RETHINKING THE ECOLOGICAL ELEMENTS OF THE CITY

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ABSTRACT

This article presents a sustainable landscape urbanism strategy for the city of Covilhã centred on the ecological element of the stream of Carpinteira that runs through the urban fabric of an old industrial area in decline. This strategy aims to promote the urban sustainability and the return of citizens to this forgotten area of the city, rethinking the ecological elements by integrating the structure of the stream of Carpinteira and the structure of the old industrial buildings together as landmarks for urban design.
The tendency of planning policies to focus on the building structure at the expense of ecological elements has led to the abandoning of several urban areas, such as the old industrial areas. In this context, these rehabilitation strategies design a riverside walk as a landmark in urban sustainability that combines the ecological elements and the industrial buildings.

1 INTRODUCTION

The ecological structure and the building structure of the urban system are two of the main components of the urban landscape. The building structure is a result of the relationship between society and territory, and represented by the inert elements built by humans, such as roads, buildings, monuments and building facades. The ecological structure is a component of the urban landscape that includes the "most ecologically sensitive areas, fundamental to the ecological balance of the city" (Magalhães, 2001).

From 1999, in Portugal, the ecological structure of the urban system has been one of the land uses in urban districts along with urbanized areas and spaces with planned urbanization. However, it is common praxis in the Urban Projects to privilege the urbanized structure of the city in its built component to the detriment of the natural structure in its ecological component. This practice promotes the disregard of the ecological structure of the urban system, like marginal zones, in the collective image of the city, leading to the inevitable degradation of the level of enjoyment by the citizens and the disqualification of the urban image as a whole.

When riparian zones integrate the ecological structure and the building structures, simultaneously (as it happens in Covilhã, where the building heritage, which was the result of the rise of Covilhã as an industrial city dates back to the 17th century, with a factory existing adjacent to the stream of Carpinteira with foreign technicians and where many officials and weavers worked. The two streams of the city Carpinteira and Goldra are the

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most important ecological elements of Covilhã and enclose two valleys in the middle of which lies the urban fabric, whose industrial heritage brings to mind resident populations as an identity factor and a challenge to landscape urbanism. In the 18th century the Royal Cloth Factory was founded alongside the stream of Goldra confirming the potentials of this industrial city. Covilhã became one of the most important towns in the country in this domain. Even today there is a strong presence in the collective imagination of residents and visitors to the factory-town. A large concentration of manufacturing in the eighteenth and nineteenth centuries is inseparable from the streams of the city) they become areas with a particular potential for the creation of significant projects. Its significance is not only socio-economic, cultural and historical but also environmental because it integrates the ecological structure of the urban system and at the same time reinforces the identity of the city. With the decline of the textile industry, the two streams ceased to have any functional role and only recovered once they returned to become part of the city. The streams have undergone a long period characterized by measures of devaluation and an oversight of their potential, triggered by the decline in the wool industry.

Fig. 1 Covilhã Location in the Iberian Peninsula. (Source: authors on Google Earth)

According to this thematic, a proposal is presented for a chunk of the Carpinteira stream, in Covilhã, characterized by a state of neglect and degradation of the ecological and building structure. The main goal is to return this river to the city and encourage its enjoyment through the integration and optimization of both structures.

2 OBJECTIVES AND METHODOLOGY

The urban project has the following objectives to promote the integration and valuing of the building structure / ecological structure:

i. Project measures to integrate and value the built structure / ecological structure of the stream, promoting the balance between these two

components of the urban landscape that become integrated into a relationship of mutual appreciation by the quality of urban design;

ii. Create a leisure space with a riverside walk, to promote the integration and valuing of the stream not only in the local context but also in the entire city, with the goal to return it to the enjoyment of citizens, stimulating the interest of the community for these elements;

iii. Create an ecological corridor to ensure the environmental balance of this area by integrating the ecological structure of urban system;

iv. Allow the rehabilitation of old buildings, and particularly of the built heritage which invokes an industrial past, present in the collective imagination of the city, by using some vacant industrial buildings and warehouses;

v. Qualify and improve the Covilhã urban image, rehabilitating this degraded part of the town;

vi. Unblock the waterline, in particular, and the study area, in general, with the demolition of some of the buildings with no architectural or historical significance.

