Our vision when we started the West Cliffs project was to build a golf course that fitted perfectly into the natural environment and offers a truly wonderful golfing experience. The beauty and challenge of this remarkable and rare ocean links course grows with each hole that you play. It is thrilling and dramatic but, at the same time, has been designed in such a way that it can be enjoyed by players of all levels.

West Cliffs Golf Links - Vision Statement
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cover photo credit: West Cliffs
Executive Summary

The project, West Cliffs Golf Links golf course by Praia Del Rey, is situated less than an hour north of Lisbon – on Portugal’s Silver Coast, in Óbidos (UNESCO world heritage site). The golf course has been designed by Cynthia Dye McGarey (ASGCA member), of the golf architecture firm Dye Designs Group.

With the Atlantic visible from every hole, the par-72 seaside links has been created over 230 hectares of natural landscape, rolling sand dunes and coastal vegetation. The varied landscape and natural terrain was maintained as undisturbed as possible to create a unique and world-class 18-hole seaside links golf course alongside the coast. The most distinguishing architectural feature on the course is the collection of bunkers with irregular perimeters blending into and dictated by the native vegetation. The project team worked in close collaboration with the local government to ensure minimum disruption to the environment and to create a harmonious and sustainable links, designed to perfectly fit into the native coastal environment. The result is a links that is modest in its footprint but provides a fun and fast surface that guarantees accessibility to golfers of all abilities.
Project Description

The golf project has been 14 years in the design stage, which has been led by Dye Designs. The West Cliffs Golf Resort project (golf course and resort) has been subjected to an EIA (from April 2008 to January 2009) and to a stakeholder consultation (May 14 to July 19, 2009). The competent authority (CCDR LVT - Lisbon Regional Coordination and Development Commission) has issued a conditioned favourable Environmental Impact Statement (9/9/2009 and 16/10/215) on the basis of the EIA, which was carried out on the detailed designs of the project.

The project includes an 18-hole golf course (34.7 ha); a clubhouse (2,020 sq.m.); and a maintenance facility (1,250 sq.m.);. The course routing has been laid out to align with natural characteristics of the ground, to benefit from the natural topography and landscape character, and to minimising the overall amount of intensively-maintained areas. The configuration of several golf holes has been reviewed during the planning phase to preserve native vegetation areas and minimize earth-movement. The golf course facility stretches over 35 hectares, constituted by 20 hectares of intensively managed turf (less than 10% of the overall site area) and 15 hectares of outer rough area, re-naturalized with native species.

“Our vision when we started the West Cliffs project was to build a golf course that fitted perfectly into the natural environment and offers a truly wonderful golfing experience. We believe we have just perfected nature. The beauty and challenge of this remarkable and rare ocean links course grows with each hole that you play. It is thrilling and dramatic but, at the same time, has been designed in such a way that it can be enjoyed by players of all levels. Our purpose is to continuously exceed our Clients expectations at Praia D’el Rey and West Cliffs.”

Francisco Cadete, Golf Director, Praia d’el Rey
The approach to the design and construction of the golf course was carefully planned and integrated the native landscape throughout. The course routing has been laid out to align with natural characteristics of the ground, to benefit from the stunning natural topography and landscape character, and to minimising the overall amount of intensively-maintained areas.

Alexandra Betâmio de Almeida, Independent Verifier - West Cliffs Golf Links
Key Achievements

The West Cliffs Golf Links project presents an opportunity to enhance overall tourism in the Óbidos region, contributing to long-term community, industry and business development, while preserving and enhancing the environment by incorporating areas for conservation and promotion of wildlife habitat. These benefits result are the direct result of the sustainable approach used throughout the entire project process, which encompassing planning, design and construction. The key achievements of the project are summarized below under the appropriate sustainability headings.

- Minimal earth movement to retain and enhance the authentic sense of place & natural beauty of the site
- 15 Ha. of rare native habitat has been created between the holes
- Continually monitor and remove invasive or exotics species.
- Use of native seed bank, harvested to re-colonise native areas that was previously plantation land.

- 100% permeable cath path system for 100% electric golf buggies
- Low-input grass species selection
- 100% sand and topsoil for golf construction found on site
- 20 Ha. of intensively maintained turfgrass area
- Gravity fed 5-lake system for a closed loop drainage and irrigation design

- Creates over 40 jobs for local economy
- Publicly accessible golf and clubhouse facility
- Collaborate with local schools to promote outdoor learning and skills
- Extensive walking and cycling trails and connectivity to lagoon and ocean
- Promote and share knowledge with shared or similar industries
The approach from the whole team has been measured, responsible and highly creative. A long process of assessment and understanding of the site meant once work began the team were focused, excited and determined to get the best golf from the site. The overall transformation of the site from pine plantation to a rich and diverse coastal scrub landscape is remarkable and testament to the skill and innovation of everyone involved.

Sam Thomas - Manager Golf Development, GEO
Design Stage

Overview
The West Cliffs Golf Links has been sensitive to environmental concerns from its inception. The course layout is the result of a long term study of the terrains conditions and characteristics to preserve the natural beauty and ecological balance of the site. The golf course was designed to be integrated in the landscape, in harmony with the natural environment and maintaining the ecosystem’s sustainability, with minimal earthworks and utilization of natural drainage swales and gullies, which means the course flows naturally with its surrounds.

