working-class centres, and a result of real estate speculation, without any regards for the comfort and health of the inhabitants. In order to earn greater profits, a hierarchy of houses would be created: buildings

with direct access to the street or with backyards would be charged a significant amount of money, whereas houses with almost no windows were the cheapest ones to rent (Figure 1). This rapid and economic-based unhuman urban sprawl soon became an easy model to be replicated in many European cities such as Manchester, Paris, Hamburg, London, presenting no concerns about the planning of meaningful public spaces (BENEVOLO, 1980).

Facing the deplorable urban health conditions of London by the end of the 19th century, Ebenezer Howard proposed the “Garden City” - a new model of town planning with affordable housing that would have a countryside aura, as the city would be planned with abundant green areas and to be self-sufficient, with agricultural areas, cultural, commercial places, schools and housing. These new utopian views defended the benefits of an urban life based on community rooting and environmental health, however the cities were thought to be built in a suburban layout, becoming static and enclosed systems by themselves. This type of urbanism laid the foundations of suburban settlements in the case of the United States of America. The “Garden City” planning model is considered by Jane Jacobs an erroneous solution, as problems such as population growth and real estate speculation in the city centre cannot be solved through the creation of disperse and separated towns, with no community life (JACOBS, 1965).

However, the most important contribution to form modern urban cities worldwide, was perhaps the one from the International Congress of Modern Architecture (CIAM), fixed in 1928. The Swiss architect Le Corbusier proposed the Radiant City model, on which the city would grow vertically: each block unit should have access to sunlight, green areas on the ground floor and each individual should be free in his private sphere (Figure 2). This model laid out a principle which defines most of the cities of our times - Le Corbusier defended an almost authoritarian way to build a city, on which the functions “traffic”, “work” and “residential” would be spatially separated in a rational way. The street as reflex of a community spirit decayed, and the private car became the most important element for mobility, which inevitably was one of the factors which contributed to an unrestrained urban sprawl (FISHMAN, 1982).

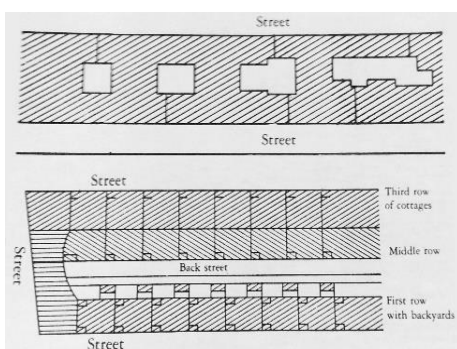


Figure 1 – Hierarchy of housing typologies in Manchester (BENEVOLO, 1980).



Figure 2 – Model of the *Ville Radieuse* (The Radiant City) by Le Corbusier. Source: ArchDaily.

2.1.2. Post-War until 21st Century

The end of World War II and its political, social and technological dynamics created new suburban territories, as they became the main residence location among middle class people in the Western countries. The Post-War was marked by the rebuilt of economies, redevelopment and growth of cities beyond their central limits. In the western countries, political entities facilitated suburban sprawl through the construction of new transport infrastructures, such as highways and train lines that connected these new fast growing satellite cities. An affordable, apparently comfortable and highly dependent on the use of the automobile lifestyle was now established (FLANAGAN, 1990).

A different approach of suburbia emerged in the later years of the 20th century (MASOTTI, 1973): the suburban fringe went through a specialization process, in terms that these peripheral residential towns became more independent from the central areas, as well as more diverse from the socio-economic and cultural point of view. As relatively low housing prices and new mobility infrastructures contributed to the enlargement of the urban settlements, new blocks appeared, that included not only the residential function, but also the establishment of services, commerce and retail, offices buildings, shopping centres, etc.

SIEVERTS (2008) alludes to the concept of “Zwischenstadt”, translated as “city in between”, in an era of “post-suburbanization” (MASOTTI, 1973), marking the intermediate position that these territories assume in different scales. The author establishes the relation between sprawl, fragmentation and globalization, placing the suburbs in a dialog between the “global” and “local” scales. European cities are now situated in a global context, as the European Union is a wide spatial network of diverse urban environments and cultures. These global influences push the cities to be more homogeneous, to develop more intricate means of communication and to dynamically exchange information. The suburban city has a crescent level of complexity and differentiation. In this regard, this model of urban growth did not follow the traditional dense and centred urban patterns from the past (SIEVERTS, 2008).

2.1.3. 21st Century – Suburbs as the personification of the contemporary city

The consequences of suburban sprawl are noticeable today in the urban environment of European cities, having created monofunctional streets, uncomfortable public spaces for pedestrian activity and having lost of a sense of community. According to BURDETT & RODE (2007: p. 8), “Suburbanization led to the separation of city functions, fuelling urban sprawl before we came aware of the consequences on climate change and social alienation.” These territories became therefore an important part of contemporary urban formations in particular in the turn of the century, as new peripheral residential, commercial and industrial hubs appeared. In spite of the variety of definitions according to cultural, geographical and social spheres, there are common characteristics which are connected to the cultural idea of what suburbs are considered, and what are their consequences in the relationship between people and the city space. It is important, as designers, to understand singularities of these urban contexts (BURDETT & SUDIJC, 2007):

- Fragmentation: The suburban life experience is highly associated to the relation between travelling time and living space, as the suburbs provide an experience of fragmentation, dividing people’s time into working time, private time, and the time in between, used for transportation. The inhabitant of this space plans his daily schedule according to transportation time between dwellings, workplace, shopping centre, etc (LEFEBVRE, 1991). Due to uncontrolled growth of the urban landscape, this fragmentation is associated with disarrangement and chaos, leading to the emergence of a group of spaces integrated in the urban fabric without any use (underused fragments); to the development of large high-speed roads which transform the public realm into an artificial, impersonal, and unpleasant space to be used by pedestrians;
- Automobile dependence and hypermobility: automobiles are often pointed as the main disturbing factor of the public realm, conducting to the loss of a sense of community and public space comfort. Car traffic is however nothing but a representation of incompetence and sometimes of corruption of the power structures of a city, as the urban space and automobile traffic are sometimes joined together, under the influence of valuable amounts of money (JACOBS, 1965). For this reason, new and numerous complex infrastructures are built, instead of investing in a functional and affordable network of public transports. In this context, François Ascher proposes the concept of “The Tunnel Effect”, as tunnels brought a new addiction of shortening time and space in the city scale in daily travels and changing the experience of inhabiting in the city. This

tunnel is also a metaphor for the increasing alienation, making daily travels an empty experience (ASCHER, 2010);

- High Density: The construction of a high density suburban city is associated to more profits for the constructor, per unit of space, which explains why many European suburban cities present this characteristic. Overcrowded and highly dense cities have negative social and psychological effects in the urban atmosphere: "...the close living together of individuals who have no sentimental and emotional ties fosters a spirit of competition, aggrandizement and mutual exploitation. Frequent close physical contact, coupled with great social distance accentuates the reserve of unattached individuals toward one another and gives rise to loneliness. The necessary frequent movement of great numbers of individuals in a congested habitat gives occasion to friction and irritation" (WIRTH, 1938: p. 14). This growth was mostly undertaken very fast and without tight regulation, leading to overcrowded cities and leaving little space for public spaces and green areas, which are important for a healthy urban atmosphere, as well as for creating meeting opportunities;
- Social heterogeneity: many suburban territories are inhabited by a mix of diverse people, from a cultural, financial and social point of view. In the particular case of the suburban constellation of Lisbon, this led to social segregation problems, enhanced by poorly formed municipal institutions, who reveal themselves being unable to handle these problems. The main social challenge is that when a city is so culturally diverse, there is a lack of common cultural values which is replaced by money as a measurement factor. This caused, for example in the "banlieue" of Paris, social tensions, segregation and racism towards minority groups (TIMMS, 1975).

The suburban space has therefore become a heterogeneous space, without any precise physical boundaries. The spatial dynamics are mostly characterised by daily long distance mobility, dissolution of relationships of proximity, where scale and complexity have made the space difficult to perceive and to read. This lack of planning leads to the existence of numerous urban voids, places for real estate speculation. In fact, the construction of these satellite cities represent an antithesis to sustainability, as a dense city that grew organically through a careful plan consumes less land, which optimizes the cost of infrastructure, transport and public facilities (ALVES, 2016). Living in this dense and "planned" city has become however a luxury

space to live in most big European cities, even though it is noticed that once people have a little more money, they decide to buy more square meters, but away from the city centre .

The spatial fragmentation that characterizes these suburban territories can be mitigated in the scope of landscape architecture, through regeneration of these voids into significant public spaces, such as parks, and through the redesign of urban streets, offering new opportunities of the presence of “nature” within the city, as it will be further applied in a real scenario in this dissertation.

3_(Sub) Urban Quality -between Functionality and Aesthetics

3.1. (Sub) Urban Quality

In a suburban complex system, earlier characterized as a spatially fragmented, densely urbanized, and with a lack of a sense of community cohesion, landscape architecture can be seen as a practice that can amend these problems through design, namely through “requalification” projects. It is, therefore, relevant to reflect upon the meaning of “quality” in two different aspects: first, in the city itself – questioning what makes a city “good”, secondly, regarding landscape architecture as a design practice which promotes quality in the urban space through public space design.

LYNCH (1981) describes a cluster of qualities which form a city as “good”:

- “Vitality”: how cities provide good environmental conditions for human life – an anthropocentric criteria that considers the access to clean water, food and air, as well as a system of disposal of waste, which provides an environment of health and safety. It also considers the concern about other species and living being which are ecologically and economically useful to man;
- “Fit”, in terms of form and capacity of spaces, and how equipment and infrastructures respond to the demands and quantity of people;
- “Access”: how reachable places are - access to activities, information, other people;
- “Control”: how use, access, and management of spaces are controlled by the people who reside there;
- “Efficiency”: how the city can balance between cost and maintenance;
- “Justice”: how environmental benefits and costs are distributed among the inhabitants, according to some principles such as equality, need, intrinsic worth, ability to pay, effort expended, potential contribution, or power.

In fact, the ultimate goal of city planning is to reach these values, and achieve meaningful and sustainable solutions, which balance human needs with environmental, geographic conditions and resources. However, as far as city planning over the years is concerned, the city can be considered as a laboratory, a result of trial and error, on which one can compare distinct strategies that have been pursued in different cities. The reasons that prevent cities/urban centres from being quality places are mostly economic and political, as costly and upscale

projects are executed without bringing benefits to cities, for example, shopping centers and monofunctional areas (JACOBS, 1965).

However, according to WALDHEIM (2013: p.13), new ways of thinking the cities have appeared over the last decade, in order to contribute to more environmentally and socially fair cities, as "...over the past decade, an adjectivally modified form of urbanism has emerged as the most robust and fully formed critique of urban design and planning's failure to produce meaningful, socially just and environmentally healthful cities. The structural conditions necessitating an environmentally modified urbanism emerged precisely because at the moment when European models of urban density, centrality and legibility of urban form appear rather remote and when most of us live and work in environments more suburban than urban...".

Considering this change of paradigm, the practice of Landscape Architecture aims for spatial, and ultimately urban quality along two different stages: "Planning" and "Design", and the two connect in the sense that "viable design begins with purposeful study and analysis" (TREIB, 2011: p. 87), meaning that planning is followed by design. The first one overlays information and parameters that conduct to design, as well as managing resources: "...the planning process rarely requires the active form-making that is central do landscape architecture. Realms of analysis and overlays will establish the parameters for making a garden for a suburban backyard, but they will hardly provide the design..." (TREIB, 2011: p.87).

3.2. Quality in Landscape Architecture

Considering the complexity of the activity of the activity of Landscape Architecture, the concept of quality is subjective and multifaceted. One can mention the two following dualities:

- Environmental-aesthetic quality: in one hand, one can approach the concept as a quantifiable criteria - quality in terms of its utilitarian and functional value, and how durable it is; On the other hand, an aesthetic, subjective criteria, related to the composition, its significance, capability of producing amenity and establish a connection between people and the place. This means that promoting environmental relevance and good atmosphere through design is connected with the quality of a certain space (VROOM, 2006).
- Static-dynamic quality: Quality in landscape architecture can also connote the passing of time. In a static way, for much as there is a constant positive connection between the

place and people over time - a durable and familiar association, or in a dynamic way, when the space is only significant during a certain period of time (VROOM, 2006).

Perhaps the most primary and important distinction among the concept of quality in the practice of landscape architecture is the environmental-aesthetic duality. The first covers the natural environment where natural processes, cycles and phenomena take place. A verifiable quality can be considered: one that can be evaluated based on objective analysis and reality, the study of causes and effects. Quality can also be assessed based on existing criteria or generally accepted standards, on which Environmental Impact Statements are generally based (VROOM, 2006).

OLIN (1988: p. 24) points that a mere ethic of “problem solving”, which brings social benefits to some extent, is sometimes considered more important than the creation of human environments which have other significance, namely an artistic one. However, more subjective criteria should be considered, as the way space is designed influences feelings of comfort and acceptance (OLIN, 1988). Good quality also involves the connection and the search to achieve affinity with the public: a certain place reveals a good atmosphere, when it offers people a sense of belonging and affection, and if it appeals to familiar emotions (MURPHY, 2005).

Aesthetic quality is considered subjective, in terms that it depends on the culture, experience, perception and judgement of the observer, however there is something concrete about the atmosphere of a certain place, which leads to people to agree on its character. Atmosphere is a result of all built elements and their eventual transformation over time, and its mutability or stability can depend on the residents as much on the developers to maintain them (THIBAUD, 2014).

