

# Certification Report

*West Cliffs Golf Links,  
Óbidos, Portugal*

Certification Stage

OnCourse® Developments  
Milestone Document

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## Executive Summary

### Objective and Scope

This Certification Report is the fourth and final milestone report on the pathway to receiving GEO Certified® Development status. It has been prepared by Alexandra Betâmio de Almeida, accredited independent verifier for the project.

The Certification Report, provides independent verification of the overall process, and delivers a definitive evaluation informed by comprehensive review of the documentation and supporting evidence. The role of the verifier is to provide independent confirmation that the sustainability Vision, Goals, and Targets as set out in the V1 and V2 Blueprints have been delivered on completion of the project.

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 (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.

The golf course facility stretches over 40 hectares, constituted by 20 hectares of intensively managed turf (less than 10% of the overall site area) and 15 hectares of outer rough area, renaturalized with native species. The project components include:

- 18-hole golf course (34,7 ha);
- 5 Lakes (2,3 ha);
- Driving range and practice area (2,6 ha);
- Clubhouse (2,020 sq.m.);
- Maintenance facility (1,250 sq.m.);

- Restrooms on the golf course.

The Certification Report has been prepared in accordance with the agreed GEO methodology as detailed below. Documentary evidence sources included proposals drawings and as built drawings from the golf course architect and building architect, and other contract documents including specifications, programme timelines, bills of quantities with variation orders, and payment completion certificates. These were supplemented and supported by on-site observations backed up by photographic records, and discussion with project team members including statements during meetings as recorded formally in the relevant minutes.

## Timeline

- September 2009 and 10 October 2015: Environmental Permit/ conditioned favourable Environmental Impact Statement (project subjected by law to EIA procedure) granted by CCDR-LVT (national authority).
- February 2016: Construction commenced.
- March - May 2016: GEO Project Appraisal approved and formal enrolment of the project in the OnCourse® Developments programme.
- June 2016: V1 Blueprint confirmed
- Spring 2017: Construction completed.
- April 2017: V2 Blueprint confirmed
- June 2017: Final verification visit
- July 2017: Certification Report issued

## Methodology

### Overview

The project was formally enrolled in the OnCourse® Developments program on May 2016. The methodology for certification was agreed between GEO and the Verifier in a formal Scope of Services document signed in May 2016. The tasks undertaken were in accordance with the ethical and professional standards set out by GEO in the current edition of the accredited Verifiers' Handbook (2017). The essence of the process is to provide independent and objective auditing to ensure that the vision, goals, and targets for the project have been satisfactorily delivered in accordance with the criteria detailed in the GEO Voluntary Sustainability Standard (VSS)<sup>1</sup>, and that the relevant supporting documents have been provided.

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[http://www.golfenvironment.org/assets/0004/3219/Sustainable\\_Golf\\_Development\\_VSS\\_2016WEB\\_v1.pdf](http://www.golfenvironment.org/assets/0004/3219/Sustainable_Golf_Development_VSS_2016WEB_v1.pdf)

## Stages and Tasks

The key tasks undertaken at each of the development stages were as follows:

### Design: Blueprint V1

- Initial site inspection (May 2016):
  - Visit accompanied by GEO and project team representatives:
    - Sam Thomas: Manager, Golf Development GEO
    - Paulo Monteiro: Owner representative
    - Cynthia Dye: Golf Architect
    - Francisco Cadete: Golf Director
    - Pedro Rebelo: Head Greenkeeper
    - António Miranda: Golfscape/Progolf, golf contractor
    - Alexandra Almeida: Independent Verifier
  - Introductory discussion of project
  - Site walk-over/familiarisation with key issues
  - Meeting/review of initial draft Blueprint V1, discussion of key aspects of content to be reviewed and developed, including detailed feedback on Vision, Goals, and Targets, and Construction Roadmap
- Comments and feedback provided to GEO on revised draft Blueprint V1, additional supporting information requested.
- Final draft Sustainability Blueprint V1 and relevant supporting information reviewed<sup>2</sup>. Recommendation provided to GEO.
- June 2016: V1 Blueprint confirmed.

