



geodesenho

landscaping | golf | sports turf



## CampoReal

Golfe & Natureza - Portugal

### Description and Location

**CampoReal Golfe & Natureza Resort** is located in the western coastal region of Portugal, forty minutes North of Lisbon. It occupies an area with steep hills and deep valleys. This is small farms country, with vineyards and fruit groves mixed with forestry areas in the steeper slopes. The course was designed by **Donald Steel**, with Senior Designer **Martin Ebert**, and opened in 2005. The resort golf facilities include a par 72, 6,000 meters, championship course and an extensive academy and training facilities. CampoReal did host the 2010 and 2011 editions of the **PGA Ladies European Tour**.

### Initial Assessment and Main Problems

- ◇ The most serious problem was water scarcity – although the area where the course sits looks green and lush, there are no readily available water sources.
- ◇ Local topography made it difficult to build a large scale lake or reservoir, and created erosion and sedimentation hazards that had to be prevented.

## GEOdesenho Proposal

The proposal that GEOdesenho presented to CampoReal was designed to address these situations. It included several main components:

- ◇ Water Logistics Study and the development and implementation of a Water Management System.
- ◇ Irrigation design, with an advanced irrigation management system as the final objective.
- ◇ Construction management support.
- ◇ Water Management System.

**“As golf course architects, we are always dependent upon well qualified and experienced technical advice, especially when it comes to irrigation issues. Campo Real posed some serious challenges in this area but GEOdesenho produced innovative solutions which provided the best possible result.”**

**Martin Ebert, Mackenzie & Ebert, former Senior Designer at Donald Steel & Co.**

## Solutions in Detail

- ◇ The initial Water Logistics study determined exactly how much irrigation water was required, pointing to 1,450m<sup>3</sup>/day at peak, and helping diagnose the sourcing problem. There is no local aquifer and bore hole production is very limited. Even today, all 10 bore holes combined only produce a maximum of 700m<sup>3</sup>/day (around 1/3<sup>rd</sup> of peak day demand). Additionally, there are no usable surface resources and no accessible waste water plant. All irrigation water has to come from the bore holes and rainfall harvesting.
- ◇ Preliminary work with the architect resulted in cutting down irrigated areas to the minimum necessary for play, just under 25ha. Surrounding areas were kept as natural landscape.
- ◇ Further work established the base guidelines for water reserves (in lakes), the irrigation and drainage designs, and the future Water Management System.
- ◇ All irrigation was specifically designed to facilitate a tight water management program. Both the irrigation and the control system were thought out to enable the future Water Management System, and minimize irrigation volumes.
- ◇ The architect managed to include two small lakes in the course, sacrificing valuable play areas. Two other reservoirs were created out of the golf area. The drainage and lakes design were integrated to facilitate rainfall harvesting. All run-off possible from the site (and from offsite) is captured and stored, to the reservoirs capacity limit.
- ◇ During construction the Water Management Plan was developed and set up. All decisions are based on several sets of soil moisture sensors, covering greens, tees and fairways, and supported by a

meteorological station located inside the golf. As grow-in started the system was in place. The Water Management system was fine tuned during the next two years.

- ◇ Even today, this is the best example in Portugal for golf irrigation management. Although demand at peak was estimated at 1,450m<sup>3</sup>/day, it has been brought down to 1.200m<sup>3</sup>/day by the irrigation management team, with a total yearly irrigation volume of 160,000m<sup>3</sup>. The bore holes are consistently supplemented by rainfall harvesting, so they usually function well below their maximum, except during summer.

**“Geodesenho and Martin Ebert, developed a project at CampoReal that is the «future». Considering the scarcity of water, they designed a sustainable golf course. This way, we only have 25 ha of irrigated area, and as a consequence, we also reduced the inputs of pesticides, fertilizers, and maintenance.”**

**Vera Quintas, CampoReal Superintendent**