WEIDINGER (2015) emphasizes the importance of the concept of “atmosphere”, as the author recognizes that landscape architects have the knowledge to incorporate atmospheric qualities through space composition, that cause sensorial experiences (visual, olfactory, tactile, etc), and comfortable space for users. In this way, landscape architects are capable of establishing a connection between these unmeasurable parameters with form. For example, the design of pathways is in connection with revelation of different viewpoints along its way, motivate distinct paces of movement, influence our sense of curiosity and encourage encounters. According to LOIDL (2014: p. 164), “relationships, relationships...are the essence of quality” referring the importance of the relative spatial position of the elements. Gestaltung theories proposed in the beginning of the 20th Century in Germany can be useful resources on this matter, since they “...describe design principles and elements, that is, contrast, symmetry, wideness and

constriction, threshold and vistas, which can help the designer to control spatial compositions and achieve distinct atmospheric impacts” (WEIDINGER, 2014: p. 95).

Conclusively, and considering ideas of OLIN (1988), spatial quality can reveal itself through a landscape architecture project in two different fields: environmental and aesthetic. In one hand, the place is designed for being experienced by people, in an atmospheric/aesthetic and measurable point of view (climate comfort); in the other hand, the project should also represent ecological benefits to the city, in terms of integration of the project to the characteristics of the territory and its ecological features.

4_Public Spaces as an instrument to reach urban quality

Public spaces assume nowadays an important role in contemporary cities, be it in the historical centre or in the peripheral area. They are fundamental elements of expressing the cultural capacity of a place, to work as functional structures in the urban fabric, proposing new environmental systems, as well as providing a good atmosphere to be experienced by people (EL-KHOURY, 2005).

In a suburban environment where planning of public spaces was neglected over time, it is fundamental to understand how and where they can be incorporated in contemporary suburban cities, as well as to recognize proposals of public space that combine a “matrix with a high degree of flexibility, which makes it capable of accommodating all the different players, uses and appropriations” (PROAP, 2011: p.124). The design of urban open spaces in the light of landscape architecture is therefore complex, as it combines social structures with natural resources, such as water and soil (FOXLEY & VOGT, 2010).

In a collective scale, public spaces are relevant meeting points. As quoted by Gehl, “The changing character of the city life with its demands for good city space is a new expression of one of the most important functions of city culture: the meeting of people.” (GEHL, p. 9, 2007); in the other hand, public spaces are also relevant in the individual sphere, “public spaces are an extension of our own lives, an environment where (...) we simply live” (PROAP, 2011, p.121), addressing the common issue of lack of space in a context of a dense urban territory.

Suburban territories have commonly no spatial and cultural cohesion, since they are often neglected and kept away from the political agenda. This lack of care instigates a consequential inertia and lack of political participation of the inhabitants in the city issues. In fact, according to BELL (2001: p.71) “the consequences of a sprawl settlement are the loss of distinctiveness of the older rural landscape with their variety of materials, diverse sensuous surface and unity of pattern. Bland landscapes are also the result of negligence in planning, design and management, coupled with a demand for cheap, short term solutions. They are the most challenging to change, because it is hard to justify spending resources on place that are not obviously ugly and degraded”.

In a suburban environment, the main reasons that conducted to the lack of interest in incorporating good quality public spaces in the local/municipal political agenda, are (BELL, 2011):

- The intense use of the automobile for daily travels and small distance itineraries. This conducts to a lack on investment in creating well structured, comfortable and pleasant pedestrian paths;
- Cultural reasons associated to the absence of social practices in the outdoors (socialization, walking, sports activities, barbecues, etc.);
- General belief that these spaces will enhance problems such as criminality and vandalism.

Public space design can mitigate adverse environmental, functional and aesthetical aspects of unplanned urban fabric, industrial sites and road infrastructures, as these areas are often regarded as unpleasant. It must provide a spectrum of different atmospheres, which are welcoming, secure, functional, as well as connected to where people live, work or study. Urban landscapes of streets and green spaces must also be designed considering protection of soil and water protection, as well as enhancing healthy urban activities and urban vitality.

The project of a certain public space must also consider its morphological effects in the city; It is important to analyse its context and also characteristics that can contribute to form an urban ensemble and to a more connected surrounding urban fabric. In the case of a requalification project, it must therefore be integrated into the pre-existing urban fabric and in a way that a dialogue between public space and the surrounding is promoted, through the urban design of the square, park or street (BRANDÃO, 2002).

Given the urban challenges that many suburban settlements face, a public space creation or requalification project assumes a particular importance in the urban quarter/neighbourhood scale, in a way to tackle problems of air, water and soil quality, of social and economic equity and criminality (DUARNY, 2003: p.86). ORFF (2016: p.197) mentions the flexibility and readability of this scale, as it is "...a defined zone from which we can scale up and down (streetscapes, sites)". This is also referenced by BUSQUETS (2005: p.53): "...work in the "intermediate scale" comes in very useful: this means that while we establish the project on the basis of its own scale and autonomy, we force ourselves to look up to its wider context and down in a refusal to validate our project..."

4.1. Public Spaces – Guidelines and Quality Assessment

The non-profit organization PPS ("Project for Public Spaces") dedicates to the education, planning and design of public spaces, as vector to build social cohesion. In order to provide an insight upon creating good quality public spaces, the organization proposed general

guidelines, represented in a diagram, which address to the complexity of “placemaking” and assessing how successful a place is- any public space can be a subject of evaluation.

According to the organization, successful public spaces seem to reunite the following cluster of four qualities: 1) good accessibility, 2) good atmosphere and comfortable, 3) uses and activities, 4) socially active. The “Place Diagram” (Figure 3) is organized in three levels: the first composed by these main criteria, the second level by subjective and qualitative aspects, and the third composed by quantifiable and measurable criteria.



Figure 3 – Graphic with criteria for public space assessment proposed by the PPS. Source: PPS, 2009.

This cluster of qualities can be questioned and described in the following way:

- 1) Access and Linkages – evaluates the accessibility of a place in relation to its surroundings, “...both visual and physical” (PPS, 2009). Accessible spaces are easily perceivable from a distance, easier and safer to walk by. They also present parking solutions, good traffic accesses, and interfaces with public transports.

Questions to consider while evaluating how accessible a public space is:

Can you see the space from a distance? Is its interior visible from the outside?

Is there a good connection between the space and the adjacent buildings and areas?

Can people easily walk to the place?

Does the space function for people with special needs?

Can people use a variety of transportation options – bus train, car, bicycle, etc. – to reach the place?

- 2) Comfort and Image – assesses if the public space has a “good image“, if it offers a clean, safe and space to people, as well as the opportunity for people to sit where they want.

Questions regarding Comfort and Image:

Does the place make a good first impression?

Are there more women than men?

Are there enough places to sit? Do people have a choice of places to sit, in the sun or shade?

Are spaces clean and free of litter?

Does the area feel safe? Is there a security presence?

Are people taking pictures? Are there many photo opportunities available?

Do vehicles dominate pedestrian use of the space?

- 3) Uses and Activities - Is related to the leisure possibilities that a place offers, as it connects the people and the place. In the case, there are no possibilities for any activities, then the place will be empty.

Questions regarding Uses and Activities:

Are people using the space or is it empty?

Is it used by people of different ages? Are people in groups?

How many different types of activities are occurring – people walking, eating, playing baseball, chess, relaxing, reading?

Which parts of the space are used and which are not?

Are there choices of things to do?

- 4) Sociability – Associated to the public space as a meeting point among friends, neighbours, but also the comfort level of interacting with strangers. This increases a sense of closeness with the community and to the public space.

Questions related to Sociability:

Is this a place where you would choose to meet your friends?

Are people in groups? Are they talking with one another?

Do people seem to know each other by face or by name?

Do people bring their friends and relatives to see the place or do they point to one of its features with pride?

Are people smiling? Do people make eye contact with each other?

Do people use the place regularly and by choice?

Does a mix of ages and ethnic groups that generally reflect the community at large?

This diagnose method can be applied to every public spaces including the ones that will be described in the following pages: parks and urban streets, and later on developed in the practice through a requalification project.

4.2. Green Spaces

Green infrastructure planning is fundamental in a dense built-up urban environment, for its ecosystem services, namely water protection and carbon sequestration, as well as social benefits. Historically, this practise was remarkably addressed in the beginning of the 19th Century by the work of Frederick Law Olmsted and his collaborators, through the projects of Emerald Necklace and Back Bay Fens in the city of Boston, on which the landscape architect advocated that this practice should balance human environments and ecologic systems.

As the foundation rock for regarding landscape as an infrastructure was laid, it is essential to invest in site specific and multi-layered interventions that have positive impacts both in the

neighbourhood and that are regionally sustainable. To design landscape as an infrastructure in an urban environment means to seek a balance between optimal design and the dynamic character of cities, while avoiding inessential ornaments and formality, and enhancing urban functionality (HUNG, 2013).

Planning green infrastructure means to recognize areas with high ecologic value, and to establish a network of contiguous areas which provide ecosystem services, in order to maximise this value, and to interconnect to a maximum number of users (CZECHOWSKI et al, 2014). In a suburban context, this is relevant, in terms that it allows, in the common sense, the return of the nature to the city.

The contemporary suburban city presents two types of public green spaces, which will be further described (IPSEN, 2010):

- “Unplanned” green spaces – these are “leftover spaces”, with variable shapes such as islands, corridors, stripes, etc. This type of spaces are quite common in suburban cities, and are potential areas for green infrastructure planning, as well as open space design.
- “Planned” green spaces – areas that were associated to a city planning process. In this group are included large parks such as Tiergarten in Berlin, Central Park in New York, pocket parks and squares, wooded streets/avenues and private gardens.

4.3. Unplanned Green Spaces – The “Third Landscape”

The rapid growth of cities and built of communication routes originated many neglected and disconnected urban voids, within the boundaries and/or in the edge of the city. Georg Simmel established a divergence of meaning between the spatial entities of “edge” and “boundary”, - a boundary delineates a space, whereas edges are spaces which “lie between the inside and outside” and result from the rapid urban sprawl, as they resisted the market’s pressures of urban development, or of unused infrastructure (for instance, old railway lines) (IPSEN, 2010).

Gilles Clément categorizes these urban voids as the “third Landscape”. This term was based on the idea of “Third Estate” proposed by Abbé Sieyès, on which he defines that the “Third State” is everything, it has been “nothing” and it will be “something” (ROCCA, 2008: p. 40). The “third landscape” sites that are expecting a transformation, without any use mostly due to financial and political constraints. They are a “fragment of undecided garden” and a “subtraction of the anthropic territory”. (ROCCA, 2008: p. 40).

Some of the reasons that are appointed for the fact that these areas remain neglected are the lack of spatial structure, lack of security, inconvenience and disconnection from the urban surroundings, unprofitable land exploitation for urban development or agriculture. They are therefore left with no concrete use besides informal and public initiative vegetable gardens, illegal landfills, and occasional pasture fields. These forms of fallow land are located overall in the city, whether near industrial sites or residential areas, they are inactive places with no concrete planned social use, and are crossed by trampled paths (IPSEN, 2010).

In spite of this dormancy, the “third Landscape” represents highly dynamic and liveable places from the biodiversity point of view. Without alteration of the substrate, the place becomes quickly colonized by grass and later trees, not only by species of the native flora, but also exotic species capable of growing in such climates. This appropriation by nature is poetically seen by Gilles Clément as a sign of vitality and not of decay, and a sign of relinquishment of man towards land. Clément approach proposes the creation of a “mesh” of joining all these abandoned spaces, in a way to promote biologic continuity, and change our interpretation of the territory (ROCCA, 2008).

These unplanned green areas – either in the form of void in the middle of the urban fabric or as located in the city edge, are spaces of simultaneity, that fluctuate between persistence and transformation. They are areas to be potentially included in a green infrastructure plan of the city, promoting water and soil protection, as well as potential green public spaces that boost urban liveliness.

4.4. Planned Green Spaces

4.4.1 Parks

Parks can be broadly defined as permeable green areas with more or less dense vegetation, native and/or exotic species, designed for human leisure activities, natural resources and ecosystem protection. They represent the poetic of the presence of nature in an urban environment, as they promote environmental and social value to the city. Great urban parks in the British Islands, Bois de Vincennes in France and the public interconnected parks projected by Olmsted in North America (Figure 4), were pioneer projects in establishing green spaces in the urban context, for its ecological and social benefits, as well as influencing the real estate market by being an important element to incorporate in city planning (BECKER, 2010).



Figure 4 – Map showing the interconnected green areas part of the Emerald Necklace in Boston. Source: Emerald Necklace Conservancy.

If in one hand, cities are developed places where social and cultural values are expressed, those are also the territories that lack most of the contact with the commonly called “nature”, and pushed away from its benefits in the physical and psychologic well-being of the inhabitants. Parks should be places that enhance both individual and community manifestations, offering opportunities for peace and quiet, as well as for meeting places (BECKER, 2010).

The planning and design of a park should not be, however, an enclosed action, as it should consider different urban dynamics of the site, and the interfaces of the park with its surroundings, regarding environmental and social aspects. It is relevant to approach parks not as isolated entities, but as places where the following dynamics are important:

- Parks as components of a green infrastructure: planning and design of parks should contribute to the *Continuum naturale* in the city scale. This enhances the ecosystem services of a park, in a way it seeks maximization of sustainable water management practices and soil protection, and enrichment of urban biodiversity (MAGALHÃES, 2001);
- Parks as promoters of neighbourhood and community unity: it is crucial to understand the interface park-neighbourhood, as geographical, urban, social contexts on which the park is located influence its functioning and maintenance. It is important to reflect upon the reasons that make a park survive, and those reasons are partly derived from the context – for instance the distinction between “vandalism” and “wear”, since the first one is an indicator of the lack of vitality and uses while the second addresses to an intense use (JACOBS, 1965).

- Parks as ecologic dynamic systems: parks are biologically not enclosed systems, as they are permanently occupied by new botanical species. Clément alludes to the concept of botanical succession, as the system evolves through growth and destruction, and, phase by phase, reaches a state of equilibrium- “climax”- which can be defined as the set of botanical species which are adequate for a certain place. In these terms, it is primordial to recognise this botanical “movement” and recognize plants as dynamic components, which in the end compose dynamic systems (ROCCA, 2008).