The methodology consisted in a first stage in the literature research to clarify the concepts and meanings that sustain the relevance of the theme. The second step involved the analysis and characterization of the study area (photograph, identification and characterization of buildings, analysis of the ecological structure, analysis of the relationship with the environment and conformity with the instruments of territorial management).

These two phases formed the foundation of the projectual measures adopted in the design of the urban project.

3 CHARACTERIZATION OF STUDY AREA

With 7.88 hectares, the area of intervention is crossed along the river along over 535 meters. The margins with steep topography are bounded by walls and many old industrial buildings.

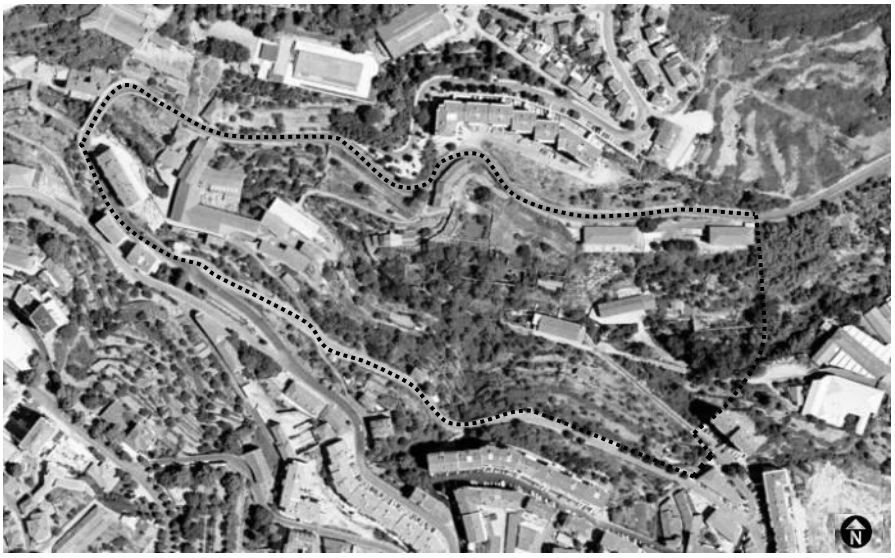

Fig. 2 Study area (Source: authors on Google Earth)

In urban terms, the structure built of this riverside system is constituted by a group of scattered buildings, with a strong presence of industrial buildings, mostly vacant and deteriorating. For each of these buildings, 42 in total, an identification and characterization card was created, which consists of the following: photo, location plan, typology (housing, industry, services or otherwise), time of construction, volume (number of floors), construction area, type of occupation by floor (permanent, temporary or vacant), integration in the surrounding area, deployment, maintenance or building to demolish.
The synthesis of these issues allowed us to calculate the urban indices and parameters of the study area and classify it as an area of low population density and housing. More than half of its buildings are in a poor state of repair or in ruins and industrial buildings predominate (38%). The nonexistence of equipment and green spaces for collective use contributes to the local community indifference with this waterfront, and this problem was considered in the proposal.

With polluted water and rundown buildings, the waterfront has been transformed into a smelly and nasty corridor, invisible in the urban set. The present situation produces negative impacts on the enjoyment and city's image.