### Construction: Blueprint V2

- September 2016 – April 2017: Site visits (3) were carried out by the project verifier throughout the construction phase. During those visits the verifier was able to:
  - Site walkover to assess and record construction progress against the project's sustainability targets and review the initial draft Blueprint V2.
  - Understand changes in projects and their implications.
  - Objectively inform the project team of their progress against their targets and the requirement for any amendments.
- Visits accompanied by GEO and project team representatives:
  - Francisco Cadete: Golf Director, Praia D'el Rei Golf Course
  - António Miranda: Golfscape/Progolf, golf contractor
  - Pedro Rebelo: Head Greenkeeper, Praia D'el Rei Golf Course
  - António Póvoas /Bernardo de Almeida: West Cliffs Greenkeeper

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<sup>2</sup> See Appendix A

- Alexandra Almeida: Independent Verifier
- Comments and feedback provided to GEO on draft Blueprint V2 after each site visit, additional supporting information requested.
- Final draft Sustainability Blueprint V2 and additional supporting information reviewed<sup>3</sup>. Recommendation provided to GEO (April 2017).

#### Completion: Certification Report

- Final site inspection (June 2017).
- Visits accompanied by GEO and project team representatives:
  - Francisco Cadete: West Cliff Golf Director (Praia D'el Rei group)
  - Pedro Rebelo: Course Superintendent (Praia D'el Rei group)
  - Bernardo de Almeida: West Cliffs Greenkeeper
  - Alexandra Almeida: Independent Verifier
- Make final site walkover to verify completed works
- Comprehensive final review of all project information provided to date
- Certification Report and recommendation provided to GEO (July 2017)

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<sup>3</sup> See Appendix A

## 1. Project Description

The site is located adjacent to the Lagoa de Óbidos and the Atlantic Ocean bounding the site in the West, near the Praia D'el Rey golf resort and in the new West Cliffs Golf Resort. The project is a key component in the wider strategic development of Portugal's Costa de Prata (Silver Coast) to primarily boost the economy and increase tourist numbers.

The site has long distance views towards the coastline with framed views enclosed by the natural rolling topography and vegetation. The landscape is characterized by low coastal scrub, rolling sand dunes, pine tree/eucalyptus forests (forestry industry) and the proximity to the ocean.

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 carried out on the detailed designs of the project.

The project's golf proposals include an 18-hole golf course, a clubhouse and a maintenance facility. 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. An adequate buffer zone (250 m) between the disturbed area and the coastal sand dune and vegetated sea cliffs has been put in place and vegetated sea cliffs with endemic "*Limonium spp.*" (habitat 1240) will not be affected during the implementation of the project.

The project team includes:

Project Owner:	Paulo Monteiro, Project Manager- West Cliffs Golf Resort
Golf Course Architect:	Cynthia Dye, Dye Designs group
Golf Director:	Francisco Cadete, Praia D'el Rey management team
Course Superintendent:	Pedro Rebelo, Praia D'el Rey management team
Environmental Technician:	Rui Mendes, Construções Pragosa
Golf Contractor:	Benjamim Silva/António Miranda, ProGolf/Golfscape

## 2. Design Process

### Summary

#### GOLF DESIGNER'S STATEMENT

*This golf course has made it possible for a spectacular coastal habitat to be exposed and restored. This is an example of what responsible development should be. The design has gone beyond the boundaries outlined in the biological assessment to honour the vegetation that the assessment intended to protect. This is a very unique project in Portugal and one that will be honoured globally for its environmental achievements.<sup>4</sup>*

Cynthia Dye, Golf Architect/Dye Design Group and ASGCA member

#### GOLF DIRECTOR'S STATEMENT

*“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

### 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.*

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<sup>4</sup> Extract from Architect’s Environmental Design Statement

## Community

*Provide opportunities for local expertise, suppliers and workforce to contribute to a genuinely Portuguese golf links*

## THE GOLFCOURSE

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 terrain's 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.

The distinguishing aspects of the course design are:

- Environmentally-sensitive design, fitting seamlessly into its natural surroundings and offering sweeping views of the Atlantic Ocean from each hole;
- Outer rough area naturalized with native species;
- Bunkers with irregular perimeters blending into and dictated by the native vegetation;
- Restrict intensively managed turf to 20 ha;
- Low input turf grass species mix selected for tees, fairways and roughs to minimize the amount of fertilizer, pesticide and herbicide application;
- Efficient drainage design;
- Water bodies placed in natural low points or existing drainage gullies;
- Naturalized edges of water bodies with wetland buffer;
- Irrigation water with three tiers of sourcing depending on climatic conditions (captured surface drainage, borehole extraction and local municipality TSE source);
- A best-in-class irrigation system, pressurized with the most up-to-date energy efficient pump system;
- Lakes (5) with gravity-fed circulation system;
- Permeable cart path surfaces;
- Electric golf buggies;
- Designed for all levels of end user, with 5 sets of tees, and inclusive ethos with generic tee descriptions offering distances between 6400m and 4600 m.