Parks are, therefore, meaningful public spaces, whose planning and design involve site specific and complex decisions, in order to promote urban quality. Some contemporary park design principles that can potentially shape good quality environments will be presented next.

4.4.2 Guidelines to design a park in the 21st Century

The project of Park am Gleisdreieck by Atelier LOIDL in Berlin emerges as a reference project in the present-day, due to its thoughtful design which includes diversity of environments aimed to be used by different groups of users. The complex design process of the park is described through key topics, relevant in the context of a suburban city, characterized by its heterogeneity of users and presence of interstitial underused space (GROSCH & PETROW, 2016):

- The construction of a solid dialog with the citizens along the design process: given the examples of High Line Park in New York, Park am Gleisdreieck in Berlin and Park Fiction in Hamburg- the process of institution of these parks was in an initial phase, citizen-based and reclaimed from constructed development. It is essential to cultivate a strong sense of engagement and activeness, and a sense of belonging;
- The importance of incorporating complexity and heterogeneity on the design of the park: unexpected uses and equipment give a distinguishable character to the place, and cultivate aesthetic variety; Atmospheres are directly related to the design of the park, as diversity can be achieved through alternation between calm and active areas;
- Program intensively: offering numerous and well distributed places for retreat, encounter and activities. In addition, sitting places must not only be physically comfortable, but also socially, emphasizing that one must anticipate what the social and environmental consequences of the design are;

- Delimitation of hotspots of the park, as areas where many activities take place and where elements are related to one another (Figure 5); “A park should bring people together. It should give rise to a feeling of social closeness and a shared identity. Creating a relaxed atmosphere can contribute to mitigating social tensions or even prevent them from arising in the first place. It is necessary to encourage communication in a targeted manner, and produce a feeling of togetherness;



Figure 5 – Example of an active area in Gleisdreieck Park, by Atelier LOIDL. Source: Grosch, Petrow, 2016.

- Combination of different typologies of green areas: variety of vegetation typologies, associated to distinct maintenance intensities offers a variety of environments and sensory experiences. Vegetable gardens, for example, are also relevant for their social benefits;
 - Development of a narrative along the park: every area of the park adds history to the city. To incorporate street art, dynamic elements that appeal to aesthetic is to make the identity of a place more cohere. The park is, in first place, a public space, where should be used as an experiment field for citizens, therefore its design should make appropriation of a place possible. Allowing street art in some days, for example, is a form of symbolic appropriation that enriches the narrative of the city and the park (Figure 6);
 - Design of appealing and barrier-free entrances, that promote a close connection to the surrounding urban fabric (Figure 7);



Figure 6 – Graffiti as a space appropriation tool. Source: Grosch, Petrow, 2016.



Figure 7 – One large and pedestrian-friendly entrance of the park. Source: Grosch, Petrow, 2016.

- Creation of a network of stakeholders who can maintain the park and participate actively on it: political actors, designers and users, through programmes of volunteering, membership. The successful design of a park doesn't only include vegetation growth, quality materials, etc., but also its development of potentialities and collective creativity.
- Promoting security in the park: design the spaces and paths in a way they are easily noticeable. The design of meadows, and less shrubs, and social meeting areas, because the presence of many people and happenings build a lively aura of the park, which makes it be perceived as safe.

In the present-days, design of parks must address to a more heterogenic and culturally differentiated contemporary society, while offering a wide range of outdoor activities and recognizing people as active and participative members of the public space (GROSCH & PETROW, 2016).

4.4.3. Pocket Parks

Pocket parks are small-scale green areas, with a different range of sizes, including for example, the size of a building lot. This typology of green spaces is relevant in the situation of suburban cities, as many urban voids and underused spaces can be frequently identified among the urban fabric, that could potentially be transformed into small scale parks.

“Common places: urban playgrounds for Amadora” is a project that crosses pocket park design in a suburban context. The project was part of the Lisbon Triennale 2016, and coordinated by the architecture office Plan Común, and resulted from a collaboration with 12 other practitioners, whose main goal was to find solutions to design public open spaces in the suburban city of Amadora, Portugal. According to the participants, “Amadora lacks orientation, public space and active collective life” (PLAN COMÚN et al, 2016).

The outcome of this project were 12 proposals of “Urban Playgrounds”, no bigger than 100 m². The main intention of the project was “...offering strategies for new places of encounter, which in their own specificity – order, form, format, and proportions – propose an antidote to the general lack of quality of contemporary public space shared by many cities throughout the world. They offer different kinds of use: from gardening to working, even focused on just wasting time. It is an opportunity to think about old / new human relations and the dimensions that allow them to happen” (PLAN COMÚN et al, 2016).

One of the proposals was “Cut Outs” by Dyvik Kahlen (Figure 8), on which it is recognized that most of the surfaces in the city are not permeable – asphalt and pavement dominate the streetscape and public spaces, despite the fact that Amadora is surrounded by open green edge areas. The designer stated: “Instead of adding even more building matter, we propose a principle of “cut outs” that are scattered throughout the city...”; “Those islands are created literally by cutting forms into the asphalt and pavement, and by a process of removing the existing material. We like to reveal the soil, give a potential ground for new plants, and introduce the surrounding wild nature into the city...”; “Their disruptive character should draw more attention to the existing material and textures and suggest potential pockets in-between buildings, streets, pavements, lampposts and furniture” (PLAN COMÚN et al, 2016).

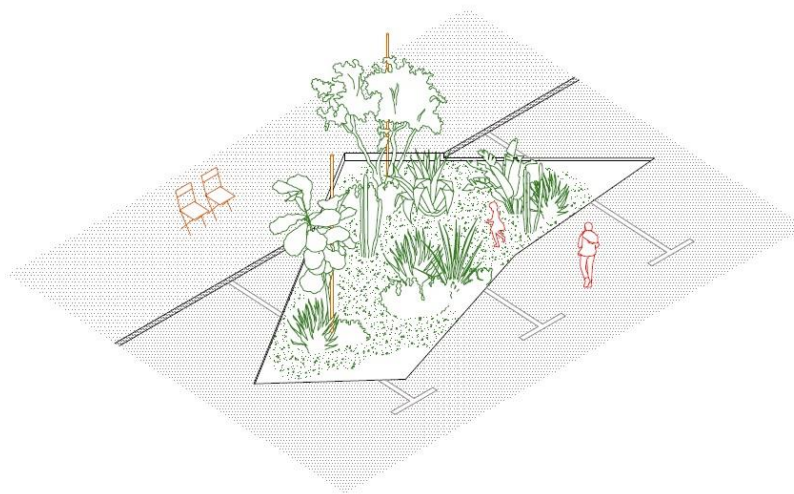


Figure 8 – Proposal “Cut Outs” by Dyvik Kahlen. Source: Plan Común, et al, 2016.

4.4.4. Urban Streets

Urban streets are the vessels of the city, as when in an organized network, establish pedestrian flows of movement through the city. This urban network of streets is often hierarchized, and present a close connection between form and function, as large streets are frequently associated to a more intense traffic movement, and to the presence of numerous commerce and services establishments (ROBBINS, 2005). Streets are, therefore, places of coexistence and conflict among different users, and civic space that should provide a well-connected solution for pedestrian circulation .

Streets are lively places, where different dynamics of active and passive activities take place. Movement of cars, bicycles are the dynamic elements of the roads, whereas the pedestrian movement takes place in the sidewalk, where people socialize, meet by chance, go for a walk, sit and talk, among other activities (Figure 9). In a suburban context where the use of the automobile prevails, the conflict between pedestrian and car circulation is a constant problematic: "...traffic levels can have a severely inhibiting effect on public interaction at the street level. A fast, straight, trunk road can divide the community as effectively as a steel fence, in much the same way that suburban railway lines once often used to symbolically divide towns and villages into the "right" and "wrong" side of the tracks" (NEAL, 2003: p.187).

In this sense, requalification projects should rethink the general street layout, the public transport network, offer parking opportunities and promote the use of the ground floor, proposing solutions crossing the ecological context on which the street is located.

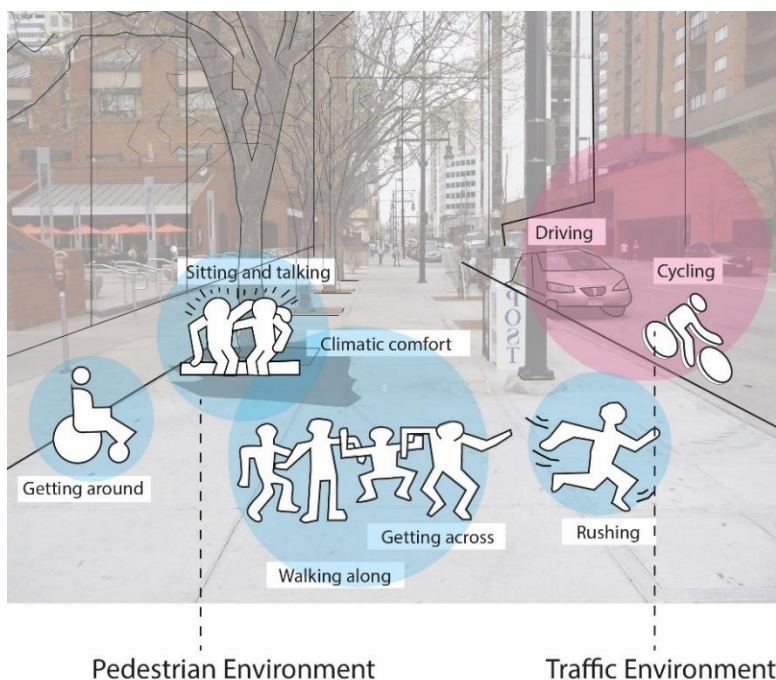


Figure 9 – Streetscape activities, adapted from Gehl, 2007. Source: Author.

Sidewalks are the pedestrian fraction of the streets and an interface between the buildings and the street. The street is not only a vital part of urban centres and its circulation of people, as it is highly associated to the image that a person has from a certain city (NEAL, 2003). Streets are a mirror of the character and should be lively, climatic comfortable and pleasant public spaces to be experienced.

“A successful street and walkway pattern not only increases opportunities for people to meet, but also helps increase levels of trust locally through the frequency of face-to-face encounter and negotiation. A sense of trust – the belief that others, even strangers, are basically helpful and considerate – is essential to the social life of urban communities, and to local economic life as well (NEAL, 2003: p.189). Promoting “sidewalk contact” through design as by increasing this sense of trust, is fundamental for two reasons:

- Complex social problems often express in the form of crime and delinquency in the thoroughfare of suburbs, thus design has the capability of tackling these issues, by enhancing this “sense of trust” through promoting “sidewalk contact”- the disposition of different elements;
- In a multi-cultural environment inhabited by users of different origins, which is the case of the city described in this dissertation, the design of sidewalk can tackle issues such as segregation and discrimination, by promoting contact among varied groups of people (JACOBS, 1965).

Sidewalks are commonly perceived as mere places to access buildings, as car circulation is often prevailed, however sidewalk narrowness and inaccessibility conduct a more sedentary urban character. Large sidewalks offer more spatial opportunities for different infrastructures which are meant to serve different users, such as playgrounds, roller skating and cycling paths, benches. Ultimately, the well-use of the street attracts liveliness, security and sharing (JACOBS, p. 1965).

4.4.5 Reference Projects

One paradigmatic example of a street requalification project is Paseo de St Joan by the studio of architect Lola Domèmech, which is an important axis included in the plan of “Eixample” of Barcelona, by Cerdà in the 19th Century. The boulevard was designed with some monumental 50 meters width (Figure 10), opposing to standard streets with 20 meters, laid out with lines of trees and parterres, that were in bad condition by the time of the remodelling project. The street width allowed many design resolutions which would have been very difficult to achieve in a dense city with narrow streets and sidewalks. However, it is relevant to analyse how the project addressed public uses and sustainability. The project included the planning of different areas with active and passive uses - punctual playgrounds along its length and areas with benches (Figure 12) and bar terraces. The bicycle lane is located in between the carriageways (Figure 11) in order to avoid conflicts with pedestrian use. A fundamental goal of the project was the integration of the boulevard in the green infrastructure of the city, since it is located near Ciutadella Park and Passeig de Lluís Companys. Green sustainable areas were designed: two extra rows of trees were planted, mixed pavements (Figure 12) assure the drainage of water, and the watering system used phreatic water. Shrubs with low water requirements were also incorporated (LANDEZINE, 2012).



Figure 10 – Overview of the Passeig De St Joan. Source: Landezine, 2012.



Figure 11 – Soft mobility lane in Passeig De St Joan. Source: Author.



Figure 12 – Sitting area and permeable pavement in Passeig De St Joan. Source: Author.

Another illustrative project is the Buffalo Niagara Medical Campus Streetscape, in Buffalo, New York by SCAPE Studio, on which the design principle was providing a “strong vegetated footprint for the site” (SCAPE STUDIO), in a previous abandoned and ecologically arid urban environment. A dense stripe with shrubs and trees was designed (Figure 13), with native and urban-adapted botanical species, as well as salt and frost resistant. The walkway now offers resting places and a pleasant and biodiverse walking environment for everyday users (Figure 14). Ultimately, this edge is now a pleasant area for the use of students and patients, in an edge which was once abandoned and empty (SCAPE STUDIO).



Figure 13 – Areas with dense vegetation in Buffalo Niagara Medical Campus Street. Source: Scape Studio.

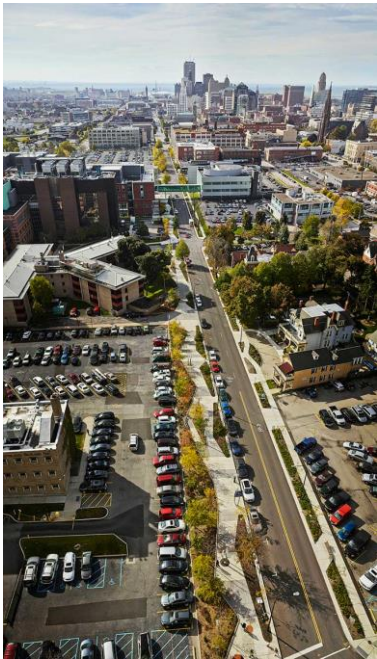


Figure 14 – Overview of the Buffalo Niagara Medical Campus Street. Source: Scape Studio.