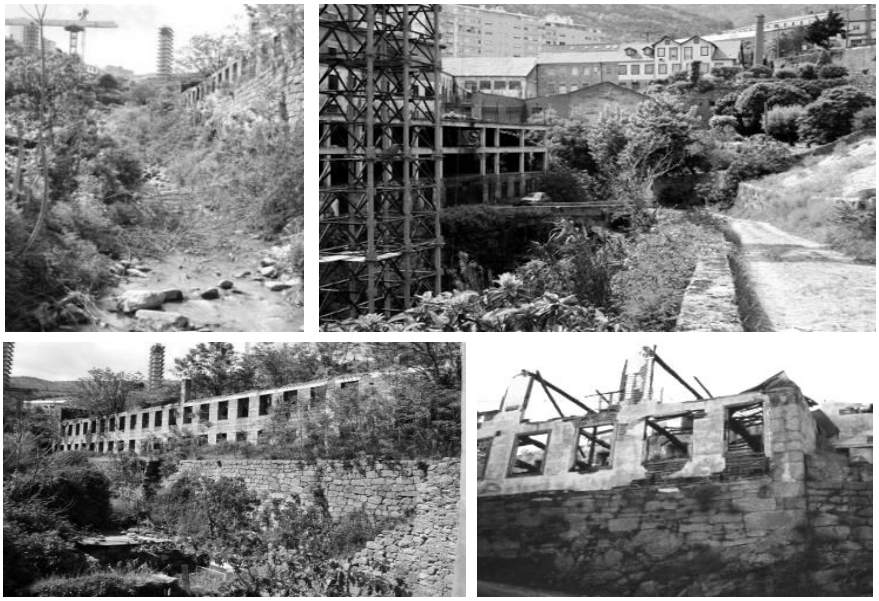

Fig. 3 Photographs of the study area (Source: authors)

4 CONFORMITY WITH THE INSTRUMENTS OF TERRITORIAL MANAGEMENT

According to the Municipal Director Plan of Covilhã and its planning plan (October 23, 1999), the study area is included in the class of "Urban Spaces", agglomerate "Level 1" of great Covilhã.

According to the consultation of the plans RAN (National Agricultural Reserve), REN (National Ecological Reserve) and the plan of other constraints of the PDM, the constraints on land use are the following restrictions of public utility: RAN; Watermark stream of Carpinteira; Line voltage below 60 kV; National Road 230. These restrictions include areas subject to the "*non aedificandi"* regime, in which building work it is not allowed.

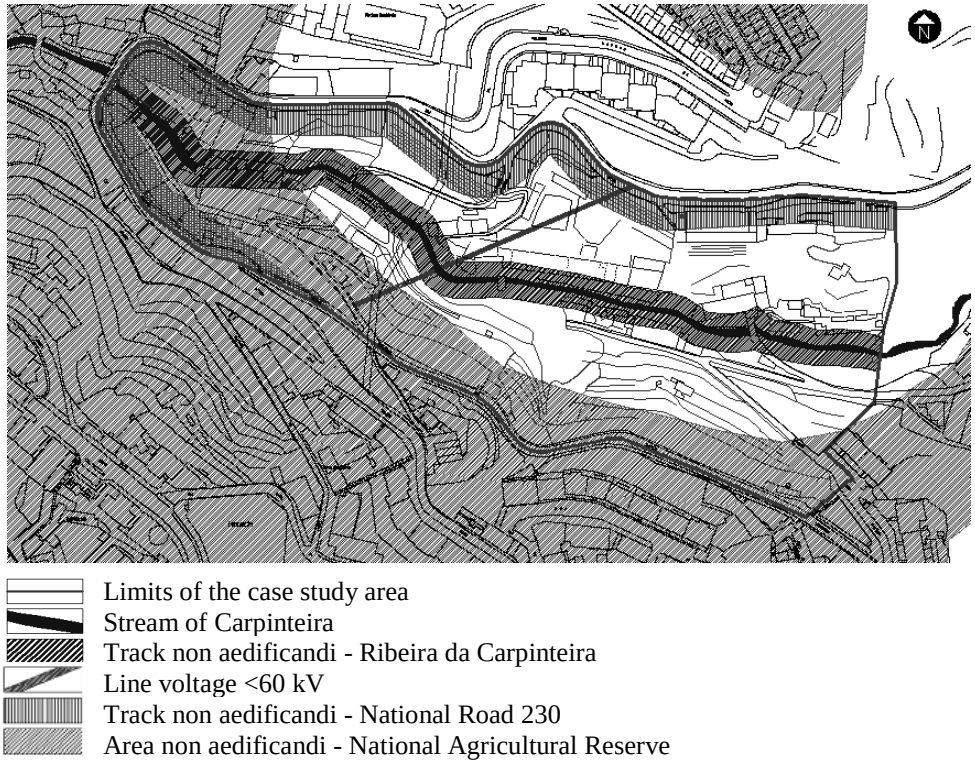

Fig. 4 Constraints to land use. (Source: authors)

