

The occupation analysis of seashores - a case study

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The analysis of the occupation of seashores - a case study

Abstract

The aim of this paper is to study Prainha neighborhood, located in the Morro da Cruz, in Florianópolis-SC. This neighborhood is an important link between downtown and the South of the Santa Catarina Island and it has an important role in the urban landscape of the city, because of its seashore occupation, the presence of panoramic streets and its connection with the sea and it is on the border os areas of natural preservation.

This paper intends to present an analysis of Prainha neighborhood and show the lack of concern of the State and the population with the historical, landscape gardening and geomorphologic aspects in the place. It was observed that the city plan of Florianópolis allows the occupation in areas of with steepness superior to 46.6%.

The research used the methodology of thematic maps for the evaluation of the problems and potentialities of the area. Among the developed thematic maps it can be remarked: map of urban referential, map of soil occupation, map of road system, map of accessibility, map of urban evolution, map of geomorphology, map of plants of great extent, map of steepness, map of infrastructure, map of the use of the soil and map of the city plan.

In the end of the paper it is shown some potentialities observed in the area for a sustainable development and also some suggestions to be considered by the State during the review of the city plan. Some of these suggestions are related to the fiscalization of the soil occupation and the determination of new spaces of public use for leisure.

Introduction

What is frequently happening in the urban landscape is the consolidation of buildings in inadequate places to the conservation of the environment, confronting the legislation of preservation. The occurrence of this type of irregularity involving mainly the seashore of the hills, the bottoms of valleys and the built patrimony favors the environmental unbalance and it provokes aggravating consequences in the urban space. The lack of permeability of the soil, the more and more scarce plants in the seashores, the implantation of constructions on flows of water and in accentuated steepness brings problems as landslide, rock blocks collapse, degraded rivers, erosion and flooding of low areas of the city in days with larger intensity of rains.

Prainha neighborhood, in Florianópolis, shows this reality. Despite its privileged location in the landscape of the city, the neighborhood has occupation irregularities. The intention of this paper is to present an analysis of this neighborhood, showing the lack of concern of the government and the population about the historical, landscape gardening and geomorphologic aspects in the place.

For the development of this analysis, the methodology of thematic cartography is used. In the 60's Ian McHarg (1992) was one of the pioneers in the use of the Thematic Cartography in the Urban Planning. The thematic cartography used for the elaboration of a geotechnical letter (equally thematic) according to the methodology of IPT - SP, Institute of Technological Researches of São Paulo are: topography, geology, clinometric (steepness), evidences of soil and rock movement and other occurrences (imminent risks), plants and urbanization (road and real estate register). For the urban projects, besides the geotechnical cartography it is necessary to map the historical evolution of the occupation, nets of urban services, typology of the constructions (volumetric, language, materials, functions), morphology of the spaces free from construction (form and structure of the streets, paths, squares and parks), dynamics of the urban life (movements and attractions). For the landscape projects there are the following themes: underground water, biodiversity, property of the soil, demography and significant views of the landscape (sceneries and observatories).

In this paper, it will be presented the analyses that were possible to be done based on the visitation of the neighborhood and in the cartography already existent and available for

consultation. The criteria used for the analysis are: road system, urban references, use of the soil, accessibility, urban evolution, geomorphology, primary plants, steepness x occupation, infrastructure and city plan.

It is important to point out that the analysis of the morphological characteristics of the land, community and of its surrounding areas are a primordial stage of the process of urban project. It consists on the diagnosis stage because it makes the interpretation of the conditionings possible for future elaboration of the prognostics, potentialities and project guidelines. Frequently, in the daily routine of the architects' project practice, the topographical letters and the whole thematic cartography to them associated are inconsiderate. In this study, we intended to point out the importance of the geotechnical cartography as project instrument and as form of help to take decisions about the urban planning.

Seashores urbanization

An increase of the world population has its impact focused on urban areas - both in developed countries or in countries of transitory or agrarian nature. More and more people are disputing for less and less space. A decisive factor in the urban areas is the high cost of the land in response to a decrease number of its offer.