Vision:
Express a close relationship between the golf links and the native coastal environment of Óbidos region. The qualities of this coastal environment and a celebration of the local way of life will be what makes West Cliffs Links Golf so special.

Goals:

- **Nature**
  - Restore a previous plantation landscape into a mosaic of native coastal scrub and diverse habitats.

- **Resources**
  - Maximise existing site features and materials to create an efficient golf course model that sits lightly in its location.

- **Community**
  - Provide opportunities for local expertise, suppliers and workforce to contribute to a genuinely Portuguese golf links.
Activities
The following text outlines the process that went into developing the West Cliffs Golf Links with sustainability at its heart. It illustrates the commitment and careful consideration of the project team’s objectives and vision throughout the early stages of the project’s life.

Nature
The approach to the design and construction of the golf course was carefully planned and integrated the native landscape throughout. The course routing has been laid out to align with natural characteristics of the ground, to benefit from the stunning natural topography and landscape character, and to minimising the overall amount of intensively-maintained areas.

The course routing has been laid out to align with natural characteristics of the ground, to benefit from the stunning natural topography and landscape character, and to minimising the overall amount of intensively-maintained areas. The re-naturalised areas, situated outside the intensively managed turf areas, were restored as natural habitats utilizing the dominant naturally occurring species on-site. These areas should not have permanent irrigation and should not be intensively maintained.

Taking into account the ecological sensitivity of the site and surroundings, the landscape and environmental aspects led all the phases of the planning and design process in order to plan and design-out environmental impacts and to minimize the needs for technological fixes, e.g.
Topographic change and disturbed areas across the entire site were minimized, buildings included passive design features and materials and colours were chosen to promote their integration with their surroundings, with prevalence for colours corresponding to natural local materials (wood, stone, clay, sand), reducing the visual impact of buildings in such a sensitive landscape.

Resources
The water management is a combination of state of the art technologies (precision application of water and efficient pumping, based on detailed soil moisture and turfgrass analysis), proper plant selection (low input fescue grass species) and cultural maintenance practices that provide adequate turf quality while minimizing the use of water and chemicals. All lakes are located in low-lying or flatter portions of the property to maximize the benefit of gravity-flow drainage systems and minimize the expense of excavation, maximizing the ability to direct drainage to them and, therefore, capture and recycle as much rainfall as possible.

15Ha.
of rare native habitats uncovered
The drainage system is closed loop and feeds 100% of surface water captured from course drainage into water bodies before being used for irrigation. Directing drainage through the lake network to the irrigation lake provides an additional factor of safety for several reasons: the nutrients or pesticides present in the run-off are dramatically diluted when they enter the vast body of water present in a lake, and the dilution is multiplied many times if the runoff actually passes through more than one lake.

Water is a scarce substance in the area due to local pedological, geological and climatic conditions and the site does not have sources of surface water, therefore the irrigated area and the intensively managed turf areas have been limited to less than 10% of the site area. The water management plan and irrigation project also consider the input of 20-25% of treated sewage effluents (TSE) for golf irrigation (from local municipality TSE source), as soon as TSE is available for reuse.
The project not only will create new jobs in the local community, but will further enhance overall tourism to the region, which in turn will help create jobs. It has been estimated that the project will create: 24 jobs in operations of facility, 15 greenkeeping staff, 4 seasonal greenkeeping staff; approximately 30 construction staff.

The golf facility and the resort will be free-access to the public. The strategy outlines several objectives aimed to increase the number of clients/club members and visitation to the area, through improving and developing services and products, encouraging retention, while diversifying the experiences on offer within the golf resort and within the municipality. These objectives are:

- To create and promote accessible forms of golf, to increase awareness of and demand for golf experiences from both local residents and visitors to the area;
- To work cooperatively with local Óbidos and Peniche schools and colleges, to promote outdoor learning and provide internship opportunities for aspects of the golf business;
- To promote the open ethos of the project, with access to all facilities available to public and “more than golf” offering, including oceanside living, walking and cycling trails, access to the lagoon;
- To promote local services, buying from local suppliers,
- To promote knowledge sharing of the practices implemented across the golf community - especially with the Portuguese Golf Federation and the Portuguese Greenkeepers Association.
The contractor did not deviate from the technical construction specifications and detail drawings given by the architect. GolfScape/Progolf's organisation, site management, shaping, finishing and work ethics were of the highest order, carrying out the construction on schedule and within budget and staying coordinated with local authorities and planning agencies.

Alexandra Betâmio de Almeida, Independent Verifier - West Cliffs Golf Links
Construction Stage

Overview

Construction work on West Cliffs began in February 2016. During the construction phase, the detailed design has continually evolved toward minimizing the area of intensively-managed turf to the absolute minimum required to create a playable golf course for all skill levels, taking into consideration the landscape and natural vegetation, the source of water supply and the optimization of the golf course irrigation.

