

Executed project report

Enhancement of the Rossinyol Square in Vacarisses (Barcelona)

Stakeholder of the project and execution: Naturalea

Client: Town Hall of Vacarisses

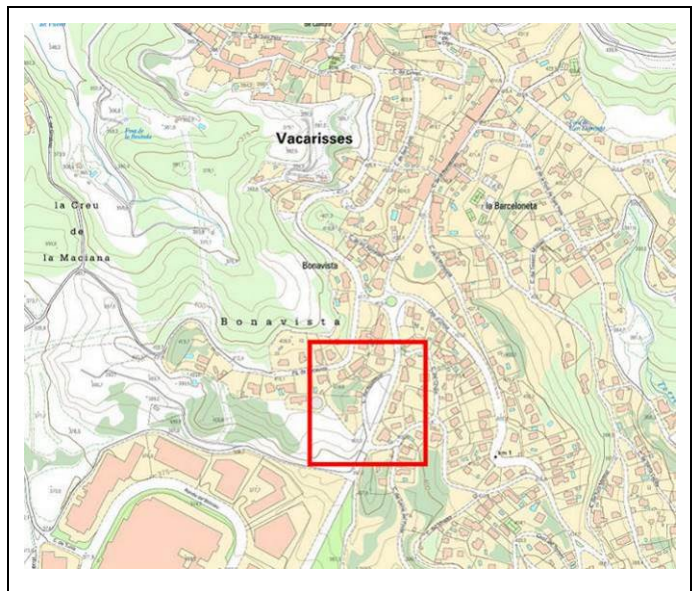
Start/finish: March-April 2019



INTRODUCTION

With the restoration of the Rossinyol Square in Vacarisses (Catalonia) we show how to convert a public urban land with sustainability, wildlife management and social use criteria. This project is an example of the implementation of *Nature-Based Solutions*, that are so important for us if we want to enjoy healthier environments, with a less expensive maintenance and with more interesting landscapes.

The actions carried out not only solve pre-existing problems, but are an opportunity to create new conditions and to improve the space at all levels.



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1. Introduction and objectives