In the United States, for example, 53% of the total population in 1960 was concentrated in 213 urban areas (93 million people). These people only inhabited 0.7 percent of the available land. The tendency of other cities in the world is to show problems of similar urban growth. Other ways of using the land should be found if the cities continue to grow and also to prevent the stagnation.

Caracas, Hong Kong, Honolulu, Pittsburgh, Los Angeles and San Francisco have already faced growth population problems because of the seashores that limit the urban areas.

These cities are used to illustrate the fact that similar problems exist all over the world and they are not located. The growth problems that these cities face can be relieved by the use of available lands which are considered exceeding and that were considered not built for all of the practical purposes, due to the steep inclination.

Many cities located in mountains or in coastal plains soon will be affected for situations that limit the growth. There are cities in search for more space for expansion because they are confined by the seashores and by the water. For this reason it is important to foresee a responsible urban planning that respects the morphological characteristics of the areas of expansion.

In terms of construction, it is more practical to build cities in the plains and valleys. Moving heavy construction equipment up the hill, installing infrastructure as nets and road system in the seashores usually has prohibitive costs. The constant threatening of sliding accentuates the construction problems and the problems of living in the seashores. However, many of the most populous urban areas of the world have to be adapted to the construction in the seashores of the hills. Hong Kong, Los Angeles, Rio de Janeiro, Honolulu, Pittsburgh, and Caracas are all in areas of sharp seashores.

In the Brazilian cities the environment and landscape are inconsiderate in the project. From the first European settlers' arrival, sceneries of mountains and hills are exalted, but the modern urbanization camouflages the form of the seashores and it degrades the urban habitat.

The seashores of the hills and mountains are a subject of the landscape study because "nobody can hide a city on a hill" (Mt 5, 14), be it to amaze, be it to desolate who observes it.

The landscape should be composed of hills that could be seen from the sea and rivers; with economy based in the landscape gardening and environmental characteristics; being characterized as places which we will remember forever. Without such an identity we cannot say that a city has personality.

The character of a place is founded in the attitude of the ones who built it, in the sympathy they treated the environment and in the value that they attributed to it. The value (ethics and aesthetics) is the philosophical aspect of the landscape architecture.

Every project needs to be committed with the environment and its elements: *sopés*, *topos*, *ombreiras* (privileged places for the construction of observatories) and natural drainage lines (privileged places for the location of parks of conservation of the water), aiming the preservation of the biodiversity.

The area of study: Prainha Neighborhood

The area selected for the development of this paper is Prainha Neighborhood, located in the Morro da Cruz, in Florianópolis. This hill corresponds to a mark of the landscape of the city because it works as background to the access of the city and the urban center.

According to Ropelato and Afonso (2004), Morro da Cruz has suffered several modifications due to the urbanization of the areas next to it (i.e. downtown). Areas, which were unfavorable to the occupation, were used and there is a lack of fiscalization.

The occupation of Morro da Cruz occurred because of the access of the south of the Island of Santa Catarina.

The first streets that appeared were the ones that outline the hill and later the perpendicular roads increased to the topographical curves (illustration 01).

The deforestation of the area increased with the years, as well as the occupation of the preservation areas.

Prainha Neighborhood is in the link of south connection between the center and the south part of the Island of Santa Catarina. Nowadays, it has been suffering great urbanization losing its character of preservation area. It corresponds to one of the first neighborhoods of the city of Florianópolis and it owes its name to its old proximity with the sea (MANDAJI, AFONSO, 2004).

The area of study is located between Silva Jardim St. and Prof. Maria Julia Franco St. These two streets are in the northwest side and they are connected with Mauro Ramos Ave., and in the other side (northeast) they propitiate access to the south of the island. With the construction of the tunnel (illustration 01) there was a decrease in the flow of vehicles in the place and it characterized the local roads. Besides, the area keeps certain relation with the sea, but there are many private constructions there and people do not have access to the water border.