5_Engagement and Participation in Landscape Architecture

Environmental degradation and community alienation are problems that can be tackled in the scope of a landscape architect project, through the improvement or establishment of sustainable environmental-social networks. When it comes to public space design, be it large or small scale, the aim is to address a diverse public, meaning that projects are beneficial when thought and developed by diverse design team (FOXLEY & VOGT, 2010). Social participation is a way to promote a more participative and engaged community, which leads to higher demands of public improvement projects, avoiding cosmetic urban projects which only benefit a specific economic group of people.

A requalification project of public space can start informally with citizens' groups who initiate campaigns to reclaim the existence or proposal of green/public spaces in their communities, which later have impacts in the power structure of the city, who eventually integrate these initiatives in their political agenda. This, however, happens very rarely, especially in social and environmentally disperse suburban cities, where social negotiation and citizen pro-activity is very little to be considered (TREIB, 2010).

The city is "multicultural", for it is composed by residents and visitors with different origins who interact in public spaces in various ways. This means that projects must seek value in these differences, and use it as a resource to produce sustainable and meaningful results for the community. Community engagement is a fundamental process in different phases of a landscape architecture project, especially in a local level. Wishes of people are a valuable resource for successful design of public space, and they can be incorporated in the project in many different ways.

As stated by ORFF (2016: p.144) , social cohesion is "a critical yet difficult to define factor in civil life, is not easy to measure and/or create spatially. Its absence, however, is readily perceivable. Design as a catalyst to strengthen bonds and generate social cohesion". For this reason, "promotion of forums, conferences, community events- following either conventional or unexpected formats- must be woven into the DNA of the design process. Every action has potential to pull together an engaged citizenry. Engagement itself is a process, a project and a product".

In terms of landscape architecture practice, the work of Berlin-based office Planung Freiraum, led by landscape architect Barbara Willecke, is deeply rooted on community engagement throughout the whole design process, in order to produce “needs-oriented and gender-appropriate” solutions, which conduct to lively public spaces (WILLECKE, 2015).

The intention is to exchange knowledge and perceive the space through the eyes of the community, for a closer contact with their needs and preferences. The engagement of certain groups of people who are difficult to reach, or often ignored in the public realm, is fundamental to avoid conflicts - the development of an integrated participatory process can constitute an important tool to prevent vandalism, as it cultivates an acceptance for transformation and a sense of belonging (WILLECKE, 2015). For this reason, the Berlin-based office researches what are the needs of specific groups, and uses this information to negotiate conflicting and incompatible interests.

Through this process, the practice of the office also aim to address gender diversity and equality, by the design of “gender-friendly” public spaces. This has a practice significance as the design takes into account all users- a wide range of people from different age groups, gender, nationality and religion. This is an important guiding principle to enhance equal opportunities among all population groups: the greater use of the space by different groups of users, the greater the sense of security, which ultimately conducts to a more effective and sustainable design (WILLECKE, 2015).

For this purpose, the office Planung Freiraum has developed a close contact with the local political authorities, and a wide variety of tools such as public assemblies and meetings, where people express their wishes through “board games” (Figure 15), on which small cards with verbs or feelings are distributed by the participants in a site plan. The final result is afterwards documented and used for zoning of the spaces and functions of the site, in particular contrasting uses such as playgrounds, vegetable gardens, sitting places, sports area, etc. One reference project is the requalification of Nauener square in the northwestern borough of Berlin-Wedding, known for its multi-cultural and complex urban atmosphere, where people with Turkish, German, Sub-Saharan African, Arabic, Asian background, among others cohabit. Several meetings were scheduled for different groups of people, such as teenagers, children, women, seniors, and all interested. The square was stigmatized as a strong criminality point, and transformed into a lively and a daily meeting point between generations (Figure 16). The result was the design of areas with active (sports, playgrounds, movement) and passive (benches area) activities, with consideration to this variety of cultural background, with a relatively low budget (WILLECKE, 2015).

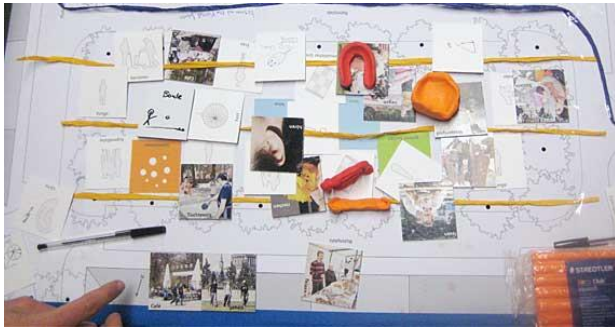


Figure 15 – Participation process with illustrative cards. Source: Planung Freiraum, 2016.



Figure 16 – Diversity of users in Nauener Platz, Berlin. Source: Planung Freiraum, 2016.

Another example on how to address multi-cultural ubiquity through landscape architecture is Superkilen Park, in the suburbs of Copenhagen, Denmark, a result of a pluridisciplinary collaboration between offices of landscape architecture Topothek1, of architecture BIG and art collective Superflex. Since early stages of the design process, an integrated participatory process was pursued, and the project extends in about 750 m in a cultural diverse and problematic neighbourhood of Nørrebro. The proposal consists of an unusual “collection” of about 100 outdoor furniture elements chosen by inhabitants from 60 different nations (Figure 18). The intervention conceptually develops along three different areas: the “Red Square” (various recreational offers, like sports activities, stage for music), the “Black Square” (relaxing and stay, with benches) and the “Green Park” (green permeable space for sports, picnics), on which a mobility infrastructure was developed through the neighbourhood, connecting to the surrounding urban fabric (ARCHDAILY, 2012).

Martin Rein-Cano, landscape architect and co-founder of the office Topothek1, established a comparison between this use of exotic urban furniture objects with the romantic landscape parks designed in the 19th century, where objects associated to an exotic imaginary such as greek and roman inspired ruins were incorporated in the English parks, in an attempt to build an “ideal” landscape (REIN-CANO, 2016).

The landscape architect also emphasizes on the psychological dimension of the project - the area was known for being violent and loud, so the design principles were to enhance and make visible the character of the place, to spatially materialize them, for example through the incorporation of a boxing ring from Thailand (Figure 17) and a boom-box from Jamaica. The urban furniture pieces, like benches, light posts, playgrounds, fountains offer informality and various uses, bringing to this area new synergies and attracting new urban actors to the area (REIN-CANO, 2016).



Figure 17 – A Thai ring box as one of the exotic elements of Superkilen Park. Source: Archdaily, 2012.



Figure 18 – About 60 different nations were represented through different urban furniture elements along the Park. Source: Archdaily, 2012.

6_Case of Study

6.1. Intervention Area – Location

The city of Agualva-Cacém is located between Lisbon, the capital city, and Sintra, an important historical and cultural centre (Figure 19). Agualva-Cacém is a parish of the county of Sintra and results of the administrative union of the parishes of “Aqualva” and “Mira Sintra”, located in the Metropolitan Area of Lisbon. It has about 6 km² of surface and approximately 41104 inhabitants and 34667 voters (CÂMARA MUNICIPAL DE SINTRA, 2014).

As it will be further described, city has a strong rural past, and a present dominated by fast urban, economic and demographic development in the last decades, and as a result, is one of the largest urban centres in the country. The landscape is constrained by transportation infrastructures – railway network and the fast speed road, which serve most of the population who work outside of their residence place.

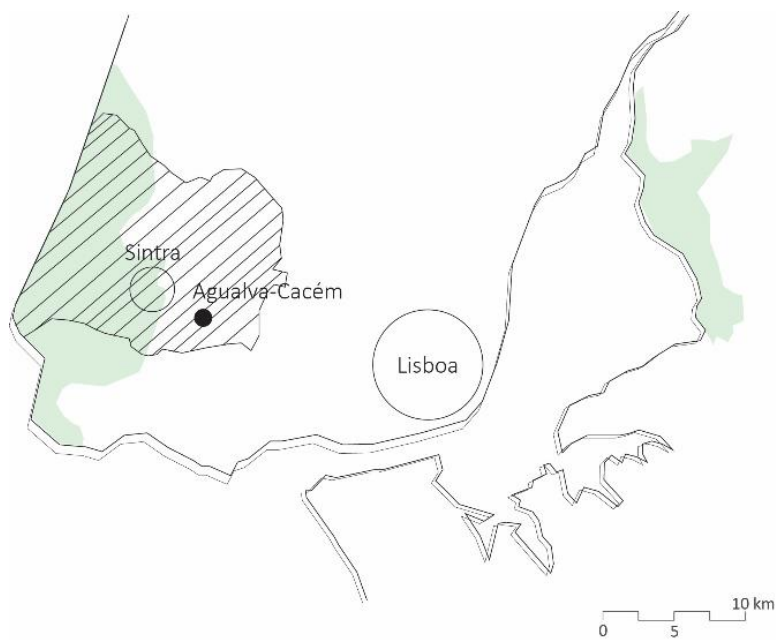


Figure 19 – Location of Agualva-Cacém in the Metropolitan Area of Lisbon.

6.2. Methodology

The methodology of the proposal (Figure 20) starts with an analysis of the territory in two different scales: the scale of the city and the scale of the intervention area. Initially it is considered the city as a whole, its characterization, history, evolution of the landscape, ecological context, an overview on demographic data, and location of the main areas of services. Secondly, the analysis of the intervention area, based on a previously published study (Magalhães, 2008) and its results - the Sintra Municipal Green Plan (SMGP), where a more detailed overview on the ecological infrastructure and the integration of the sites within a network of pathways will be made. A hypothetical participation process is suggested afterwards, considering this feature an important tool to contribute to a more participative influence on the design of the space. In the end, a description of the potentialities and challenges of all the areas that are part of the axis is made – Bons Amigos Avenue, Quatro Caminhos Park and North Park, based on observation, experience, and documentation of the places. This diagnosis is followed by the requalification project, whose design strategies were oriented by some questions proposed by FOXLEY & VOGT (2010): How is the image of the city changed? With what design methods do we work on the image of the city?

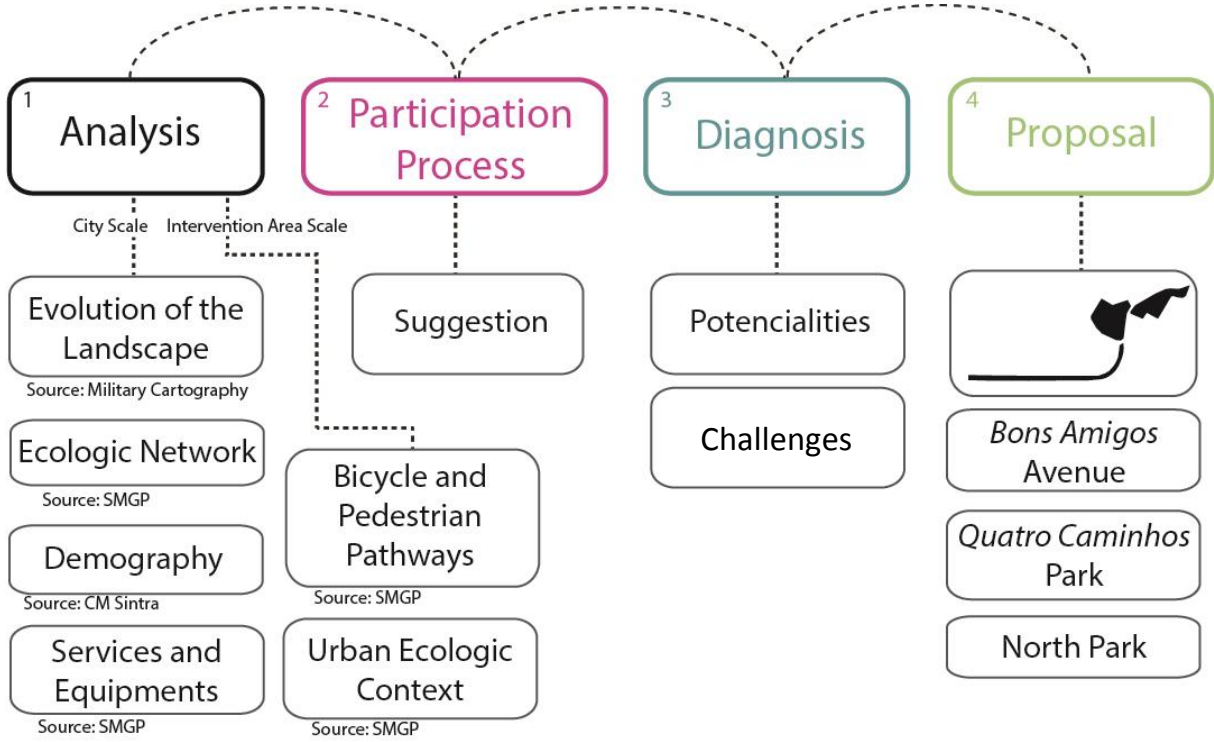


Figure 20 – Methodological phases.

6.3. The Metropolitan Area of Lisbon (MAL) – Development and expansion

The growth of the MAL over the decades is highly associated to the development of transport infrastructures. Until the 19th century, most part of the movements within the same urban area was done by foot, while wealthy people would use cars pushed by animals for transportation or cargo transport. Many Portuguese cities and villages maintained these simple means of transportation of the pre-industrial area until the time of the 2nd World War.

Later in the 20th century, fast speed terrestrial transportation became the most relevant means of communication, through the building of modern roads and railways in the country. The development of new train stations conducted new processes of urban development, as new suburban cities emerged, which later developed to be more autonomous in terms of employment and services (BARATA SALGUEIRO, 1992).