5 PROJECT MEASURES PROPOSE

The creation of a riverside walk is proposed as the essential measure to the integration and enhancement of ecological structure and building structure, 900 meters long, which goes through the terrain, following the longitudinal direction of the stream, and "grabbing" the natural elements and built elements of the landscape at the same time.

In its relationship with the ecological structure, the ride was designed based on the level curve of the terrain, adapting it to its characteristics. However, its design in plant is rectum. This characteristic accentuates the character of artificial structure of the riverside walk associated with the "urban walls" that come up occasionally along the way giving the sense of inner urban.

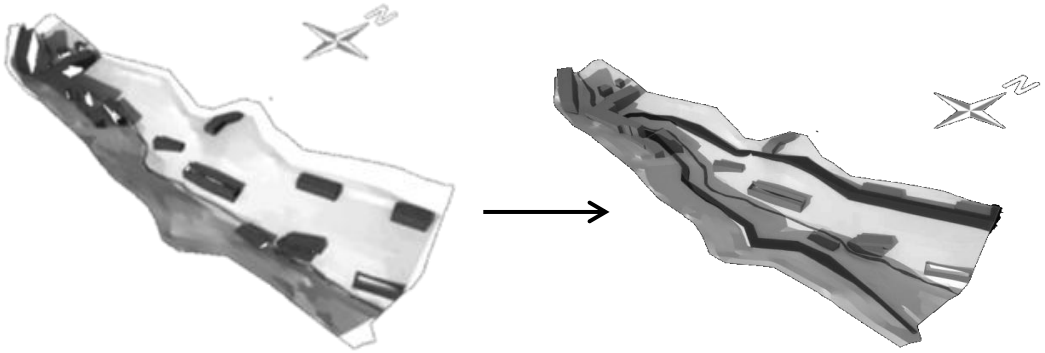

Fig. 5 Design of the riverside walk. (Source: authors)

Fig. 6 Riverside walk. (Source: authors)

The creation of a leisure space is proposed with equipment and green areas of collective use to help stimulate the interest of the local community by the river Carpinteira. The presence of housing functions, services and trade offers a range of uses and activities, promoting the excitement and appreciation of the site.

One projectual measure which stands out specifically aimed at the ecological structure is the creation of an ecological corridor at the "non aedificandi" area along the river, according to the "non aedificandi" area of 10 meters, which guarantees the protection of its ecological values.

As for projectual measures specifically aimed at the structure build, rehabilitation was the watchword, particularly with regard to the old industrial buildings, most of which acquire new functions.