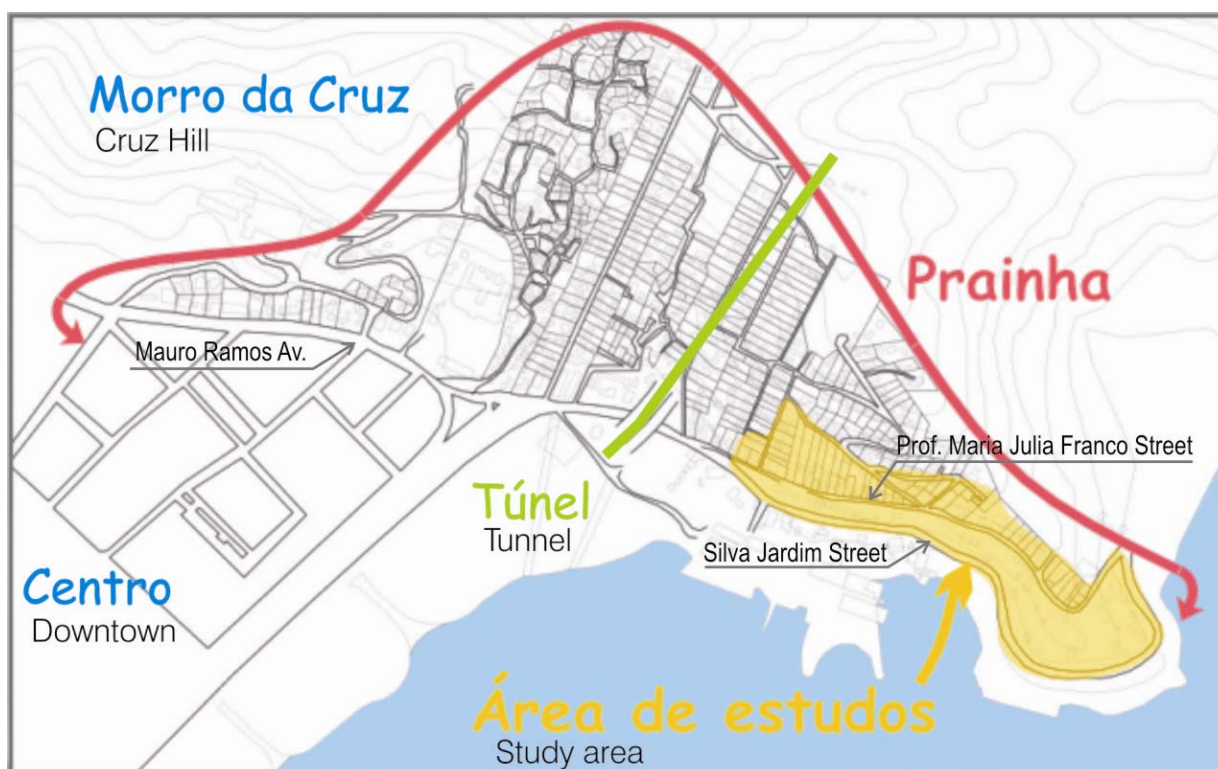


Illustration 01. Map of Prainha Neighborhood.

Analysis of Prainha Neighborhood

Road system

In the map of the road system the intention is to analyze the main accesses to the area of study and the intensity of vehicles flow.



Illustration 02. Map of the road System

It is verified that the area of study is located along Prof. Maria Julia St., and Silva Jardim St. The second street has an intensity of transport flow bigger because of its pavement type and also due to the fact that it is a collect road, unlike Prof. Maria Julia St., which is local. These streets surround the area and they work as panoramic streets, what makes possible to admire the sea from different parts.

There are many exclusive roads for pedestrians since the area is situated in acclivity.

Accessibility

In this aspect, we analyzed the parts that cannot be used by handicap people (according to NBR 9050/2004). The seashore areas present many problems in relation to this theme, but it is believed that the discussion of the main problems can facilitate the proposition of some adaptation measures.



