

Water Tank Design Project

- *Increasing aquatic biodiversity* -



*Benjamin van Ooij
September 2010
Leria, Portugal*

Site Survey

Type of site:	Irrigation water tank made from brick, stone and concrete.
Size:	4 meters wide x 4 meters long x 2,5 meters deep. Capacity of 40000 litres of water.
Aspect:	South / South-west facing.
Slope:	Tanks is built on slope of +15 %.
Water source(s)	Rainwater catchment from all over the farm by irrigation canals (+400 meters)/ tanks (3 in total). The large tank is the last collection point.
Building(s)	North-east side there is a steep terraced slope with stone wall and a large view point constructed from stone.
Micro climates:	Protected from North-east to North-west by view point and terraced slope. The stones from the tanks and surrounding wall and the water in the tank form a large thermo-mass entity. Exposed to south-east, south and south-western sun and warm winds.
Pollution:	No pollution.
Access:	Access only by foot with no direct path.
Water quality:	High quality water seen the wildlife living in the water system.
Soil:	Soil within tank is a layer of 40 cm of decomposed organic matter and washed off soil. This is highly fertile.
Vegetation present:	Cattail and algae in the tank. Surrounding the tank are a large plumb tree, oaks shrubs and grasses.
Wildlife:	Salamanders, newts, frogs, toads, snakes, birds of pray, other birds, rabbits, stray dogs, and insects.

Goals Articulation

- To create possibilities to easily enter and exit the water tank for pets and wildlife;
- To increase biodiversity by creating new planting zones in where a variety of water plants are grown and wildlife can find their habitat.

Work Plan

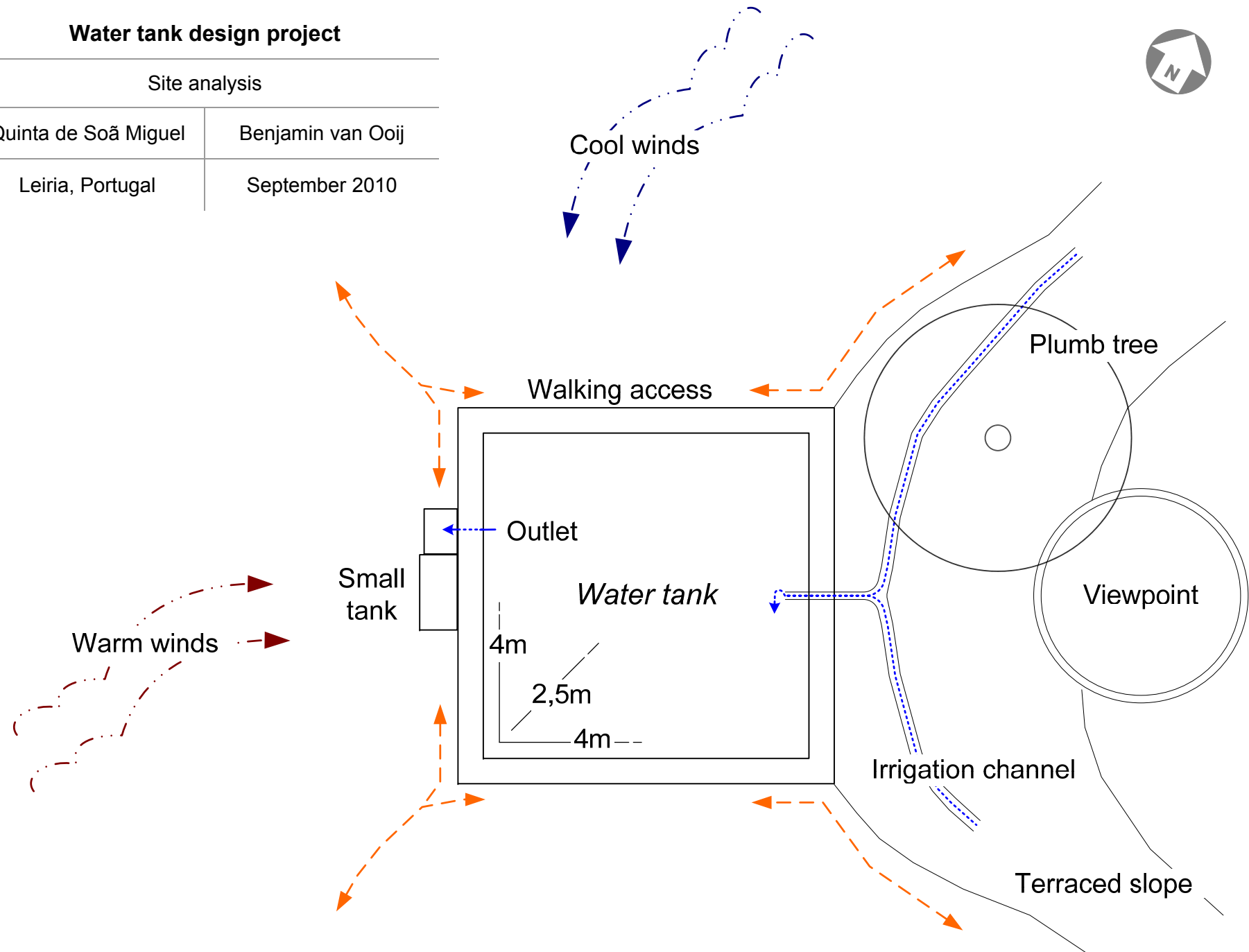
Activities	Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Design	2	■	■																		
Clean tank	4	■	■	■	■																
Re-locate wildlife	1/2				■																
Material collection	2					■	■														
Construction zones	2							■	■												
Plants collection	2									■	■										
Soil building	1											■									
Planting	2												■	■							
Fill tank	2												■	■							
Total Days														13							