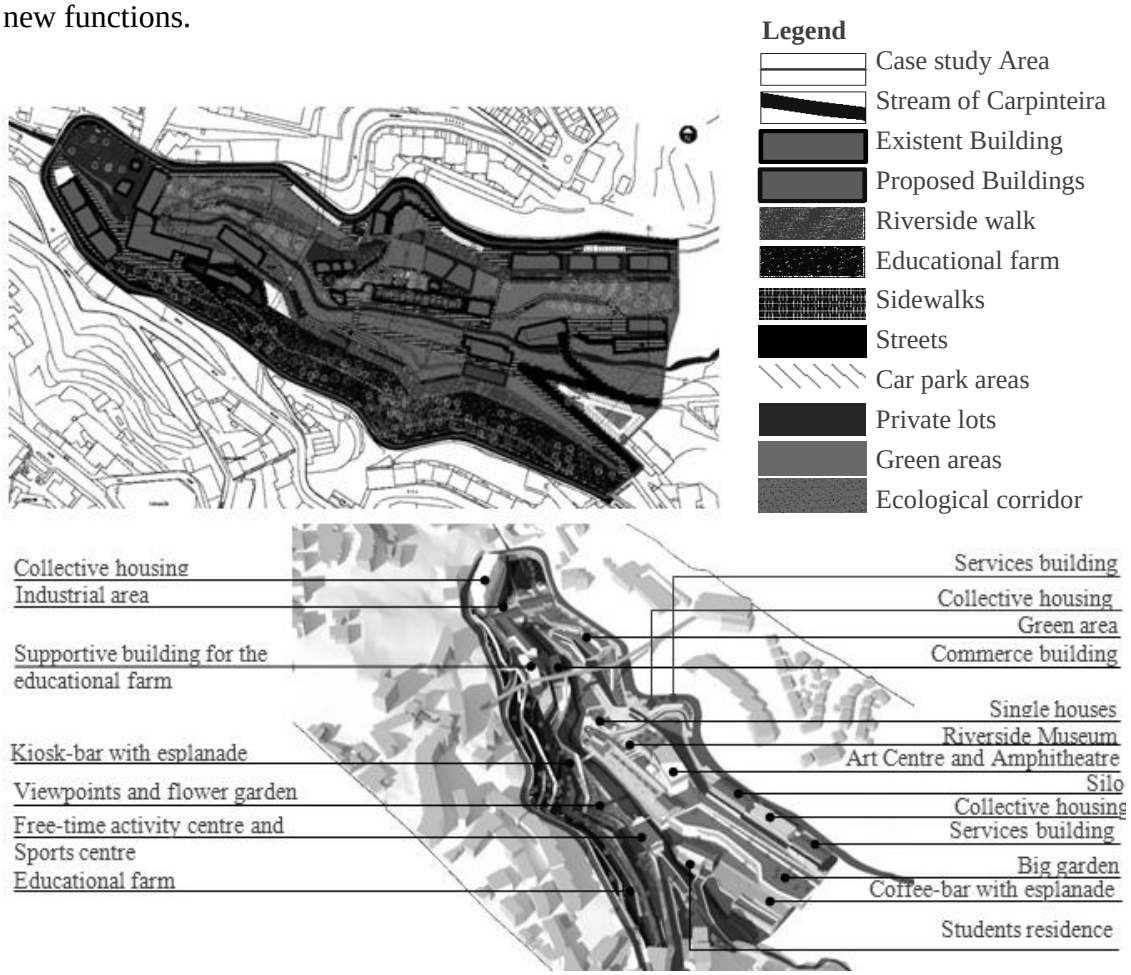

Fig. 7 Design of the Project. (Source: authors)

It was designed an entry on the riverside walk at the edge nearest center. This is not a fixed entry but a symbolic entry. So, by starting the journey on this point we have at the left an educational farm, distributed in terraces connected by ramps. In order to achieve the objective of the RAN to protect the land of higher agricultural suitability, it is proposed for the area covered by this restriction of public utility, to create an educational farm as a place of awareness with an educational orientation, focused on environmental issues like organic farming or composting. This farm is crossed longitudinally by a wooden walkway that integrates this farm into the urban context and facilitates access.