Illustration 03. Map of the critical points of accessibility

The lack of concern with the accessibility was verified in the area of study because there is not a prediction of safe movements for the pedestrians. There were identified four critical points: three in Prof. Maria Julia St. and one in Silva Jardim St. It was also observed the presence of steps, with more than 20 centimeters height, in the public walks; area of the street without area to the pedestrians' circulation; steep stairways for access to constructions; and different configurations of paths, with materials that are not specific for external use. Besides, the dimensions of the existent paths are not appropriate to a person with wheel chair in places with lateral unevenness there is not handrails, and there are not informative tactile elements on the ground or in maps to help the blind people's displacement.

Urban References

The limits, the focus points and the reference marks of the area are identified and analyzed in urban References.



Illustration 04. Map of the urban referential

The limits of the area of study are characterized by a water divisor in the East that separates Prainha and Chico Mendes neighborhood and it is limited by the sea in the West.

The main roads surround the area working as panoramic roads and they have two intersections on the north and south, as indicated on the map.

The main reference marks are the commercial equipment and of service indicated on the map, which are Daifa Hotel, Veleiros Hotel, Veleiros da Ilha Iate Clube and Penhasco Club because of its privileged position.

Urban evolution

The growth of the occupation is analyzed in the area considering the formation of the roads and the buildings construction in *evolution*.