## THE CLUBHOUSE

The clubhouse was designed by renowned Portuguese architects, Sua Kay (General Project) and Blue Office (Interior Architecture), and furnished by leading interior design company Filosofia do Espaço. The architectural concept is based on the relationship with nature. The Clubhouse has 2 floors including all services connected to the golf course, the shop selling articles and a social activities areas, which includes a large bar with panoramic views over the golf course, lounge areas, and the À la Carte restaurant.

The distinguishing aspects of the clubhouse are:

- Low profile, eco-friendly design (green building and passive design concepts);
- Solar water heating systems;
- Natural cladding materials, such as wood and stone;
- Car parking spaces and sidewalks with traditional “calçada portuguesa”, Portuguese cobblestone pavement;
- Clubhouse project to achieve at least a B-certification rating (ECP)<sup>5</sup>:

## THE MAINTENANCE FACILITY

The course will operate out of a state-of-the-art maintenance facility. The maintenance area was planned to reduce operation costs and environmental impacts and the building has been designed to maximize operational efficiency of operations while minimizing environmental impacts and risks associated with health and safety issues.

The project includes the construction of two single-storey buildings with administrative offices and employee locker room and breakroom, equipment storage and maintenance workshop area (for daily repairs, storing of maintenance materials, small tools and equipment), wash off pad, pesticide fill and all areas tie in to a state-of-the-art filtration system, and provides for sand and soil, chemical and hazardous material/waste secure storage.

The entire facility is self-contained. Maintenance is performed in covered or indoor maintenance areas where potential pollutants cannot be introduced into stormwater drainage systems. All vehicles and equipment are cleaned in a designated area. All the drains run into a central wastewater drain, which is connected to an oil/water separator, preventing wash water from draining directly into soils, ground water or public sewer.

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<sup>5</sup> Portugal's certification system for buildings - the System for Energy and Indoor Air Quality Certification classifies buildings on a scale ranging from A+ (highest efficiency) through G (lowest efficiency) and requires a minimum certification grade in the design of new buildings - at least a B-certification rating to be approved at the planning stage, before construction begins

The distinguishing aspects of the maintenance facility are:

- Centrally located maintenance facility reducing fuel use and improving logistics;
- State-of-the-art maintenance facility project;
- Storage of fuel and hazardous substances / wastes compliant with national law;
- Maximum chemical storage safety;
- Part of the maintenance fleet to include electric and hybrid vehicles;
- Staff resource, maintenance equipment and furniture sharing relationship with Praia D'el Rey.

## Verifier Observations

### 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 golf design helps to protect the health of ecological systems and the biodiversity they support and conserves areas with identified environmental and landscape values, also increases the relationship between wildlife and surrounding landscape. 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 do not have permanent irrigation and will not be intensively maintained.

The design of the buildings complies with certain basic obligations. In particular, it uses all appropriate pollution-prevention measures and prevents large-scale pollution, reducing health and safety risks to personnel and surrounding environs while protecting natural resources.

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 that apply the appropriate amount of supplemental water in an efficient manner (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. The selection of Declaration Creeping Bentgrass for greens, a mix of Ryegrass, Bluegrass, Red Fescue, Chewings Fescue for tees and fairways and a mix of Strong Red Fescue, Hard Fescue, Red Fescue, Chewings Fescue for roughs, will further reduce life cycle resource inputs.

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. All lakes are interconnected and were planned to enhance storage capacity and minimize the “drawdown” created by nightly watering of the course. The gravity-fed circulation irrigation system will reduce pumping energy requirement and consists of open features, such as streams and cascades between lakes. One of the lakes serves as a reservoir for the irrigation system and is located in the lowest elevation. Water conservation was also a major concern, and a synthetic membrane was used to prevent leaking and conserve water in the golf course lakes.

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, and directing drainage to the irrigation lake, maximizes the amount of nutrients or pesticides that are returned to the course through sprinklers rather than discharged off-site.