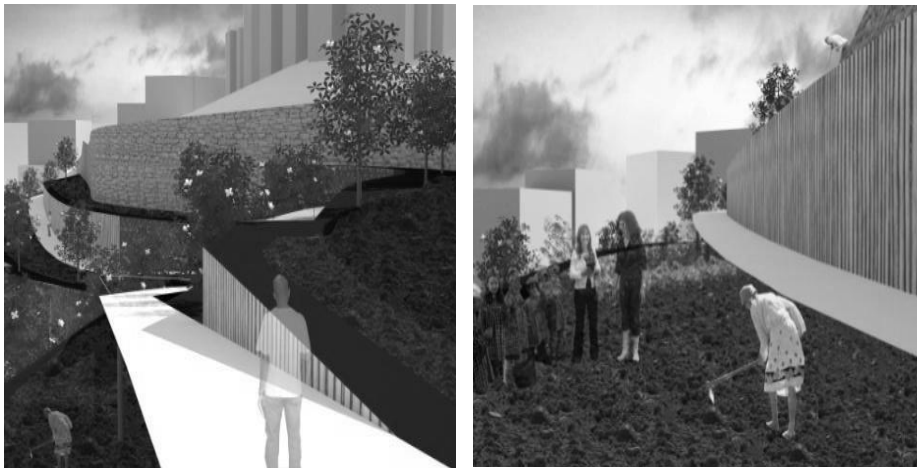

Fig. 8 Educational farm. (Source: authors)

On the right side of the walk one free-time activity centre and one sports center is proposed. The objective is to provide cultural and sportive activities for different age groups that can occur inside buildings or outdoor, contributing to the dynamism of the waterfront and its integration in the urban context.

Fig. 9 Free-time activity centre and Sports centre. (Source: authors)

Free-time activity centre is created in a rehabilitated old industrial building over the water line, while the sports centre will occupy a new building yet to be constructed. The proposal includes *urban walls* to maintain the alignment of the existing walls although the sports centre building is indented.

Along the way there are emerging elements to enjoy the ecological structure of the waterfront: viewpoints, flower gardens, kiosks and terraces connected by the riverside walk and a series of side rails to ensure the continuity of routes.

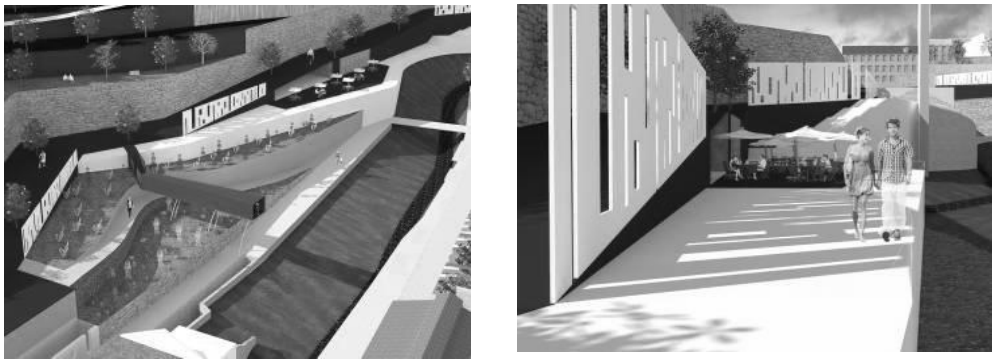

Fig. 10 Elements to enjoy the ecological structure. (Source: authors)

In the transition from one side of the waterline to the opposite side, there is an existing industrial zone to enhance and integrate. Subjected to the "*non aedificandi"* regime, the projectual measures are small interventions in order to overcome the state of degradation of the facades of buildings factories, expand existing access ensuring pedestrian and automobile traffic, guarantee the continuity of the floor and remove elements impeding the legibility of the landscape and the appreciation of its ecological and built structures. Some factories in operation will remember the past and the foundation of industrial city of Covilhã.