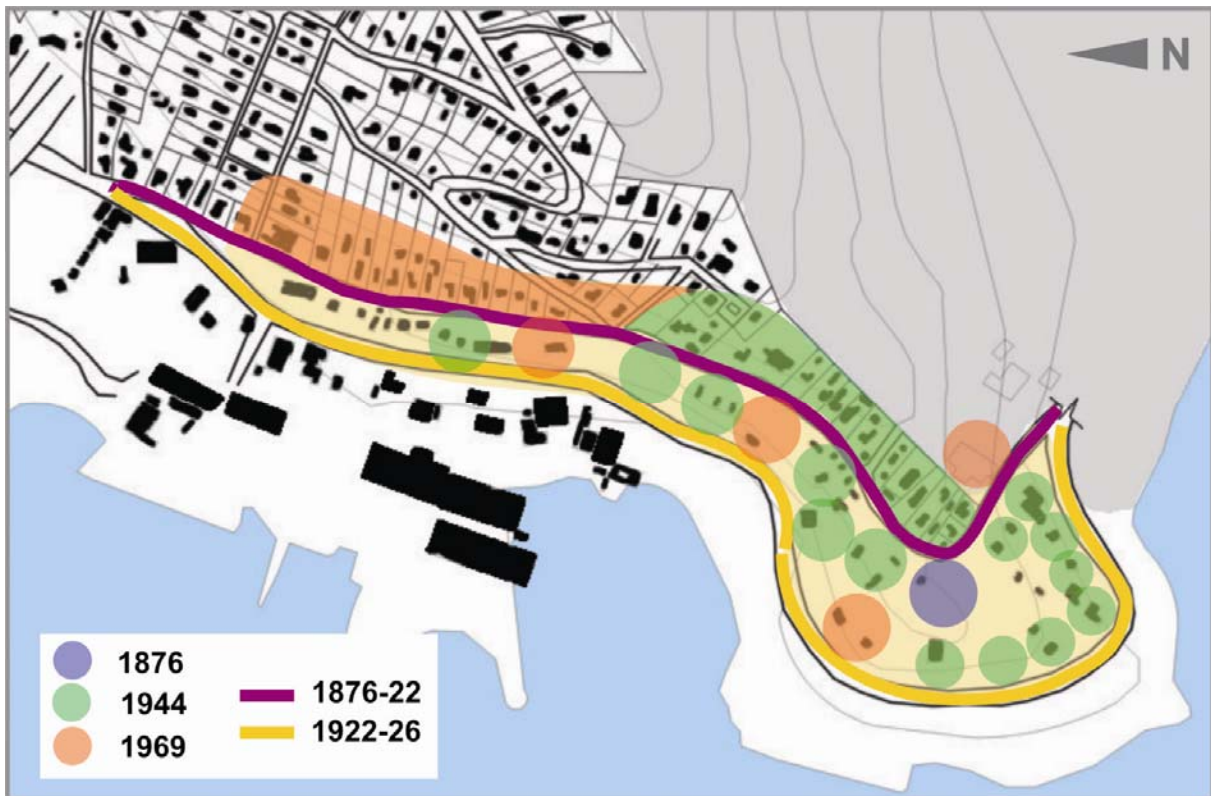


Illustration 05. Map of the urban evolution in the area

From 1876 to 1922 the only existent road in the area was Prof. Maria Julia St., and at the same time it was constructed the place marked with the blue color in the illustration 05. In 1922, the resignation of Silva Jardim St. began. At that time there was a relation with the sea in all its extension. By the formation of this road, a more concentrated occupation began in the area as can be seen in the green color on the map of the illustration 05. The configuration that is the closest to the one that we can see today started in 1969.

Geomorphology

In geomorphology, it is analyzed the geological formations of the area of study taking into consideration the types of soil used.

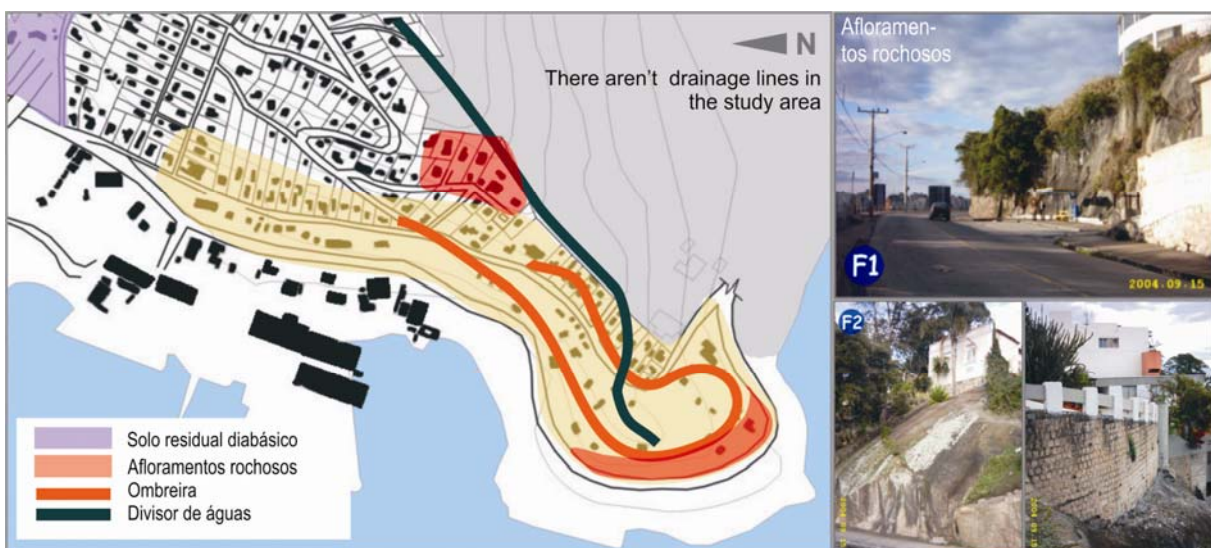


Illustration 06. Map of the geological formation

The area of studies is characterized by a water divisor, also having an area considered as *ombreira* of hill susceptible to the occupation with observatories because it has a great view to the sea.

In the West part, it has rocky parts, which can be identified in the illustration 06 because there are some constructions built on the same.

Besides, it is important to report that the area does not have residual soil and natural drainage lines.

Plants

In this item, the presence of plants is analyzed and/or original traces of the Atlantic forest in the area. However, what was verified in the area is the inexistence of remaining vegetable areas. There are only some without expressiveness or implanted by the local residents.

Steepness x occupation

In steepness x occupation, the data are analyzed in accordance with the percentage of slope of the areas with its occupation made with constructions.

