

## Executed project report

### Creation of a wildlife pond in a drainage stormwater channel at Winery Torres, Vilafranca del Penedès, Barcelona

**Author of the proposal:** Naturalea

**Client:** Winery Torres

**Execution:** Naturalea

**Start and finish:** May 2017



## INTRODUCTION

The creation of a pond for the fauna has been carried out with the aim of improving the biodiversity of the area. In order for the pond to be able to accommodate organisms from these environments quickly and to act as a refuge for the fauna, it has been built using landscape bioengineering techniques. It is also worth mentioning the stabilization of a slope with a vegetated slope grid that favours the presence of butterflies. These NBS infrastructure keeps the water and let use water that creates erosion problems and effects wine production



## Creation of a wildlife stormwater pond in a drainage channel

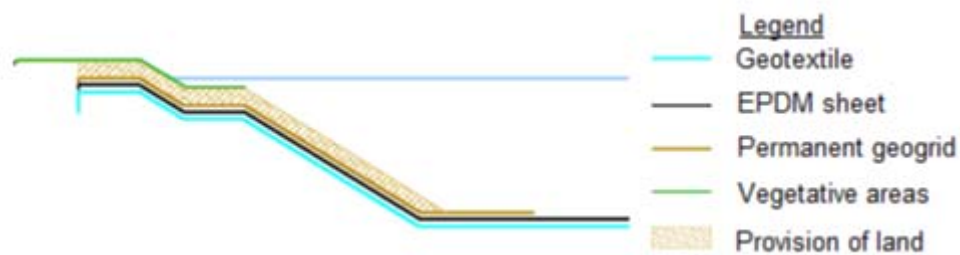
### Work on the creation of the pond

#### Excavation and waterproofing works

To create a pond with a maximum depth at the central point of 1m, controlled excavation work has been carried out with a topography level to generate the appropriate terraces and place pre-vegetated material with helophytes. These creates an immediate ecosystem to improve biodiversity and reduces the risk of insect's plague.

For waterproofing, a geotextile sheet, an EPDM type waterproof sheet and a C350 Vmax type permanent geogrid have been installed on the excavated surface. The permanent geogrid creates friction so gives soil cohesion, the root system of the plants also improves it. This is also an impermeable protection against big mammals like wild pigs that can damage the system.

The diagram below shows how it is waterproofed:



Excavation works.



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Geotextile installed after excavation.

EPDM sheet installed on the geotextile and permanent geogrid type C350 Vmax in the process of installation.



Installation of permanent geogrid / Pre-vegetated plant material stocked in the area.



Detail of the fitting of the C350 Vmax permanent geogrid and the existing stone wall.

Once the three materials are in place, a layer of soil of approximately 30-45 cm has been placed on top of the geogrid.

### Revegetation of the pond margins

To facilitate the integration and revegetation of the margins of the pond, various materials have been installed, generating different spaces that increase biodiversity:



- 9 m of vegetated rolls type Fiber Roll, in the margin under the stone wall and in the point where the water is received from the channel.
- 5 m<sup>2</sup> of plurispecific grasslands type Plant Carpet.
- Stone from the stacked area generating holes between the mud at the point where the water comes out.
- 5 m of live willow fascine at the point of entry of the water into the pond, buried and above the line of the vegetated roll.



Plurispecific grasslands type Plant Carpet installed on one side of the pond (left).  
Vegetated roll type Fiber Roll installed at the base of the stone wall and at the entrance to the pond (right).



General view of the pond.

These differences in the composition of the margins allow improvement of diversity and increase the chances of the pond to become quickly naturalized.



## Other complementary actions around the pond

### Plantations for habitat improvements

It has been planted:

- 35 helophytes on the outer margin of the pond, near a speck of land.
- 35 bushes on the speck of land in groups of 5-7 specimens of the same species to favour their growth.
- 6 ash trees and 2 oaks of 1m of height planted throughout the area in the external margin of the channel.



Tree planting work at the margin of the displaced fleck to make space for the pond, and planting helophytes and shrubs on the slopes surrounding the pond.



Planting of helophytes and bushes behind the herbaceous area.



### Willow sediment trap

A large part of the water that will reach the new pond will do so through a drainage channel between fields. To prevent the pond from becoming clogged by the input of fines from the channel, a structure has been made which, once vegetated, will reduce the speed of the water causing sedimentation and therefore reducing the arrival of sediments in the pond.

On a 2m width along the drainage channel, upstream of the pond created, two transverse live fascines have been installed, completely buried, like a continuous linear natural live filters when the plants grow. In addition, 20 specimens of *Salix eleagnos* have been planted between the two fascines to increase the density.



Image of the area where the sediment trap has been located, before and after the actions.



Excavation of the two trenches where the live willow fascines have been placed.



Installation of treated wood fence and creation of an access ramp to the pond

In order to allow the observation of the pond, an access ramp has been created using the remaining soil from the excavation. In this way the pond can be observed from a high and comfortable point.

A 6m section of treated wood fence has been installed at the connection point between the pond and the platform.



Installation work of the wooden fence at the margin of the pond.



Wooden fence on the margin of the installed raft.



Front view of the access ramp / Transition between the access ramp and the ground fleck that defines the channel.



An additional 6m fence has also been installed following an existing fence at the top of the stone wall.



Installation work of the wooden fence on the top of the pond.

### Construction of a butterfly attraction point

#### Installation of a live slope grid and cleaning of the stone wall

A 4.5m long and 3m high live slope grid has been installed to stabilise a section of vertical slope affected by the deterioration of part of a wall.

The earth accumulated at the base has been removed, re-profiling work has been carried out and subsequently the structure of the live slope grid has been generated with wooden logs, 2 verticals anchored to the ground and the horizontals anchored to the first ones.



Image of the area of the slope where the live slope grid has been built before starting the work, and the re-profiled slope with machinery ready to install the live slope grid.





Image of the slope after the work with the living slope grid and the plantations.

Below is a detail of the plantation done on the slope grid to favour the presence of butterflies, with species of interest to them and others to give stability to the slope with the structure of its root system.

Specie	Base	Level 1	Level 2	Level 3	Level 4	Total
<i>Salix atrocinerea</i>	15					15
<i>Rosmarinus officinalis</i>		5	4	4	2	15
<i>Thymus vulgaris</i>		3	3	4	4	14
<i>Thymus citriodorus</i>		2	3	3	3	11
<i>Santolina chamaecyparissus</i>		3	3	2	2	10
<i>Vinca minor</i>		2	2	2	4	10
<b>Total</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>75</b>



Initial state of the stone wall / Stone wall cleaned and with redone transfer between the stone wall and the live slope grid installed.

**KEYWORDS:** diversity, fauna, temporary pond, helophytes, butterfly attraction, stone wall, viewpoint, ramp.

**APPLIED TECHNIQUES:** Plurispecific grasslands type Plant Carpet, vegetated roll type Fiber Roll, live fascine, live slope grid.