According to Telles (1987), there are six axes of urban growth of the MAL, established by transportation networks of railway, roads or boats (Figure 21): Cascais line, Sintra line, Loures, Vila de Franca de Xira, River Connections and the *25 de Abril* bridge. A construction boom in the region of Lisbon took place after 1950, and they also contributed to the fixation of population, some of them from the countryside and smaller towns of Portugal. Urban sprawl associated to transport infrastructures could then be acknowledged: it created a “starry pattern” (Figure 22) consisting of a dense area where urbanized strips are distributed along the transport lines

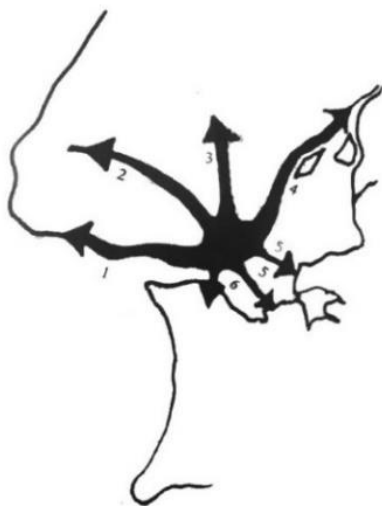


Figure 21 – Graphic showing the main urban growth axes of the AML. Source: Telles, 1987.



Figure 22 – Disperse urban growth left interstitial spaces in between cities. Source: Telles, 1987.

This process of urban expansion implemented an artificial and explosive built environment in the landscape that conducted to several spatial and social modifications. The main consequences were the following (TELLES, 1987):

- The new buildings were constructed with low quality materials and were overcrowded;
- Traffic jam at the city's entrance points, and long daily work – home daily trips;
- Lack of local agriculture production in extensive areas, which leads to importation of expensive goods which are grown in other countries;
- Flooded areas due to bad water management and urban planning decisions, such as canalization of rivers and occupation of river basin areas with construction;
- Uncontrolled urban expansion, caused by economic interests;
- Lack of planning of green areas for recreation, leisure and sports, making those areas difficult to reach by walking distance.

The case of study of this dissertation is the city of Agualva-Cacém, which is integrated in this narrative. The Lisbon-Sintra urban growth axis is composed of several isolated cities that grew according to railway stations and due to the construction of the highway, forming a “constellation” of suburban cities (Figure 23).

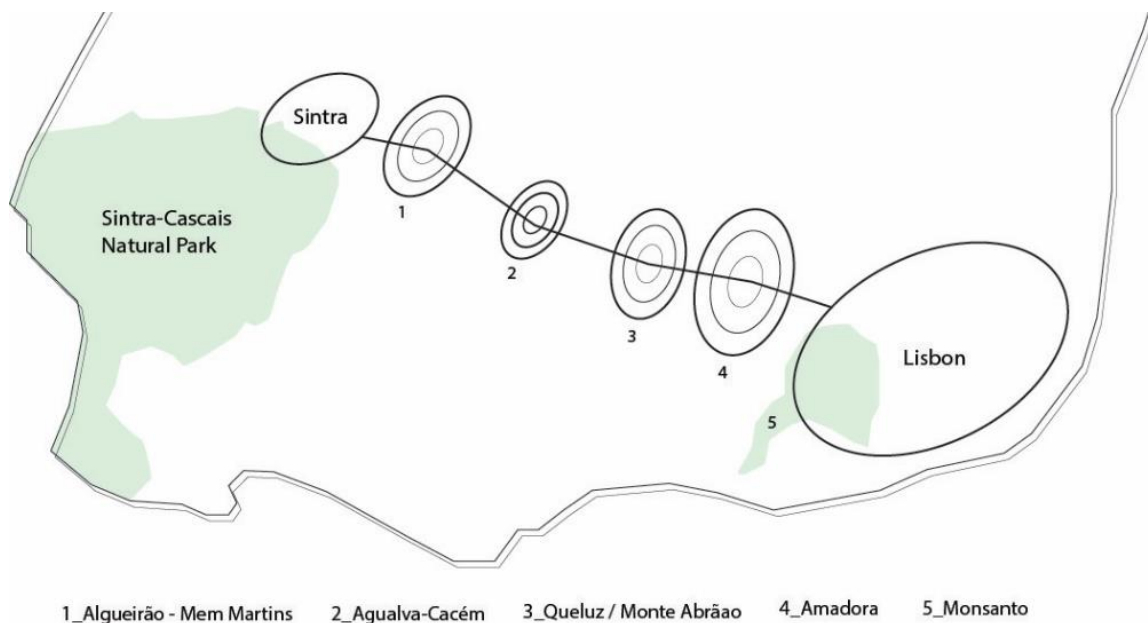


Figure 23 – Constellation of suburban cities between Lisbon and Sintra.

6.4. History of the City and Territory Evolution

The earliest human settlements in the area of Agualva-Cacém date from the Paleolithic era and were established about 5000 years ago. Pre-historic monuments from this era are quite common in the basaltic soils of the Lisbon region, as the density is about one per square kilometer. The territory was known since early years for the cleanliness and freshness of the waters of its main stream, Jardas. The name of the settlement has its probable origin two thousand years ago, when the romans fixed there and attributed the name of “Aqua Alba”. The spring of the stream is located in Agualva-Cacém, although it circulates throughout different parishes and towns, assuming different names, all the way to Oeiras, where it mixtures with the Tagus river and with the Atlantic Ocean. This stream has been economically and politically important over time in a local scale, as it was a separation line between the settlements of Agualva and Cacém: in earlier years, one part of the settlement belonged to the administrative limits of the city of Sintra and other part to Lisbon, until 1953, when they were reunited as one village (MACEDO E SOUSA & MASCARENHAS, 2000).

Throughout the centuries until the end of the 20th century, the territory had a rural character: the Jardas stream was the resource to water orchards, gardens and agriculture fields, fishing, as well as the force to move water mills. Single family houses were dispersed through the territory, and families would economically rely on cattle and cereal plantation. The landowners were mostly noble and monasteries of religious orders of S. Vicente de Fora, S. Domingos, Donas de Chelas, Santo Elói, Alcobaça and Santo-o-Novo. In the beginning of the 18th century, the settlement had 450 inhabitants, and this number grew in the next one hundred years after the earthquake of 1755. The population was composed by ecclesiastic, noble and workers of the *Águas Livres* aqueduct, and the great majority dedicated to agriculture, producing wheat, corn, wine, bread, lemons and oranges. Architectonic witnesses of this rural heritage are the “Quintas” (farms) and “casais” (country houses). Two of the historical farms can still be seen: Quinta da Bela Vista and Quinta dos Lóios (MACEDO E SOUSA & MASCARENHAS, 2000).

The turning point of the development of the city was clearly the establishment of the railway connection between Sintra and Lisbon in the end of the 19th Century – which marked the beginning of an urban and demographic explosive growth. The establishment of the definite railway line was not fast, as it was followed by many problems during its construction, such as insufficient workers, one mortal accident, and constant project alterations. The changes of the landscape were not immediately significant, as the rural character prevailed (Figure 24) - Cacém was a recommended area to live for people with lung sickness, and a refuge for the inhabitants of Lisbon, so the renting of holiday houses during the summer was usual. In the

second half of the 20th Century, the population doubled between 1940 and 1950, and during this time the wagons which made the connection Sintra – Lisbon were already overcrowded, and afterwards improvement works and electrification of the line were carried out by the *Estado Novo* regime. As previously described, after the decade of 1970, new satellite cities started to grow around the train stations of the Lisbon – Sintra railway line, as a response to a high demand for affordable housing and proximity to the capital city. This construction boom kept going until the beginning of the 2000's, as high-rise buildings with an average of seven floors dominate the actual landscape (Figure 25) (MACEDO E SOUSA & MASCARENHAS, 2000).



Figure 24 – Rural character of Agualva-Cacém in the 1950's. Source: Centro de Formação da Associação das Escolas de Sintra, 2017.



Figure 25 – City skyline of Agualva-Cacém with Sintra in the background.

6.5. City Scale Analysis

6.5.1. Evolution of the Landscape

As observed in the diagrams (Figure 26) and in the cartography (Annex 1, Annex 2), a transformation of the landscape took place along the 20th century, as the old rural housing typologies of “Quintas” (farms) and “casais” (small country houses) gave place to high-rise buildings that can accommodate large numbers of people. The built-up area therefore grew considerably in surface area and height, and, in addition, new industrial areas were established in the second half of the 20th century. As far as transportation infrastructures is concerned, the railway line kept the same layout, whereas high speed roads such as IC19 were built, crossing the territory and communicating the city with other urban agglomerates.

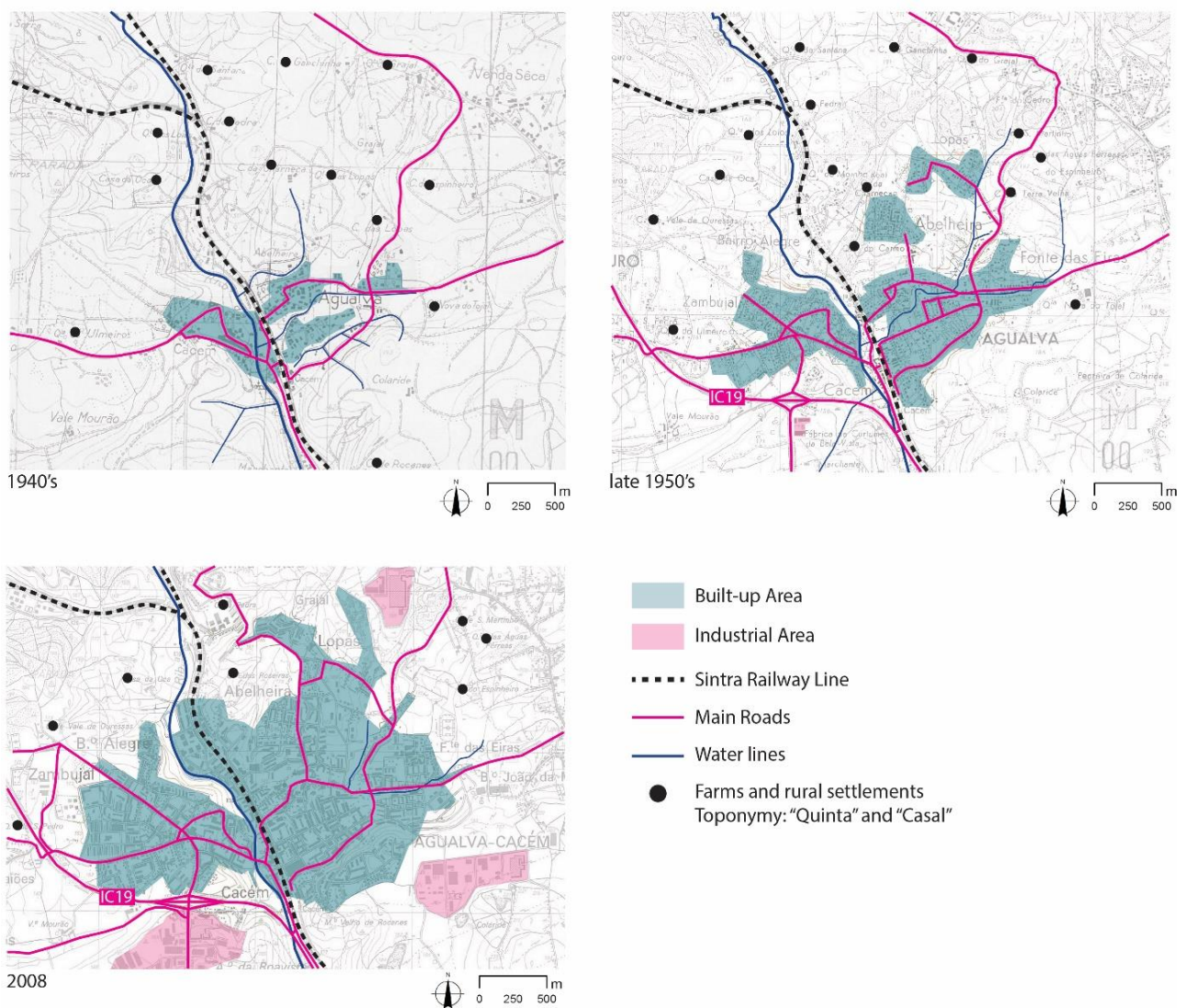


Figure 26 – Diagrams showing the evolution of the landscape based on military cartography (1940, 1958, 2008).

Source of the cartography: IGOT, University of Lisbon

6.5.2. The Sintra Municipal Green Plan (*Plano Verde do Concelho de Sintra*)

The Sintra Municipal Green Plan (SMGP) is a study elaborated as a result of a protocol between the Municipality of Sintra and ISA/ADISA (*Instituto Superior de Agronomia*, University of Lisbon) coordinated by MAGALHÃES (2005). It consisted of a proposal of the green network of the municipality of Sintra, considering a variety of geographical and juridical information including topography, cartography related to the nature of the soils, heritage, monuments and equipment of the municipality. A fundamental goal of this study was to develop a land planning methodology which combines human built systems and ecological systems, emphasizing the duality between dense build-up areas and natural landscapes. The green network is a fundamental feature in urban planning, and should be taken into account for its contributions to a sustainable development of urban settlements and humanized landscapes.