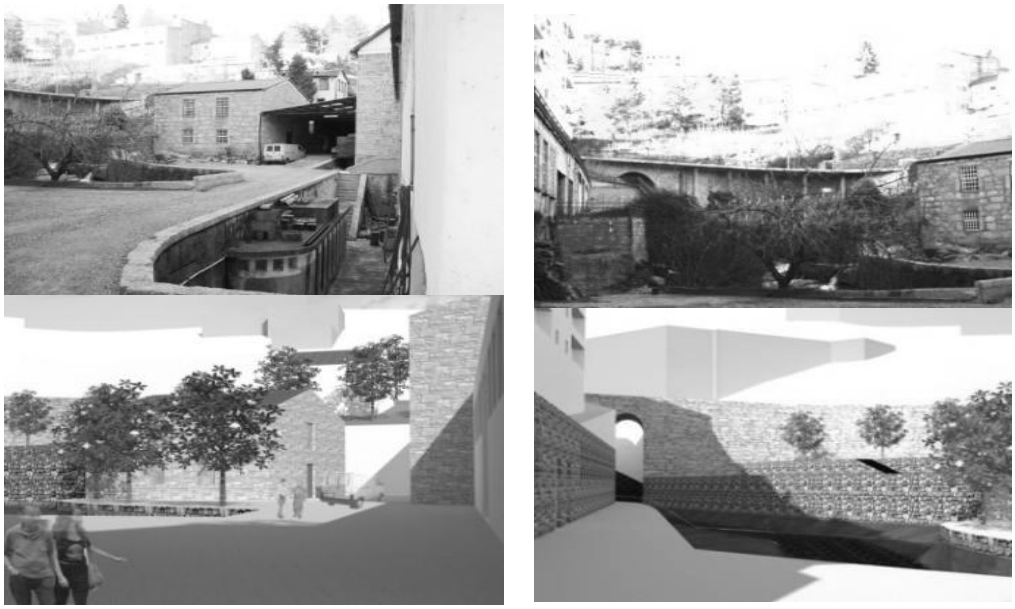

Fig. 11 Industrial zone, before and after intervention (Source: author)

As the industrial buildings it also emerges along the riverside walk multiples green spaces for collective use. The different heights between terraces are overcome by ramps and enclosed by walls that are one of the most striking elements of the waterfront.

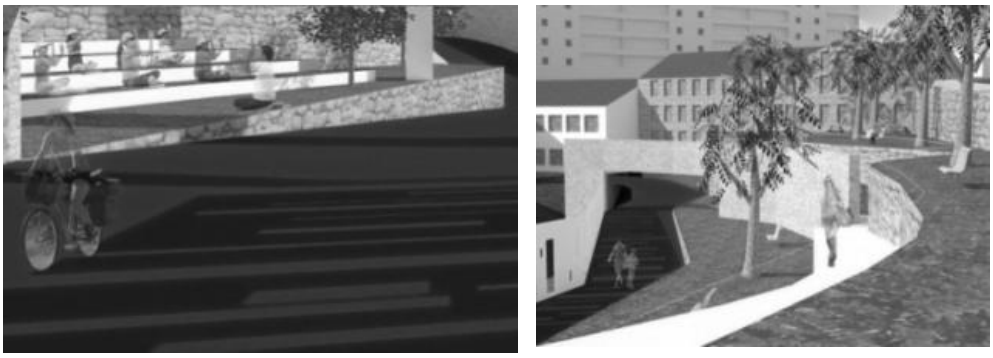

Fig. 12 Green spaces for collective use (Source: author)

The proposal is for a collective green space of private property of the Riverside Museum, insert in a complex of ruins of existing industrial buildings introduced in three altitudinal levels of the margin of the stream. It is intended that this museum will invoke the history and experience associated with the streams of the city of Covilhã.

Fig. 13 Riverside Museum (Fonte: autor)

Taking advantage of the topographical characteristics of the site there is, next to the Museum, an amphitheatre that is part of the Arts House for the teaching of performing arts such as music, dance or theatre.

At the opposite end from where we started the route. There is a proposal for a zone of residential character, marked by the presence of two new buildings for collective housing and a student residence resulting from the rehabilitation of an industrial building, claiming the status of the university city of Covilhã. Housing (single or collective) comprises a total of 71 houses.

Fig. 14 Collective housing buildings and student residence. (Source: author)

Also in this area we can find office buildings, a silo with 73 public parking spaces and the largest green space for collective use. This is a multifunctional garden, which allows the enjoyment of a privileged view over the valley of Carpinteira, equipped with furniture for leisure, relaxation and sport. This garden is larger enough to shelter events like the Festival of the Garden.