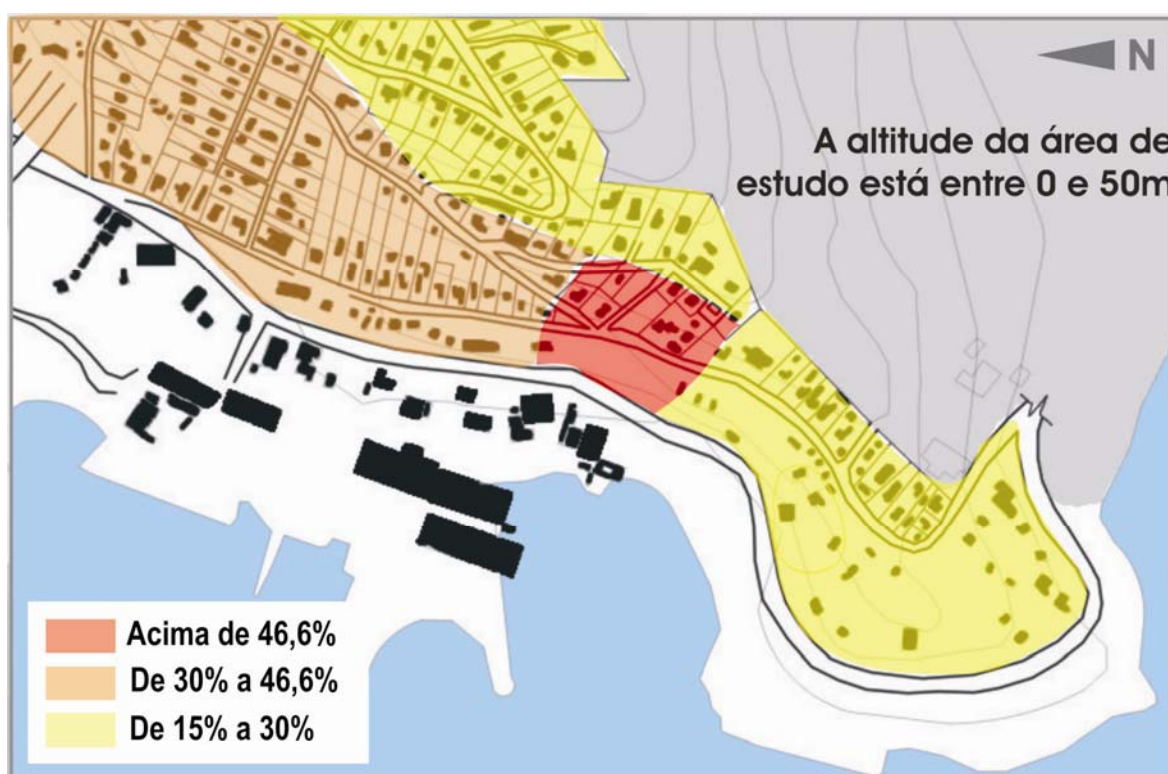


Illustration 07. Map of the steepness of the land

The altitude of the area of study varies between 0 and 50 meters of height. It presents a small portion of the area with superior inclination to 46%, but the majority has between 15 to 30% of inclination. However, what is verified in the area is a disregard of the morphological aspects of relief in relation to its occupation because there are constructions in the areas with steepness superior to 46%. Due to this irregular occupation, the area has several problems, as well as difficulty of superficial drainage, presence of contention walls with more than 2 meters height, need of extra structures to fasten the contention walls and the constructions, uncovered pluvial canalizations and steep staircases to access the constructions.

Guidelines of the city plan for the area of study

Here it is verified what the city hall allows people to build in some places.



Illustration 08. Map of the guidelines of the city plan

In the case of the area of study, there are two different areas proposed by the city plan. In the illustration 08, the Residential Tourist Area - ATR4 - is represented in blue color and the Exclusive Residential Area – ARE 6 - is in yellow. Thus, it can be verified with that analysis that there is a disregard with the morphological aspects of the area in the elaboration of this city plan because it permits the construction of buildings in the areas of rocky terrain, water divisor and with inclination superior to 46%.

Soil Use

The types of use of the constructions in the area are verified in soil use, for example: residential, commercial and services, institutional and tourist.