The construction work at West Cliffs golf course has been executed by Construções Pragosa (infrastructure) and Golfscape/ProGolf (golf course construction), a specialist golf course construction company with over 20 years’ experience. The Construction Programme indicated a completion of construction work in early 2017 (10th February 2017) but the completion date was adjusted and the date of final completion / opening day was rescheduled (23rd June 2017).

During the construction stage of the project, the Construction Logistics Plan (construction management plan) provided the detail of the logistics activity expected and ensured that the construction team followed best practice within the logistics supply chain as often as possible, benefiting the developer, other stakeholders and the local environment.

A comprehensive monitoring plan was implemented during construction phase. The evolution of the work was made through periodical reports and monitoring results were reported to and verified by the Local Authority (CCDR-LVT).
Activities
The following text outlines the construction process of the West Cliffs Golf Links. It illustrates the steps taken during construction to deliver the highest quality golf course in a responsible, practical and resourceful way.

Nature
The disturbed area (clearing of natural vegetation, deforestation and earth-movement) was kept to 40 ha in order to retain and enhance the authentic sense of place and natural beauty of the site, adapting to the morphological and topographical characteristics of the ground and protecting, whenever possible, areas of higher density of coastal vegetation.

The construction of the golf course included approximately 220,000cum of earthworks (cut and fill) with zero export of material, removal of all exotic plants (Acacia Spp and Carpobrotus edulis), woodland and tree (Pinus pinaster and Pinus pinea), and construction of local crushed stone pathways (6,760 m).

The colours and textures of the site that bring a unique character to this area have been allowed to flourish under the measured tree removal works. These removal works have changed the landscape from an industrial like plantation character into a low coastal scrub landscape, diverse in flora and fauna. The opening up of the site now gives the visitor a closer to the ocean feeling with views from almost every point of the site down towards the ocean.
The interstitial zones between the holes were preserved, maintaining the existing vegetation, and the outer rough areas were restored as natural habitats with many similarities with the local natural coastal habitat, utilizing the dominant naturally occurring species on-site (Pashmina and native seeds). These areas do not have permanent irrigation and are not intensively maintained.

**Resources**
Throughout, there was use of local suppliers of goods, services and construction products, whenever possible. The construction management team incorporated environmental and social considerations into product and service selection process:

- Certified timber on clubhouse cladding,
- Traditional Portuguese cobblestone pavement sourced from a local supplier,
- Rootzone material sourced from local sand quarry located 30km from site,
- Local crushed stone (gravel) for pathways, etc.

The construction management team worked with more than 43 Portuguese suppliers. The Course Superintendent, Pedro Rebelo, has created an on-site plant nursery for turf and other species to reduce reliance on external sourcing. The on-site turf nursery ensures permanent availability on an as-needed basis and Pedro is also testing C4 warm-season cultivars to ensure a sustainable management of both Praia D’el Rey and West Cliffs golf courses.

100% pathways constructed of local stone

ALL exotic species removed
The protection of the native vegetation on site and surface soil stripped from areas to be disturbed that contain a reservoir of seeds was one of the most important key aspects for Golfscape. The golf contractor implemented procedures that helped preserve and protected both natural resources, namely:

- Maps showing topsoil and subsoil types and areas to be stripped
- Methods for stripping, stockpiling, re-spreading and improving the soils
- Haul routes
- Fencing
- Location and content of each soil stockpile
- Who is responsible for supervising soil management

During the construction phase, the construction management team worked to reduce waste through more efficient material use and accurate ordering processes. The construction team also reused and/or recycled materials on site wherever possible (e.g. gravel, sand and seeds), in line with best practice (e.g. locally available sand used on fairways, tees, roughs, bunkers, waste bunkers and surrounds, 15cm of sand screened from site used as sandcapping, etc.).
The decision was made to selected domestic suppliers/contractors, whenever possible. Contractors appointed for the clubhouse and maintenance facility contract and for the golf and landscape works were Portuguese companies.

West Cliffs Golf Links (managed by Praia D’el Rey), Construções Pragosa (infrastructure) and Golfscape (golf course construction) employed local workers for all the golf construction phases. During the golf construction phase, employment fluctuated from 20 to not more than 50 people.

Since the beginning of the golf course construction, the Course Superintendent, Pedro Rebelo (head greenkeeper at the Praia D’el Rey golf course), supervised all the work performed by the construction team. During the construction phase, the project management team also engaged a qualified greenkeeper to assist in the briefing and to help monitor outcomes during construction and grow in phases.

The public access route to the beach remained open during construction. The project also included beach public access and parking area improvements and a new cycleway connecting the existing beach public access to cycle routes and walking paths across the resort. All the improvements, cycle routes and walking paths had been completed before the golf course.
“We are extremely excited to welcome the first GEO Certified® Development in Europe. The resourceful and innovative approach from the entire team involved in the project has been inspiring to see. Lead by Cynthia Dye McGarey (Dye Designs) and built by the team at Golfscape, the golf course raises the bar in terms of golf design and construction - applying specialist knowledge and expertise to the process of delivering a world class golf course with sustainability at its heart.

Jonathan Smith, Executive Director of GEO Foundation
Sustainability in and through golf

photo credit: West Cliffs