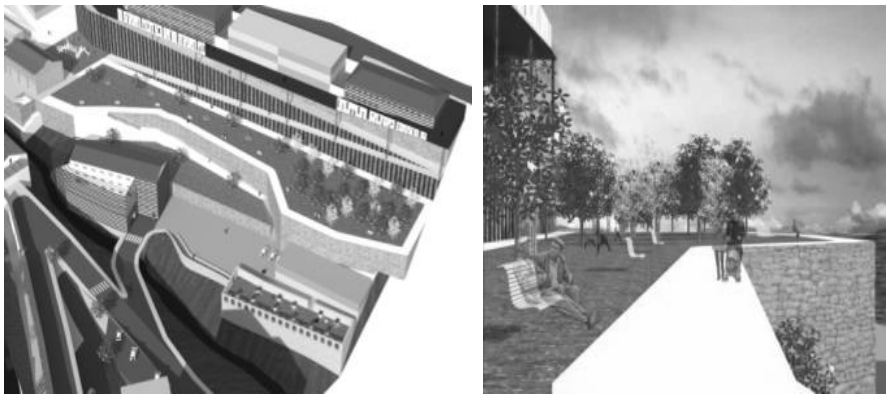

Fig. 15 Biggest green space of collective use. (Source: author)

Next to this garden, there is a proposal for a coffee-bar that uses a ruin of an industrial building adjacent to the water line to place its esplanade.

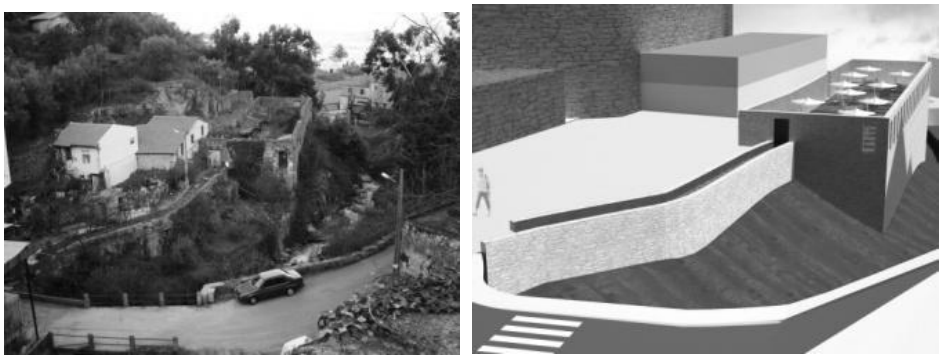

Fig. 16 Coffee-bar with esplanade. (Source: authors)

This type of commerce is not only useful to occasional users of the waterfront as well as to the residents, including the residence students, located nearby.

6 CONCLUSIONS

This urban project is to demonstrate that urban integration and mutual appreciation between the ecological structure and building structure can be rewarding for the environment.

These results were achieved by the intervention in an ecologically sensitive area where we propose the creation of space socially and culturally diverse by the amount of green spaces and equipment for collective use, mainly installed in abandoned industrial buildings. In

terms of urban image, this project transforms a degraded and declining sector of the city into a pleasant place, skilled and valued in the context of the city.

The urban project scale allows the type of drawing based on the observer's eye (who discovers the city and its spaces when he is walking), using the method of urban design (which combines the laws and regulation aspects with the qualitative aspects of the urban landscape). Thus it was possible to achieve the goal of creating a pleasant area and stimulating not only to the residents but also to these space users. Simultaneously, the urban project considered the objectives set at the scale of the city, such as urban regeneration, the life in community and also environmental concerns.

It is understood that this project is only the beginning of a long multidisciplinary collaboration work between architecture, civil engineering, town planning, landscape planning, law, economy and others. In order to make its implementation feasible in the future, there are key aspects to consider, such as registrations of the lands, the direct involvement of the local community or the economic and financial viability of the proposal.

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