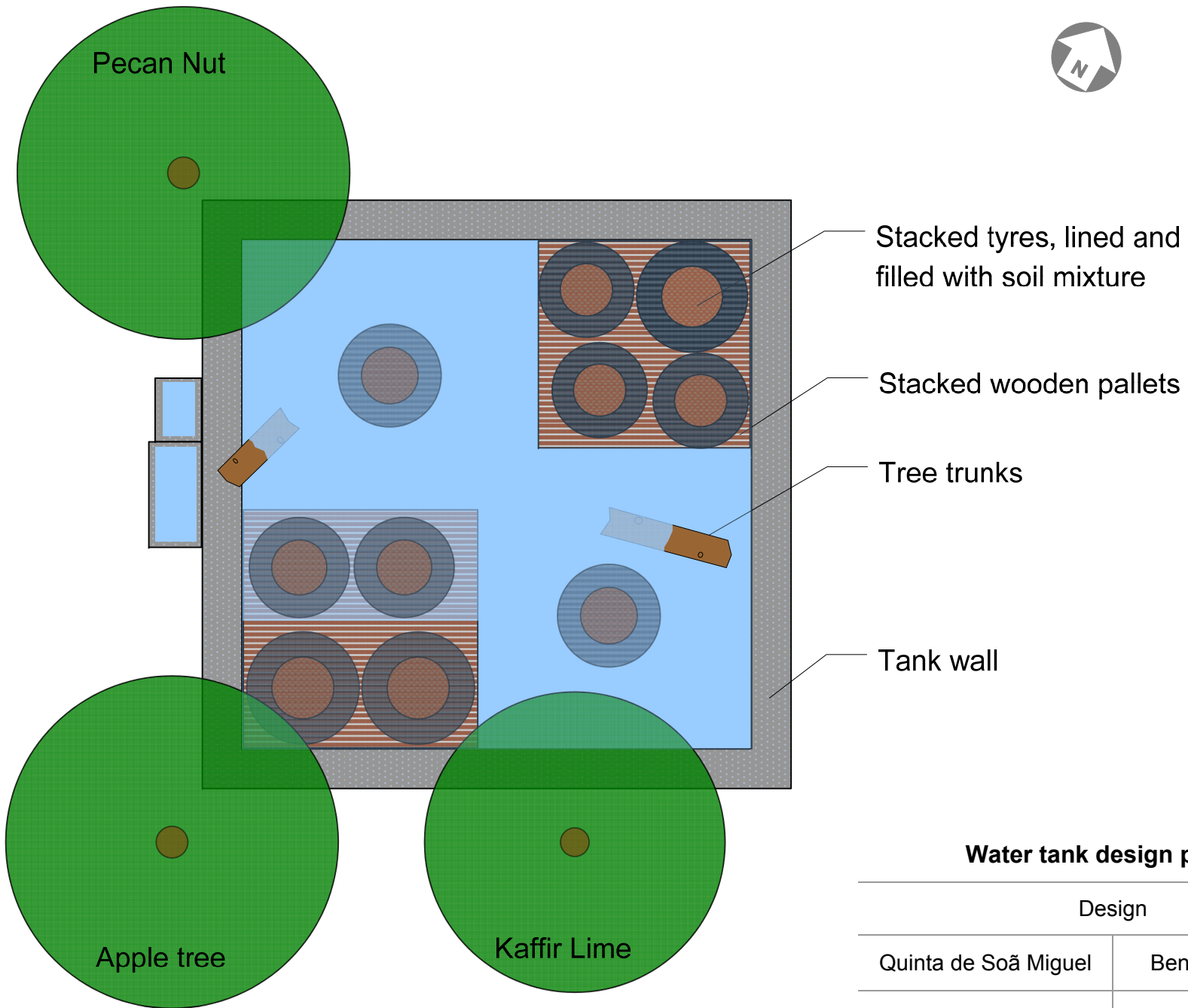
Maps and Drawings

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Site analysis

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Leiria, Portugal	September 2010