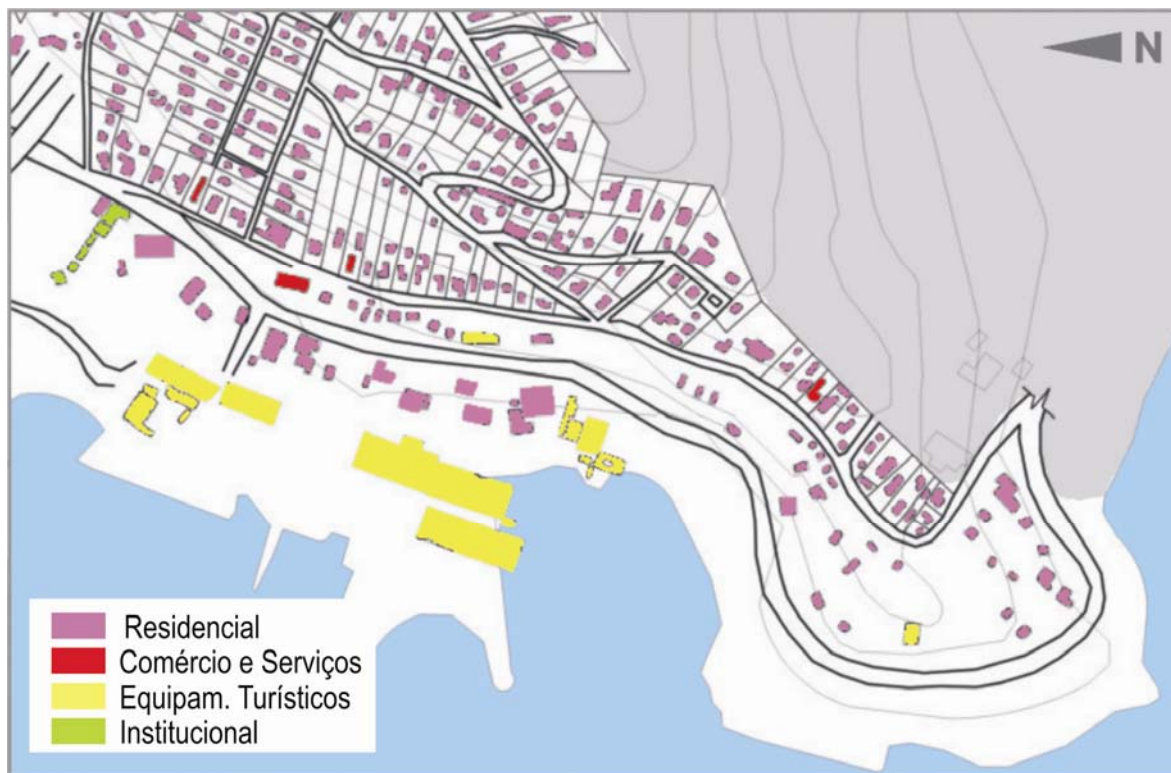


Illustration 09. Map of use of the soil

There is predominance of residential constructions in the area of study and there are few constructions of commercial use, and the few constructions observed are not configured to supply the residents' needs. There is some tourist equipment as hotels, club and a yacht club. There is just one kindergarten in the area, as an example of institutional use.

Besides, there are not public spaces destined to the leisure of the population in general.

Urban infrastructure

In the Urban infrastructure is verified the presence of canalization of water supply, sanitary exhaustion and electric net.

The area of study is provided with public illumination, electricity for residences and water supply. However, the collection of cloacae sewer only happens in Silva Jardim St., and it is a responsibility of the residents. The collection of pluvial sewer happens superficially next to the transport roads. The garbage collection happens in alternate days.

Potentialities and guidelines for the area

After this analysis, it was verified that there are many misunderstandings in the planning and occupation of the area of study. In the illustration 10A, it is possible to check that this area could be used to different uses, mainly to the leisure of the population and local community, because of its strategic location and morphological resignation.