Based on the concept of “landscape morphology”, that the form of landscape is a result of its structures, the SMGP aims to propose a green network plan, in a municipal level, whose results can be integrated in the Land Use Plan of Sintra (PDM) and contribute to its revision and updating, mediating the impact of the present influence of the human activities. Some goals of the study are the following (MAGALHÃES, 2005):

- Ecological evaluation the territory, identifying its vulnerabilities and potentialities, in order to mediate the human activity and the landscape; to seek a balance between built and unbuilt territory;
- Interpretation and analysis of the landscape through the study of the biophysics of the site: hypsometry, sun exposition, geomorphology, soil studies, soil permeability, native vegetation, terrain modulation, data related to erosion risk, as tools to determinate the Ecological/Green Network of the Municipality;
- Delimitation of typologies of space and proposal of a concept of intervention, contemplating interconnected green urban public spaces;
- Proposal of a network of potential bicycle and pedestrian pathways in the territory and along the waterlines;
- Integration of the proposal in the frame of regulations related to the territory (Reserva Ecológica Nacional, Reserva Agrícola Nacional, Directiva nº92/43/CEE);
- Proposal of regulations that limit the land use of areas which are part of the Municipal Green Infrastructure.

The SMGP study is relevant for this dissertation, as it was an important source for the analysis of the territory of Agualva-Cacém and the intervention area, and provided important spatial information that was a starting point for the proposed requalification project.

The city of Agualva-Cacém presents a dense urban fabric surrounded by large open green areas, that interstitial spaces between the suburban cities that are distributed along the Lisbon – Sintra urban growth axis. These “green belt” city edge areas are mostly abandoned fields with no concrete use, or farmland, with little morphological and social connection with the city. The urban ecologic infrastructure areas marked in the map includes mostly urban voids and small green areas. The most important element to be noticed for its size is the Jardas linear park, located on the west side of the railway, completed in the framework of POLIS program during the last decade. The park is fundamental for the protection of the riparian ecosystem, and is widely used by the population for recreation activities. In the east part of the railway line (Figure 27), two relatively big green areas part of the urban green infrastructure can be noticed: one in the northeast part- these green interconnected spaces are currently urban voids and the intervention areas of the dissertation’s project; the other in the southeast is a steep area with dense vegetation that morphologically separates the city from a neighbourhood built on the upper side of the slope. In conclusion, the requalification project that will be further presented aims to unify, the scattered mosaics that compose the urban ecological infrastructure nowadays, in order to promote a green continuity among the urban fabric.



Figure 27 – Ecological Network of Agualva-Cacém based on geographic data of the SMGP. Source: Adapted from SMGP (2005/2008).

6.5.3. Demography

The county of Sintra is known for the cultural diversity of its population, as it is pointed to be the county in Portugal with the biggest number of foreign inhabitants. Approximately 9% of the population comes from a foreign country, which corresponds to more than the double of the average national percentage, and the highest among the MAL. This cultural diversity is also present in the city of Agualva-Cacém, as about 11 % of the population comes from a foreign country, who immigrated to the city in the 1990's (4056 foreign inhabitants out of 30115 inhabitants). Among this percentage, between 25-32 % come from Cabo Verde, 16-17 % from Angola, 16 % from Brazil, 14 % from Guinea-Bissau, 6-8 % from other European countries, 6 % from São Tomé e Príncipe, 1.3 % from China, 0.6-1 % from Mozambique and 0.6 % from India. Most of the population is composed by young adults and adults (active population), and a high rate of unemployment is estimated among this group – about 15 % of the population. As far as education is concerned, most of the population did not attend institutions for higher education, and there is a relatively high percentage illiterate populationn- 11 % (ALTO COMISSARIADO..., 2011).

6.5.4. Social Equipment

The city is overall well served with schools, kindergartens, and sports facilities, and also with small health centres and pharmacies (Figure 28). The lack of cultural facilities such as cinemas, theatres, museums, and arts-related infrastructures is perhaps a fact to be noted.



Figure 28 – Social Equipment in Agualva-Cacém based on geographic data of the SMGP. Source: Adapted from SMGP (2005/2008)

6.6. New environmental strategies of the municipality of Sintra

In the frame of the seminar “Ecologic Infrastructures and Landplanning in Portugal” (*As Infraestruturas Ecológicas e o Ordenamento do Território em Portugal*), that took place in Lisbon in June of 2017, Ana Queiroz do Vale, who is the Municipal Director of Environment, Planning and Territory Management of the Municipality of Sintra, gave her input about land planning and environmental strategies to be implemented in a near future in Sintra. In this seminar were presented important ideas that are in accordance with the ones described in this dissertation, namely the importance of rethinking public space and implementing green and blue infrastructures in growing urban territories. In a contemporary context where cities are growing in a fast pace, it is relevant to consider that the “city-system” is deeply connected to the “natural system”. In this sense, the concept of urban metabolism is fundamental- it is defined by the quantification of resources and energy needed to support human activities in the city. The green infrastructure in the city assumes therefore an important role in a context like the one of the metropolitan area of Lisbon, in terms that it has the potential to interconnect urban islands, considering that 80 % of the population of Sintra lives in cities. Leftover spaces in the city – urban voids – and existing green areas work as anchorage points to arrange the green infrastructure of the city; Rivers and streams work as natural corridors that should be protected, rehabilitated and equipped with soft mobility, establishing the urban blue infrastructure. New green and blue infrastructures are planned to be implemented, for example, in the city of Mem Martins, through the rehabilitation of the Lajes stream (QUEIROZ DO VALE, 2017).

According to this presentation, the municipality is therefore engaged into investing in new blue and green axes for a long term urban rehabilitation towards sustainability, and recognizes public spaces as important features with environmental, social and economic value. Although the presented projects in this seminar do not correspond specifically to the city of Aqualva-Cacém, the goals established by the municipality are aligned with the ones presented in this dissertation – the development of a green and blue axis, and the simultaneous connection of different public spaces (QUEIROZ DO VALE, 2017).

7_Proposal

7.1. Analysis and contextualization of the intervention area

The intervention area includes three distinct contiguous spaces that reunite interesting ecological and urban characteristics. An analysis of the intervention area and a description of its localization is to be followed, and will be divided into two parts: first, this axis will be regarded as a whole, and secondly, a more detailed overlook of each component is to be made. This integrated analysis is made in order to search for potentialities and urban challenges, important to considerate during the design phase.

The intervention area unfolds into three different spaces (Figure 29, Annex III): *Avenida dos Bons Amigos* – a vital artery and perhaps the most important avenue of the city in terms of offer of commerce and services (Annex V); the area surrounding the artificial lake of *Quatro Caminhos* – an abandoned area forbidden to public trespassing for security reasons; and the area of the proposed North Park – an open field which survived the urban construction boom, used spontaneously by the neighbourhood as a crossing area and for walks. If, in one hand, the avenue is an urban space of agitation, of daily pedestrian and motor vehicle movement during daylight, the other two areas are characterized for being abandoned areas and scarcely used, connected solely to monofunctional residential buildings (Annex V).



Figure 29 – Intervention Area based on Google Earth imagery. Three spaces of intervention: (1) Bons Amigos Avenues; (2) Quatro Caminhos Park; (3) North Park.

7.1.1. Urban Ecological Context - Integration of the axis in the SMGP

The intervention area reveals an interesting juxtaposition to the green network of the city, as it is illustrated in the Figure 30. The surrounding water system is composed by a network of waterlines which connects to a main watercourse, the Jardas stream. The spring of this watercourse is located in Carregueira sierra (*Serra da Carregueira*), crossing a variety of urban agglomerates along its course. A waterline which is part of this network runs along the *Bons Amigos* Avenue towards the Jardas stream, located at the west side. The water runs however superficially through the asphalt area and underground through the sewage system. A contiguous area of this waterline is important to be noticed, particularly in the bottom part of the avenue. These areas can be defined as being relatively plan, located either upstream or downstream, with high levels of soil humidity and high probability of being flooded, providing poor conditions for the foundation of buildings and climatic comfort (MAGALHÃES, 2005). The areas of the *Quatro Caminhos* Park and of the North park are part of the urban green infrastructure, as they are open abandoned green fields, where mostly spontaneous vegetation grows. A waterline crosses the border of the *Quatro Caminhos* Park area, where the water also circulates direction into the Jardas stream.

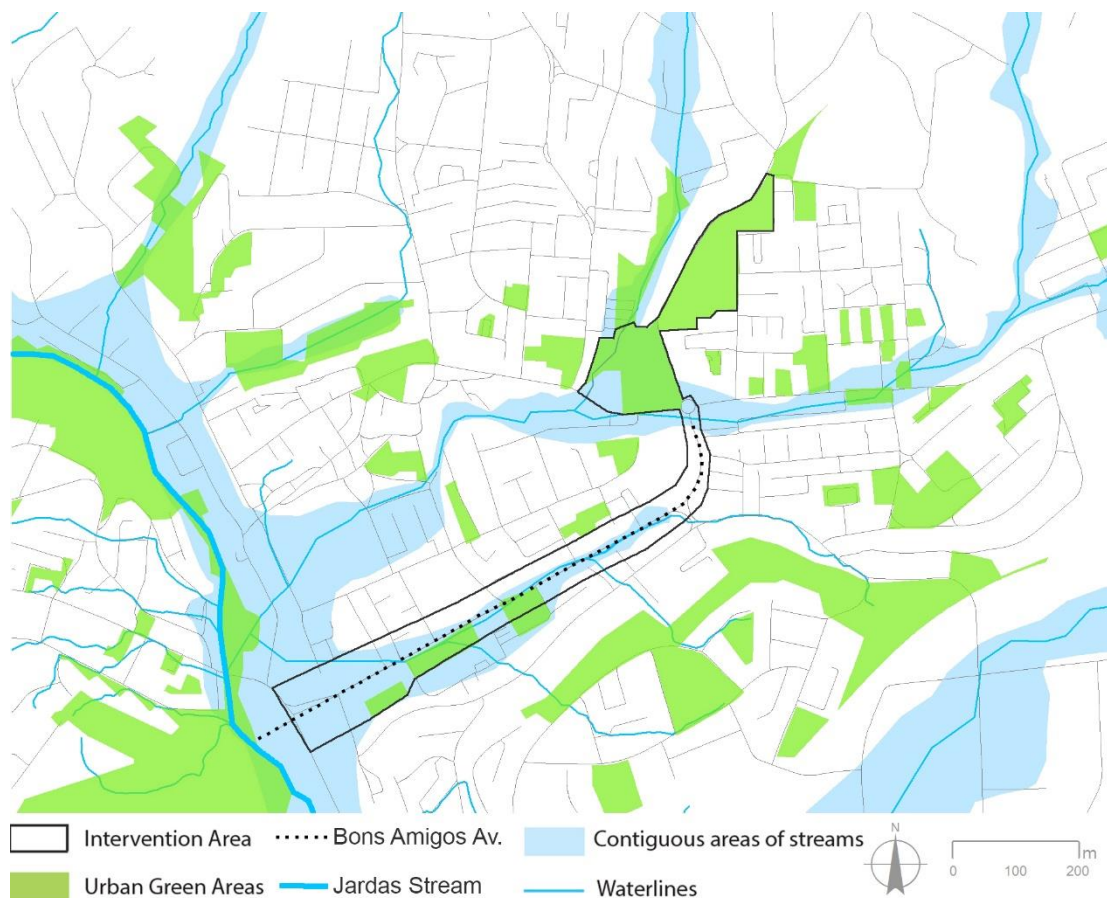


Figure 30 – Urban ecological network around the intervention area, based on geographic data of the SMGP.

7.1.2. Urban Ecological Context - Integration of the axis in the urban green network

As a result of the rapid urbanization process and lack of a thoughtful urban planning, the city of Agualva-Cacém is provided with a relative low number of green public spaces (parks, gardens, and squares) dispersed around the territory, without any structural relation between them. In general terms, there are some green public spaces (Figure 31), and they are used by a moderate number of people during daylight, however the majority of existing green spaces are urban voids with no use. The proposed planning and design concept follows the concept of *continuum naturale* (MAGALHÃES, 2001) emphasizing on the importance of the continuity of green areas. This continuous system promotes a continuous system of water circulation, soil protection, additional biodiversity value, and air purification. The axis composed by the avenue and the two parks establishes a connection between the Jardas Linear Park and open fields located in the north (Figure 31). The proposal intents also to connect the avenue to vacant and existing urban squares and small gardens contiguous to the street, in a way to promote an interconnected system of open spaces accessible to the population for recreation purposes.

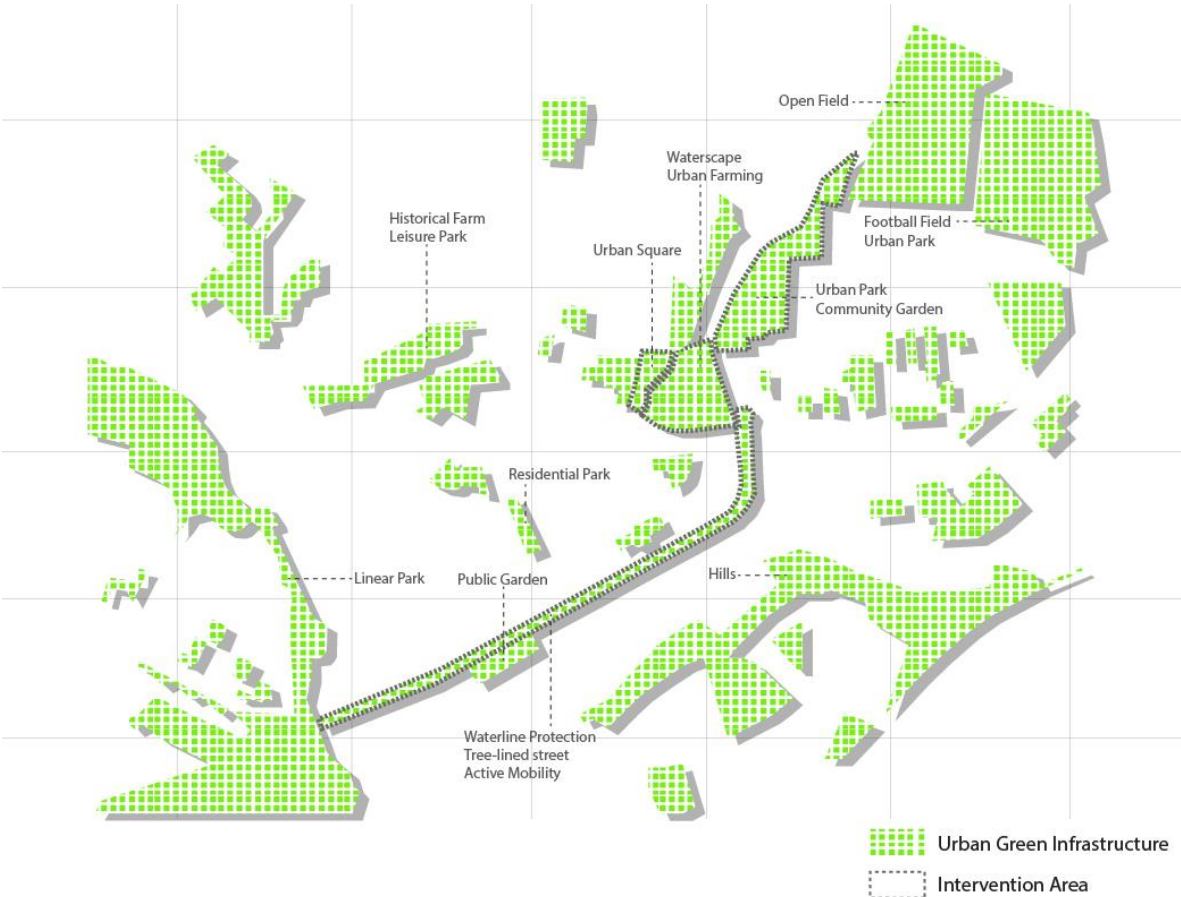


Figure 31 – Urban ecological network around the intervention area, based on geographic data of the SMGP, and graphic representation adapted from Dee, 2001.