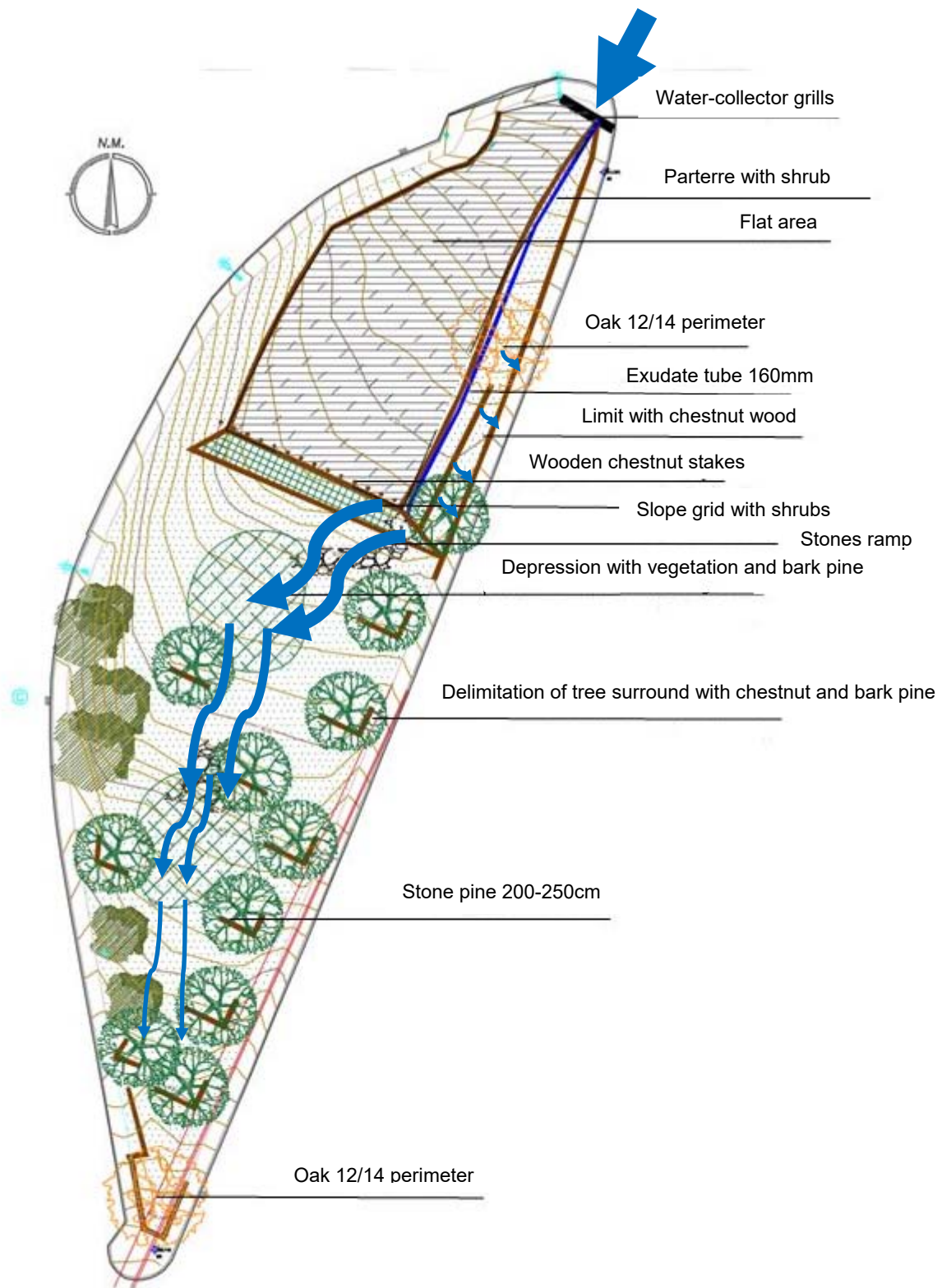
The action carried out had the objective to organize the Rossinyol Square in Vacarisses. At the same time that erosion problems and the spatial planning were solved, a space with a lot of opportunities was created.

The runoff water that initially was going through the area, generating gullies and transporting eroded land to the streets, has been carried and transformed as a resource to provide water to the existent plants. Doing this, not only we improve the vegetation, but we eliminate the erosion caused by the runoff and the plants can improve the quality of the *first flush* polluted water.

Also, delimited and ordered spaces, where cars can access, were generated, and were separated from the natural spaces. The natural spaces were classified into the ones that are going to be more planned and that will connect with the urban areas and the ones that will be more natural and where the vegetation will grow and expand, creating more densely masses. These natural spaces combined with stone and cortex generate habitats for the fauna (insects, birds, etc), so we recreate what we call wildlife gardens.

The base of the action is the utilization of natural materials. To delimitate the spaces and to create contention structures, chestnut wood from close areas was used. Coco netting was also used, along with pine tree cortex.

The space will become a more naturalized area that will maintain totally natural spaces and spaces with greater maintenance needs near the streets.



Runoff intensity

Carried out actions

	Storm water management	Improvement of biodiversity	Use of natural materials	Creation of singular spaces with identity
Problematic	Storm water that went trough the space in straight line, without infiltrating, dragged the ground that was going to end up on the road.	Lack of biodiversity and use of the natural resources of the area	Use of Standard materials historically linked to urban areas.	Urban square disconnected from the surroundings. Lack of shadow on the perimeter sidewalk. Parking with no order..
	<p> </p> <p>Retain the storm water with a water-collection grilles.</p> <p>↓</p> <p>We conduct the water through a drainage tube that irrigates the parterre with aromatic plants and therefore we gradually infiltrate the storm water</p> <p>↓</p> <p>The water goes through two lamination bases so that it slowly infiltrates and loses strength, so we avoid dragging the soil to the street.</p>	<p>Wildlife Gardens Spaces with dense autochthonous vegetation with low maintenance. Combination of dense points of vegetation, Stones, bark, etc.</p> <p>Ordered parterres Plantations with autochthonous vegetation (Aromatic plants)</p> <p>Protection of the slopes with bioengineering Creation of a slope grid to protect the slope</p>	<p>Wood of chestnut</p> <p>Seeding mat</p> <p>Pine bark</p> <p>Stone from the area</p> <p>Vegetation</p>	

2. Before and after images



Before and after



Before and after

3. Execution process

3.1 Land movements

Land movements were used to create a flatter public area (8%) in the upper part, and two important depressions for the infiltration of the rainwater. This way, we prevent land to be dragged to the road.