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Design	
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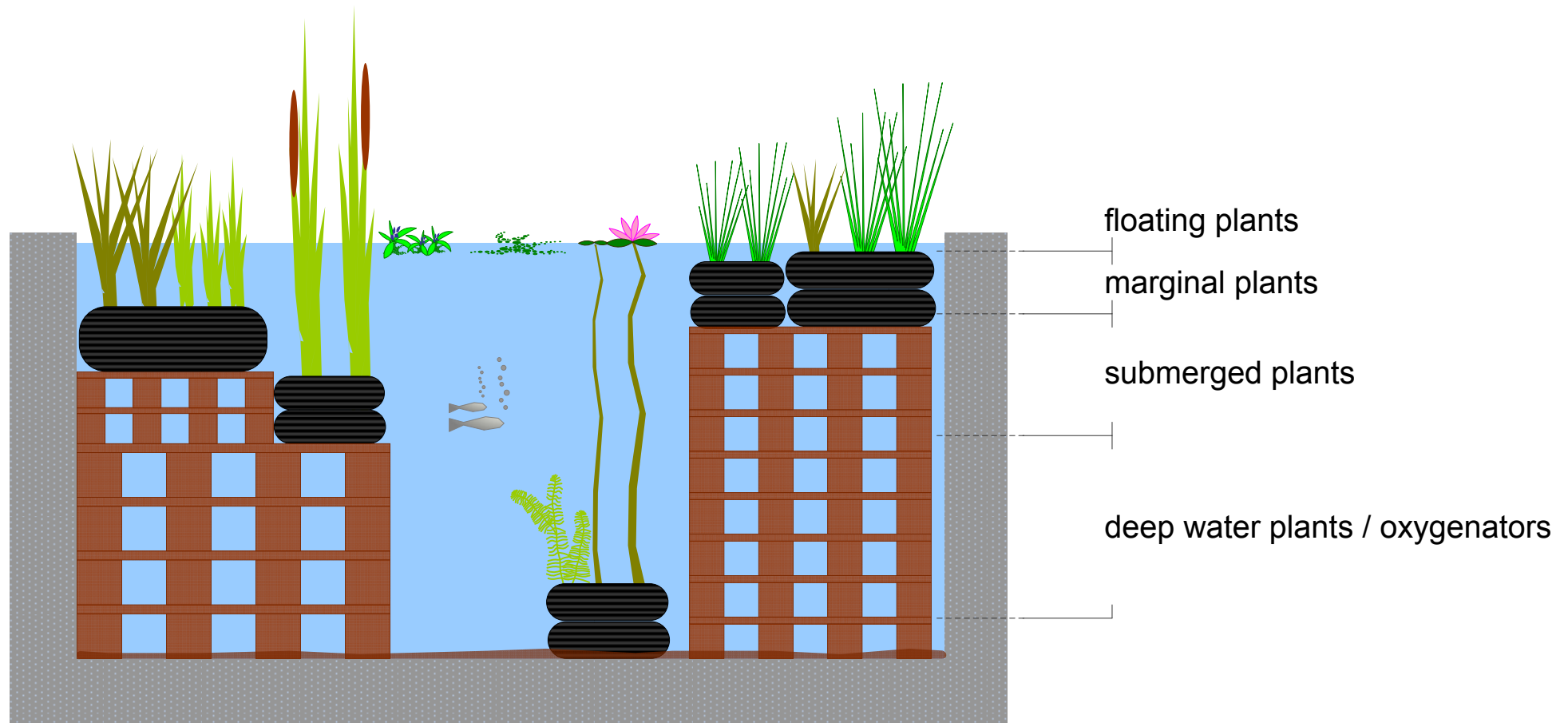
Side-view tank with planting zones

Quinta de Soã Miguel

Benjamin van Ooij

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Specifications

Plant list

Species	Planting Zone
Duckweed	Floating
Water Hyacinth	Floating
Common mare's tail	Floating
Umbrella papyrus	Marginal
Large sedge	Marginal
Common rush	Marginal
Bulrush	Marginal
Cattail	Marginal
Iris	Marginal
Water lilies	Submerged
Lotus	Submerged
Common mare's tail	Oxygenators

Material List

Materials

Wooden unpainted pallets
Car tires
Root cloth
Mud –bottom tank
Soil
Compost –peat free
Gravel
Tree trunks

Wildlife habitat

Habitats

Pallets
Trunks
Walls
Mud
Plants
Gravel