Among the identified potentialities are: the prediction of observatories since there are areas with interesting view of the south bay and of Ponte Hercílio Luz (illustration 10B); recovery of the water borders (illustration 10C) with public use of the spaces; prediction of spaces of contemplative leisure.



Illustration 10. Images of the area of study. Caption part A – AFONSO, 1992.

Based on the identified potentialities and the analyses that were realized, some project guidelines for the area were suggested..

For the accessibility

- ✘ Improvement in the accessibility conditions with the NBR9050/2004 implementation that suggests tactile signaling in the public walks among some determinations that facilitate the transport of handicap people;
- ✘ To implant high crossings or to lower the curb in order to facilitate the use for a person with wheel chair on the corners and/or crossings;
- ✘ Paths with free spaces for the circulation should be implanted in the streets;
- ✘ Alert ground should be implanted next to the fixed urban furniture for the blind people to recognize the place;
- ✘ Adaptation of the staircases with mirrors of the same dimension and handrails;
- ✘ To guarantee character of local via of Prof. Maria Julia St. with more appropriate pavement or traffic calming use.

For the city plan

- ✘ To reformulate the city plan in a more detailed way, according to the characteristics of each area because the one that is in use does not take into account areas of risks, with high steepness that are being used.
- ✘ To allow local commerce as bakeries in Prof. Maria Julia St., but maintain the residential tourist character of Silva Jardim St. Small commercial stores where the occupation is allowed to assist the residents' needs.
- ✘ To guarantee the execution of the determinations of the Plan through a rigid fiscalization.

For the use and occupation

- ✘ To propose policy of use orientation and occupation of the area;
- ✘ To remove the constructions in risk or preservation areas;
- ✘ To promote campaigns of environmental understanding for the residents of the area;
- ✘ To propose contemplation areas (observatories) in the potential areas, for example, next to the Clube Penhasco and Iate Veleiros;
- ✘ Recovery of the border of water with use to swimmers and fishermen, in the West of the area.

Conclusion

As it can be seen, there are several problems faced for the construction in seashores. It is noticed the need of the search of new techniques of construction and circulation. The traditional approach of embanking is an attempt to duplicate the plain lands; the problem of the seashore is completely denied. There is a complete modification of the ecological system

with this traditional method. The fragile seashores are inconvenienced and the natural protective covering is lost.

Many urban functions do not need to consume the available and scarce land. Many uses of land can be delegated to sloping structures, if a satisfactory method for construction in seashore is adopted.

Existent methods of working with construction in areas of steep seashores are firmly based in traditional approaches, as it was verified in the analysis that identified constructions in rocky terrains that do not consider the land, the geological formation and the visual potentialities of the area.

The uses of the land in the seashores are also limited by the tradition and this should be reevaluated taking into account new approaches about the construction in areas of seashores. If confronted with the growth in seashores, a way of building that does not affect the adjacent natural conditions should be developed. The methods used here, should not need a lot of landscape construction to preserve the instability inherent to the seashores. As the urbanization is extended to distant places, the preservation of the natural environment should be emphasized.

In relation to the methodology used here - thematic cartography –the wealth of information obtained would be emphasized, not just contributing in the sense of explaining the different forms of analyses, but also of evaluating the real potentialities of the places.

In relation to Prainha Neighborhood, it could be observed that there are great potentials for occupation, mainly for public use that has not been explored. What is verified is an occupation usually by residential use that does not worry about the environmental and morphological topics.

The performance of the City hall, through the City plan is also defective because it disrespects the morphological subjects in their guidelines, it doesn't act as a fiscal organ for new constructions and it does not elaborate projects of re-qualification to the urban space in the area.

It is important to say that the suitable guidelines in the end of the paper don't have the pretension of analyze the whole universe of possibilities, not even to indicate all the solutions for the project, but to indicate some evident suggestions that could be applied in the area.

It is believed that with this study, the fact that the seashores have more potential of use than it is used now was evidenced.

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Observação1: The maps of this work were elaborated with the data obtained in the works developed by teacher Sônia Afonso.

Observação2: The illustrations that don't present source close to illustration allow to Vanessa Dorneles, author this paper.