Land movements pictures

3.2 Water management – Captation and infiltration. The water as a resource.

The runoff of the square is collected through a grate that connects with a tube situated in the upper part of the parterre. Part of the water infiltrates in the parterre, and the rest goes off the slope, and through a stone road connects with the first infiltration pond. The stone prevents the water to erode the land at the outlet of the tube.



Images before and after the action / Infiltration grate



Outlet of the tube and stone structure to prevent the land erosion

The two depressions generated in the terrain allow the water to slow down and infiltrate. As they will be very humid zones, we plant with high density to create a wildlife garden that will be a fauna refuge.

To make sure that the herbaceous do not compete with the planted vegetation, and to retain more moisture, a cortex layer mixed with land has been arranged.

The transition spaces between the two depressions have been protected with stone to prevent erosion in the areas with more slope. We plant small plant because they grow faster and are better adapted.



Images of the depressions with the stone roads to prevent erosion

3.3 Creation of a slope grid

The slope generated between the upper flat area and the rest of the zone has been protected with a vegetated slope grid. It was also protected with a seeding coco netting mat. We planted all over the slope grid, with the objective to fix and stabilize the land with the plant roots when the wooden structure degrades. We selected *Rosmarinus officinalis*, *Thymus vulgaris*, *Pistacea lentiscus*, *Viburnum tinus*, *Cistus albidus* and *Santolina chamaecyparissus*.



Construction of the lattice



3.4 Margin installation with trunks of chestnut wood

The square has been delimited with non-peeled chestnut wood trunks.



Chestnut-trunk limits installation process

3.5 Installation of chestnut stakes for each meter.

On the limit of the flat zone and the slope where the slope grid is located (south zone), chestnut stakes have been installed each meter to make the limit more visible.



Irregular chestnut bollards

3.6 Plantations

3.6.1 Trees

Various trees have been planted in naturalized agroupations. In the entrance and the exit of the square, we have planted two oaks (*Quercus pubescens*), and in the central zone we have planted *Pinus pinea*, following the existing trees.

To protect the tree-holes, we have installed chestnut trunks surrounding the trees that facilitate the water and land retention, and allow to break the surface flow of the water.



Images of the planted trees and the chestnut limits

3.6.2 Shrubs in the parterre

The objective of the parterre is to delimitate a transition space between the upper area and the street, enhancing the naturality of the zone and promoting the landscaping value of the area. *Rosmarinus officinalis*, *Rosmarinus officinalis subsp. repens* and *Salvia officinalis* have been planted to create a vegetal aromatic mass. To prevent the growth of non-wanted herbaceous, a ground bark layer and a seeding mat has been installed. The seeding mat will also prevent the flow of the land and the bark to the street.



Delimitation, protection and plantation of the parterre

3.6.3 Trees and shrubs in the depressions

As it was explained in this document, in the depression areas, trees and shrubby species have been planted (in a 2,5 L container) to recreate a wildlife garden. *Rosmarinus officinalis*, *Rosmarinus officinalis subsp. repens*, *Salvia officinalis*, *Pistacea lentiscus*, *Viburnum tinus*, *Pinus pinea*, *Quercus ilex subsp. ilex* and *Quercus pubescens* have been planted.



Plantation in the depressions to create wildlife gardens

KEY WORDS: Integral design of spaces, water as a resource, wildlife gardens, natural material, sustainable areas.

APPLIED TECHNIQUES: Slope grid, seeding mat, chestnut wood margin, chestnut stakes, shrub planting, tree planting.