7.1.3. Integration in the Route System proposed by the Sintra Municipal *Green Plan*

Another relevant factor for the delimitation of the intervention area was the proposed network of pathways made by the SMGP (Figure 32). These pathways are important structural features, as they assemble a network that connects different typologies of public spaces/places such as green infrastructure areas, important historical landmarks, and other useful urban entities (train stations, bus stops, schools, services, and other social equipment).

To develop such systems in the city is a major necessity for its environmental and social benefits. First, by creating more opportunities for soft mobility in the scale of the city, more space is reclaimed by pedestrian and cycling movement to the car traffic and its dominance in the urban landscape, reducing subsequently air pollution that results from the burning of fossil fuels. In these terms, the planning and design of a safe, continuous and comfortable soft mobility network tackles the problem of space fragmentation and minimization of the public space, by proposing a healthy use of the space, motivating physical exercise and increase quality of environmental atmosphere and of people's lives (MAGALHÃES, 2005).

7.1.4. Cycling Network

The scope of the SMGP involved the proposal of a network of continuous cycling pathways in the territory, based on two main factors: the terrain inclination and the connections between relevant points in the territory in order to establish a comfortable, continuous, and convenient network. This network was delimited keeping in consideration that in order to promote comfortable cycling driving, the path inclination should not be superior that 5 %. For distances with no more than 150 m long, an inclination between 5 – 8 % can be considered, and for shorter distances than 45 m, the inclination should be between 8 and 10 %.

These bicycle pathways are intended for the daily use of the population within the city, interconnecting cultural and social equipment, as well as main transportation hubs, which in this case is the train station of Agualva-Cacém. The benefits of developing a cycling network, which is also adapted to skating, wheel chair circulation, are relevant as it contributes to the requalification of the public space, to non-polluting mobility, and to enhance quality of life to the inhabitants through more physical exercise. The network aims to establish itineraries both for long and short distances, for example, work-home, or home-station/bus stop, considering that Agualva-Cacém is served both by the Sintra railway line and the West railway line (*Linha do Oeste*), as well as leisure walks/bicycle rides.

7.1.5. Pedestrian Pathways associated to waterlines

The proposal of pedestrian pathways along the waterlines, integrated in the results of the SMGP, is a combination of the ecological function of the waterline with the necessity to rehabilitate public space. The ecological functions of the waterline include the circulation and cleaning of the water, as the margin of the waterline must be covered with native riparian vegetation which slows down the speed of the water and regulate its chemical quality. These riparian corridors are vulnerable ecosystems and the interventions in these environments are legally limited, although an integrated design solution can incorporate the social function of walking into this system by proposing a design based on the characteristics of the layout and morphology of the waterlines. In this way, an opportunity is given to new pedestrian pathways, as well as enhancing the ecologic quality and functioning of the riparian ecosystem (MAGALHÃES, 2005).

The two intervention areas and the avenue are crossed by pathways delimited in the SMGP associated either to soft mobility or to waterlines (Figure 32). According to this study, the proposal was organized through a hierarchy, based on the quantity and relevance of the places to be connected, in particular how important they are for daily flows of people – train station, schools, commercial areas, other services, etc. They are also associated with the ecological network of the territory, namely when associated to water and ridge lines. The results presented in the SMGP included a network of cycling pathways in the scale of the municipality of Sintra, which followed low slopes, and a network of cultural pedestrian paths, connecting cultural landmarks distributed among in the territory (MAGALHÃES, 2005).

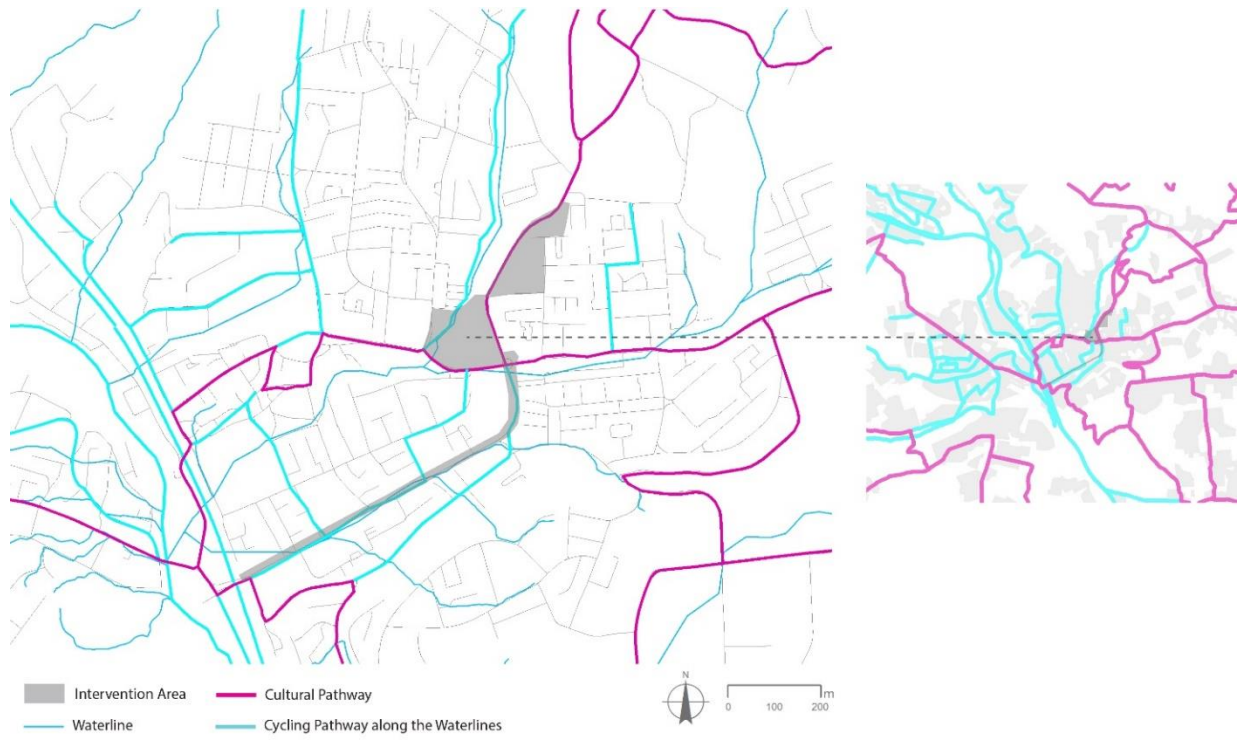


Figure 32 – Integration of the intervention area in the network of cultural and bicycle pathways, based on the proposal and geographic data of the SMGP. Adapted from SMPG.

7.2. Description of the Proposal

7.2.1. Participation Method with the Communities

To plan and design while being in contact with the local communities is an advantage point and an empowering tool in today's processes of placemaking. This topic is theoretically approached in this dissertation, however considering the positive results obtained by some landscape architecture and architecture practices, to involve local entities along the design process is a strategy that respects the local identity and power of decision, cooperating towards a more socially acceptable project and to a healthier use of public space. In the context of the county of Sintra and Agualva-Cacém, local assemblies do happen, however they seem to arouse very little interest among the population, which is a reflection of a possible political alienation and a prevalence of a sense that the individual opinions do not count on the future of the city. In a fragmented social context that Agualva-Cacém seems to present and lack of interest for the public space, mobilization and education of people would be promoting activities and debates through existing social associations.

Following the participation method done by the Berlin-based landscape architecture office Planung Freiraum, in the case of Agualva-Cacém, the participation process could follow the following steps:

- Establishment of a cooperation between designers and the local council (*Junta de Freguesia*) and organization of three discussion sessions with three groups of participants- one for children / teenagers, one for elderly people, and another one with adults. It is important that a people with different backgrounds are reunited, in order to represent the diverse composition of the city of Agualva-Cacém, as well as people who live in the surroundings of the intervention areas.
- The participants are challenged to locate their favourite and least favourite places in big-sized printed site plans, as well as to express their opinions about what needs to be changed; They suggest new areas for passive activities - sitting, reading, talking, walking, laying in the grass, as well as active areas used for running, playing, playing sports, gardening, etc.
- The designers combine the information into a plan that shows people's intentions and wishes towards the intervention area (Annex IV), important to consider for further phases of the planning and design of the sites.

7.2.2. Overall Concept and Goals

The proposal of the requalification aims to add value to two different and complex systems that coexist in the landscape: human and ecological systems. This is achieved through the planning and design of recreation areas (parks, public space), while promoting the protection of ecological systems (soil, water protection and climate regulation) through vegetation and establishment of green areas. In this sense, it is essential to design a continuous and sustainable system of green infrastructure (Figure 33 and Annex VI), water dynamics and a comfortable soft mobility network. This green continuity can be achieved through a great variety of design strategies, such as the afforestation of the axis, starting in the beginning of the avenue and continuing throughout the axis up until the North Park. Another important feature to contribute to the continuity of the system are the bicycle and pedestrian pathways, which were planned and designed having in consideration the sidewalk infrastructure of the areas surrounding the intervention area, as well as the previously mentioned pathways designated by the SMGP. An additional design concern was the one of offering a variety of social spaces, labelled as “urban squares”, widely distributed along the axis, and integrated them in the three big intervention areas. The result both includes pre-existing small parks and gardens of the city, but also plans the creation of new socially active hubs, which work as main leisure and meeting points, and can be easily reachable by walking or cycling (Annex VII).



Figure 33 – Overall Intervention.

7.2.3. Bons Amigos Avenue

Bons Amigos Avenue (Figure 34) is an important street in the local scale, due to the following factors:

- It is an access road between the highway IC19 (Sintra-Lisbon connection) and the east side of Agualva-Cacém, having a considerably high traffic movement;
- The avenue is the pedestrian connection between adjacent neighbourhoods and the station, which is used daily by thousands of people during daytime, mostly to go to their workplace in Lisbon;
- High concentration of commercial activities and services.

Challenges:

- In some segments of the avenue, the sidewalk is too narrow and most of the surface area is occupied by car parking. This situation cuts off the vitality and fluidity of pedestrian movement that an urban sidewalk should present;
- Absence of areas of stay and benches along the sidewalk;
- The intense car traffic makes the urban atmosphere loud and polluted;
- The avenue is windy, perhaps due to the fact that all the adjacent buildings are relatively high (more than 20 m), which creates a tunnel effect of wind circulation;
- All of the surface of the avenue is impermeable, which is incompatible with the ecological situation of the street – a waterline, leading to overfilled sewage systems and flooded areas during rainy days;
- Lack of green areas and trees that could mitigate the problems presented in the last four topics.

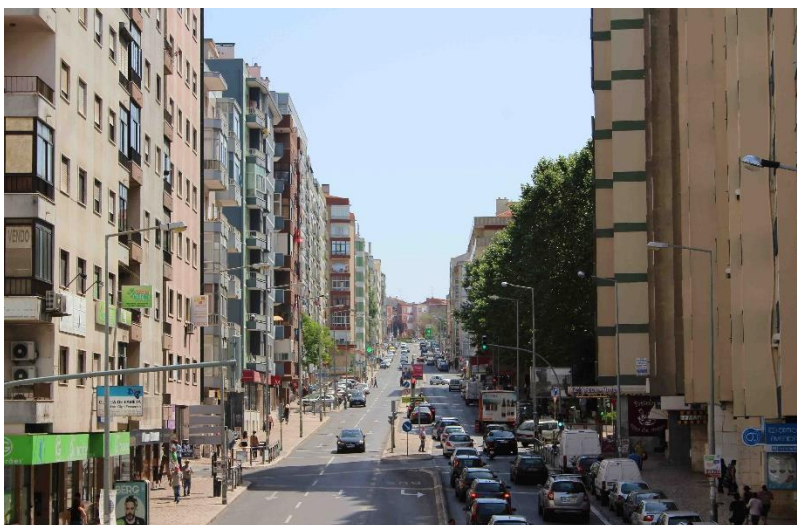


Figure 34 – View upon the Bons Amigos Avenue.

Potentialities of the Avenue:

- Strategic location: near the train station of Agualva-Cacém and proximity to the Jardas linear park, as well as to residential buildings;
- Existence of contiguous empty lots and urban squares, that can be incorporated in the proposal;
- Lively street during daytime, due to the numerous stores, coffee shops, banks, services, etc;
- The avenue is about 20 m, allowing the installation of rows of trees, new green areas and a bicycle lane.