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. Abstracting water from underground or from streams requires regulatory approval and the

owner was able to obtain the permits for two boreholes situated on the site which provide the quantity of water needed for irrigation (2 already licensed, 2 with approval pending). 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 design of the clubhouse combines integrated architecture and interior design with environmental analysis. The building was designed to reduce the overall impact of the built-up environment on human health and the natural environment. The efficient use of energy, water and sustainable materials, of architectural techniques that prioritise natural light, of “intelligent” equipment, protecting occupant health and improving employee productivity, reducing waste, pollution and harm to the environment, traffic circulation, parking location, visitor safety and accessibility, were crucial components used to inform the design of the facility.

### Community

The golf course and buildings construction projects comply with all applicable national building code requirements and all applicable local and national regulations.

Tourism is one of Óbidos’ key economic and social drivers, contributing to long-term community, industry and business development. 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 golf project will create: 24 jobs in operations of facility, 15 green keeping staff, 4 seasonal green keeping staff and approximately 30 construction staff.

The golf facility and the resort will be free-access to the public and the golf facility will be managed by Praia D’el Rey Golf management team. 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.

## 3. Construction Process

### Summary

Construction work on West Cliffs began in February 2016 and the clearing of vegetation for primary shaping was completed by mid-February. 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 Golfscope (golf course construction), a specialist golf course construction company with over 20 years' experience. Pragosa's work was completed early in the construction programme with Golfscope/Progolf being responsible for the majority of the golf construction work, including during the sowing and grow-in phase.

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).

The contractor did not deviate from the technical construction specifications and detail drawings given by the architect. Golfscope/Progolf's organisation, site management, shaping, finishing and work ethics were of the highest order. Golfscope has carried out the construction on schedule and within budget. The work was also coordinated with local environmental authorities and planning agencies. The approach to the construction process was fully congruent with the goals and targets established at the design stage in the Blueprint V1 and as subsequently developed in the Blueprint V2 Construction Roadmap.

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. It was a priority to reduce energy consumption and unnecessary exploitation of resources, as well as the amount of construction waste and pollution from the transport of construction materials.

The construction team employed a culture of building safely, implemented preventive measures to reduce the risk and used environmentally-conscious construction techniques to make construction results safe to the environment. The Pollution Control Plan (PCP) implemented during construction included Best Management Practices (BMP) to prevent pollution related to contractor activities.

The project management team valued open communication and had a system in place to ensure that workers were adequately trained and had received proper orientation. The communication plan included informing personnel of the BMPs on hazardous and non-hazardous material delivery and storage, material use, waste management, spill prevention and control and other emergency procedures.

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).

## Verifier Observations

### Nature

It was required that golf course blended harmoniously with its surroundings, thus the disturbed area (clearing of natural vegetation, deforestation and earth-movement) was reduced 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 220,000 cubic meters of earthworks (cut and fill) with zero export of material, removal of exotic plants (*Acacia Spp* and *Carpobrotus edulis*), woodland and tree (*Pinus pinaster* and *Pinus pinea*) clearance, and construction of crushed stone cart pathways (6.330 m) and walking paths (430 m), consistent with the guidelines given by the architect/project manager. It is worth mentioning that exotic plants were removed manually or with the help of simple tools.

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), meeting the minimization measures included in the Environmental permit. These areas do not have permanent irrigation and will not be intensively maintained.

	TEES/m <sup>2</sup>	GREENS/m <sup>2</sup>	FAIRWAYS/m <sup>2</sup>	ROUGH/m <sup>2</sup>	WASTE BUNKERS/m <sup>2</sup>	BUNKERS/m <sup>2</sup>	OUTER ROUGH NATIV. (A)/m <sup>2</sup>
	9191,15	11361,29	97636,72	81470,58	18449,49	4284,02	150259,00
Golf Course (holes), Driving Range, Chipping and Putting Green areas	Declaration Creeping Bentgrass	10% Ryegrass, 20% Bluegrass, 50% Red Fescue, 30% Chewings Fescue	10% Ryegrass, 20% Bluegrass, 50% Red Fescue, 30% Chewings Fescue	30% Strong Red Fescue, 20% Hard Fescue, 30% Red Fescue, 20% Chewings Fescue	Flexible approach to bunker design, utilizing open existing sand areas for placement and informal edging to blend with dune character		Areas naturalized with native species
Turfgrass area/ha	20 ha						
Irrigated area/ha	22,4 ha						
Total disturbed area/ha	40 ha						
Total area/ha	230 ha						

## Resources

The project manager encouraged the use of local suppliers of goods, services and construction products, whenever possible. The construction management team carried out procurement activities in an environmentally and socially responsible manner, incorporating environmental and social considerations into product and service selection process (e.g. 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 50 suppliers. Of these, only 7 were international companies (Dalton Cooper, Dye Designs, European Turfgrass Laboratories Ltd, ortolan zappatrici, Paige, Redexim, Riversa).