Given the previously presented information, the resulting design strategies in this area are the following:

- Plantation of two rows of evergreen trees – one on each side, with different rhythms along the avenue, to create a more dynamic atmosphere and avoid excessive formality (Figure 35, Annex VIII). The planting of trees promotes shade during the summer and retention of pollutants in the canopies and soil.
- Creation of alternated green stripes with herbaceous and arboreal vegetation, in order to increase infiltration of rain water. This stripe also marks a visual separation between the sidewalk and the road, offering more comfort to the passersby;
- Conception of a corridor in the middle (Figure 36), where the bicycle lane is located, and a green bioretention stripe. This low impact strategy consists of a middle corridor with vegetation in a way to control the quality and quantity of water in the avenue. The benefits of this infiltration stripe include the improvement of the urban atmosphere and the control of storm water, as the water is there retained and slowly conducted towards the Jardas stream. This solution also promotes the cleaning of the water, as the particles it transports are retained in the soil (CLAYDEN, DUNNETT, 2007); Another addition is the conceptual intention of this strategy to make the water cycle visible, drawing attention to the fact that the street is a natural waterline;



Figure 35 – Streetscape intervention in the Bons Amigos Avenue.

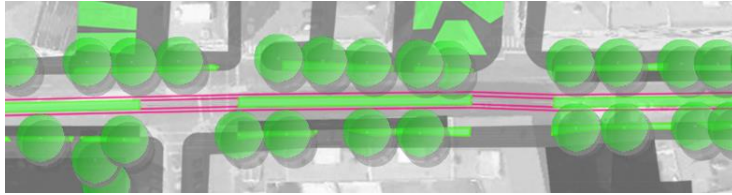


Figure 36 – Close-up of the redesign of the avenue.

- Enlargement of the sidewalk width, in order to transform the street into a lively public space, where people can walk comfortably and sit down in benches. This is ultimately an important strategy also for the local economy and consumption, as a wide and comfortable sidewalks attract more people to stroll and stop near the shops;
- Incorporate the avenue in the proposed pathways network of the SMGP, in a way to promote a continuity of mobility.

7.2.4. *Quatro Caminhos* Lake Park

The site of the proposed *Quatro Caminhos* Lake Park (Figure 37) is nowadays an open-air scar and an underused space among the urban fabric. Approximately twenty years ago, earth works started to take place for the building of a big complex that included a hospital, a shopping centre, a four star hotel, public services and parking places. Due to irregularities regarding the land owning, the construction of the complex stopped and an excavated area with roughly 18 m depth was left abandoned, accumulating precipitation water over the years. This massive accumulation of water ultimately formed an artificial lake, and this hypothetically happened due to the deep excavation that reached the water table level. The whole area was then fenced, presumably because of the danger such a deep water level represents to the public use, and an ecosystem was formed: fishes and a variety of birds inhabit the lake and the lake margins. Up until now, the site is left alone to its own dynamics, with little human presence. The only marks of human intervention are revealed through urban gardening mainly in a narrow strip in the east side of the area. It is therefore a site with many particularities, given its urban complexity, and a potential area for a sustainable public use.

Challenges:

- Potential danger for the public use, due to the deep water level;
- Continuous state of abandonment of the space over the decades;
- Most of the space is underused, except small portions of land occupied by urban gardening;
- State of degradation of an old building, that was a former fire station;
- All the area is fenced with metal plates, which perpetuates an image of abandonment and an atmosphere of isolation in the core of the city;



Figure 37 – View upon the actual state of the site. Souce: Blog Rouxinol dos Pomares, 2016.

Potentialities of the Site:

- The water element is interesting for the interaction between people and the space. Once integrated in a green and accessible area, it is a catalyst of new leisure activities that bring good quality of life to the inhabitants (for example fishing, sightseeing, relaxing, and eventually swimming);
- The water body with an extensive area of about 4000 m² influences positively the microclimate of the region. This temperature regulation function of the water is relevant in a city like Agualva-Cacém, densely built, with little green areas and most surfaces covered with asphalt and pavement, as the water absorbs the heat
- The established ecosystem adds wildlife value to the city. An ecosystem of its own has developed – fishes and birds live inside or in the margins of the lake.
- Pre-existence of many trees and shrubs in apparent good health conditions, that can be incorporated in the design of the park.

Design strategies for the *Quatro Caminhos* Lake Park (Figure 38, Annex IX and Annex X):

- Interconnect the proposal with the network of pedestrian and bicycle pathways proposed by the GPS: one that crosses the site in the direction west – east, as well as in the direction southeast – northeast; another that is associated to a waterline;
- Proposal of the requalification of the old fire station into a cultural centre for people of different age groups: support for activities related to arts, culture, languages, education, sports, dance, urban gardening etc. This aims to attract more people to the area and to create a strategic meeting point;
- The topography of the site was very little changed: the strong limits of the lake were kept in order to reference to the memory of the site. The steepest areas, in particular in the north part are to be kept with the original arboreal vegetation, and a stripe in the south is to be planted with vegetation to promote slope stability;
- Creation of two main active areas – the first one surrounding the old fire station, where people can have a more contemplative contact with the water through a platform, and where a kiosk can be installed. This area will also work as an access area to the new cultural centre. The second “active area” is located upwards, and it reunites a sequence of social spaces such as a playground and a square where people can sit down. The location of this area is in the interface with the sidewalk is a result of the idea that the edges are essential areas, as they mark the distinction between two physical environments;



Figure 38 – General plan of the *Quatro Caminhos* Park.

- Design of open green meadow fields near the active areas, with potential for free running, playing, sports, dog walks, etc;
- Delimitation of an area of urban gardening near the cultural centre. Through the creation of associative groups or individuals, people would apply to parcels where they can grow their own food. The resulting products could be used either for self-consumption or for public cooking events / public kitchens, charity events, etc. Taking in consideration that some public initiative urban gardening parcels already exist on site, this feature is important in the design strategy, and recognizes the practice of urban gardening as an essential tool of participation, social responsibility and community meeting;
- Requalification of the waterline (in the west side of the site), with native riparian vegetation, in order to promote good chemical quality of the water, as well as to decelerate the speed of water circulation;
- Strategic implementation of aquatic vegetation, to enhance the biodiversity of the place, as well as to establish visual barriers in order to discourage the contact between water and people in particular in the south side of the lake;
- Establishment of a fluid network of pedestrian and barrier-free pathways, connecting the main areas with the surroundings of the intervention area, in particular between the active areas, the water line. Important to emphasize is the design of a path that crosses the lake, functioning as an essential connection element and a contemplative path. Near the road in the east part, a main connection path connects the Quatro Caminhos Park to the Bons Amigos Avenue all the way until the North Park. The pedestrian circulation in this part is protected from the noise of the road through vegetation stripes with planted trees, and a direct visual contact with the water along the path can be made;

- Promote a dynamic sensorial contact with the water through the strategic direction of the paths, their variable distance until the water margin and vegetation. The aim is to design different places that offer distinct sensorial situations related to the lake: perceptible / hidden, close / distant, tactile / unreachable, contemplated / concealed (Figure 39, and Annex XIV).

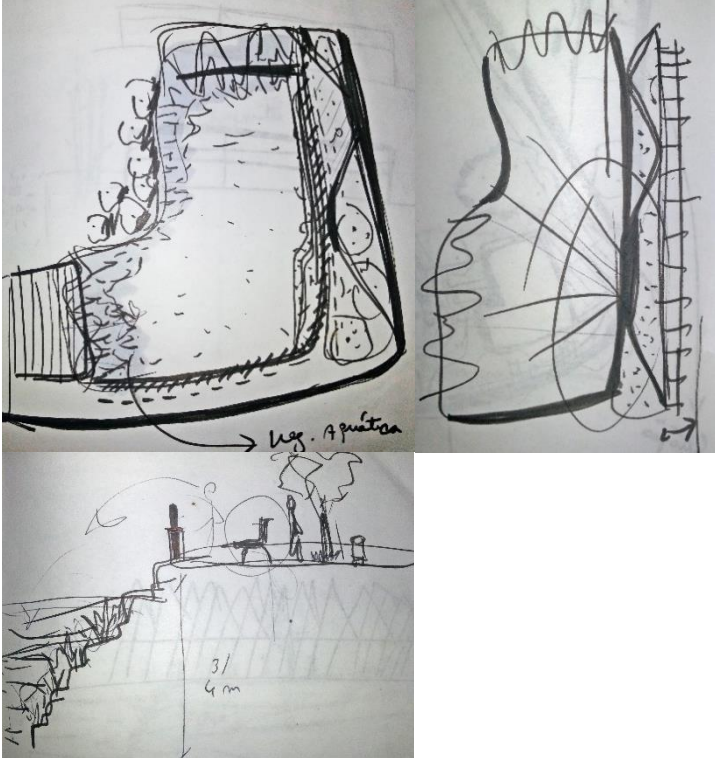


Figure 39 – Initial sketches for the *Quatro Caminhos Park*.

7.2.5. North Park

The North Park is the third component of the proposal, located immediately north of the *Quatro Caminhos* lake. This site was intended to be occupied with building lots (Figure 40), and the first for electricity installation and the access pathway were built, however due to probable legal irregularities, the construction stopped and the area was left abandoned. The site is surrounded by residential blocks, scout headquarters and is contiguous to a high speed road which accesses a main highway (IC16). Along the years, the space was left for little public use aside from casual dog walks by the residents and waste disposal, and ruderal vegetation grew freely. This typology of green open spaces is relatively common in the context of a suburban city like Agualva-Cacém, specifically due to the rapid urban growth, sudden constructions and lack of urban planning. The fact that the site is integrated in the green infrastructure of the city, and on the pathway network proposed by the GPS, makes it an interesting site to be intervened.

Challenges:

- General state of degradation and abandonment;
- Existence of invasive species such as *Cortaderia selloana*;
- Place of waste disposal;
- The surrounding monofunctional buildings contribute to make this area lifeless, with little pedestrian but frequent car circulation;

Potentialities of the Site:

- Interesting location in relation to the previous intervention areas, establishing a continuous system of green areas, pedestrian, bicycle and barrier-free friendly;



Figure 40 – Representative image of the character of the North Park site.

- The large surface area is convenient to design a park with different atmospheres, to be used by the residents;
- Existence of well-developed pine trees (*Pinus pinea*) that can be incorporated in the design;
- The tall spontaneous ruderal grasses create an interesting aesthetic effect which can be replicated, taking into account that this typology has low maintenance requirements.

Design strategies for the North Park (Figure 41, Annex XI and Annex XII):

- Design of a network of paths, with a central pathway that divides the park into two areas: one part in the west side, more steep, composed of mostly vegetation (dry meadows, shrubs and trees), to mark a separation between the park and the road, and to constitute a sound barrier; another part in the east side of the main pathway, where the main social area can be found. Overall, the system of paths aims to offer opportunities of mobility in both longitudinal and transverse directions; Tracing of a central bicycle path near the high speed road;
- Delimitation of an area to be used for urban gardening for residents (individuals and collectivities) in a sector where the soil is considered to have very good quality, and favourable to the growth of plants. In order to protect the soil, organic farming techniques should be utilized;
- Creation of two urban squares and one playground, as well as open green areas with watered meadows that can be used for recreation - by children to play, for free running, sports, etc (Annex XIII);
- Proposal of parking lots with paved areas mixed with planted trees.



Figure 41 – General plan of the North Park.

Conclusion

In the epoch of the Anthropocene, cities and suburban territories are growing worldwide at a fast rate, so it is therefore essential to assure a balance between natural and cultural space. Suburban cities which grow dispersedly in the territory represent an unsustainable model of city growth, and many are characterized for having spatial fragmentation and social problems. These territories have been growing in the western world in the last centuries, since the Industrial Revolution until today, representing a reality of how contemporary cities are formed.

Urban quality is an important factor that defines how human settlements have been developing in the territory, considering natural resources, size of the population, social justice, and conditions for health, safety and sustainable accessibility. In a suburban environment like the city of Agualva-Cacém where unregulated planning prevailed over time, the public space is an important tool that can bring benefits both in environmental and social levels, ultimately to contribute to a better urban quality, and work as anchorage places for urban identity. The practice of landscape architecture promotes the creation of comfortable, easily accessible, and sustainable public spaces, such as streetscapes, parks and urban squares.

Agualva-Cacém is a representative example of how many peripheral urban settlements grew unregulated, leaving many urban voids in the city's edges and empty lots among the urban fabric. These unplanned green spaces were interesting to be incorporated in the proposed requalification project of interconnected spaces – parks and avenue, as the project is a contribution to the change of the image of the city, and a possible solution to address ecological and social problematics.

The chosen design methods to change the urban image add value to a city which is mostly considered grey and with little community life on the outdoors. Different typologies of public spaces in the scale of neighbourhood such as community gardens, open or dense green areas, small public squares, waterscapes, playgrounds offer a variety of atmospheres in the city, and opportunities for several activities. The creation of participative, lively and comfortable public spaces plays an important role of developing local economies, contributing to healthy life habits and an inclusive city.

As far as the intervention areas are concerned, the design strategies proposed are meant to contribute to the green and blue infrastructure of the city; they also propose to enhance the urban quality through the factors analysed by the PPS: project public spaces that are easily accessible, that offer opportunities for sociability, that offer a wide range of uses and activities and that

provide comfort and a good image. The new proposal for the redesign of the avenue envisions a sustainable water management through the increase of permeable areas and suggests to make the waterline visible again, enhance local economies by proposing comfortable and wider sidewalks near the ground floor businesses, promote more shadow through the plantation of trees; The design of the Quatro Caminhos and North Park contribute to the inclusion of an abandoned terrain and/or water body for leisure activities, proposing to enhance urban quality in the neighbourhood scale. The overall strategy is a contribution to the green and blue infrastructure, composed of soft mobility infrastructure that can contribute to the use of the automobile for daily movements.

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