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.

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 construction management team also took special care when working with hazardous wastes, complying with all legislation to ensure they were safely stored and disposed of and communicated this policy to its employees. The construction management plan included effective waste management policies and plans.

### Community

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 have already been completed.

## 4. Management hand-over

### Summary

West Cliffs is being managed by Praia D'El Rey, one of Europe's leading resorts, situated less than 10 minutes' drive from West Cliffs. All greenkeeping operations are being handled by the West Cliffs greenkeeping team, coordinate by Bernardo de Almeida (greenkeeper), under Course Superintendent Pedro Rebelo (Praia D'el Rey Head Greenkeeper).

With regard to maintenance equipment, the project team has considered hybrid and biodiesel-powered alternatives to diesel variants. The greenkeeping team will also share equipment with Praia D'el Rey.

Praia D'el Rey has implemented a management system with a set of processes and practices that enable the organization to reduce its environmental impacts and increase its operating efficiency, through consistent control of its operations. The same management system will be implemented at West Cliffs Golf Links, aiming to improve performance across all functional areas. The Golf Director has committed to register both Praia D'el Rey and West Cliffs golf courses on the OnCourse® programme.

### Verifier Observations

Efficient and responsible maintenance practices are included in the golf course's routine maintenance in order to sustain the integrity and playability of the course landscape.

A management plan for the first semester (January – June 2017) has also been provided. A maintenance schedule (schedule of tasks with tentative dates and other details included, e.g. soil test information, control measures, cultural practices, etc. ) and an action plan were included in the management plan for the golf course and surrounding areas, namely woodland, wetland, pine forestry and lakes/lakeshore areas.

The management plan also includes the monitoring plan (water consumption quantities, water quality, energy consumption quantities and waste management - self-monitoring report twice a year). The irrigation system will continue to be refined during the first year of operation to achieve maximum efficiency.

The plan is intended to be used by greenkeeping personnel as a guide for maintaining and monitoring the golf course and surrounding areas.

## 5. Key Achievements

### Summary

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.

### Nature

#### Design Goal

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

#### Key Achievements

- Environmentally-sensitive design, fitting seamlessly into its natural surroundings and offering sweeping views of the Atlantic Ocean from each hole;
- The earth-movement was minimized in order to retain and enhance the authentic sense of place and natural beauty of the site (the total disturbed area is approximately 40 ha, less than 18% of the total area)
- The interstitial zones between the holes were preserved, maintaining the existing vegetation, and the outer rough areas were restored as natural habitats, with native species (approximately 15 ha);
- Responsible approach to habitat management to continually monitor and removal invasive or exotics species;
- Bunkers and waste bunkers with irregular perimeters blending into and dictated by the native vegetation;
- A responsible approach to habitat management to continually monitor and removal invasive or exotics species(*Acacia Spp* and *Carpobrotus edulis*);
- Successful integration of the clubhouse into the surrounding landscape.

## Resources

### Design Goal

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

### Key Achievements

- Low input turf grass species selected for tees, fairways and roughs to minimize the amount of fertilizer, pesticide and herbicide application;
- The design has continually evolved toward minimising the area of intensively-managed turf to 20 hectares;
- Native and near native plant material is drought and heat tolerant, thus reducing irrigation water demand;
- Golf course automated irrigated area limited to 22,4 ha (approx. 10% of overall site area).
- Efficient drainage design;
- Irrigation water with three tiers of sourcing (captured surface drainage, borehole extraction and local municipality TSE source);
- A best-in-class irrigation system, pressurized with the most up-to-date energy efficient pump system;
- Lakes with gravity-fed circulation system;
- 100% electric golf buggies (40);
- The clubhouse includes passive design concepts, e.g. low profile, eco-friendly design, solar water heating systems, natural cladding materials, such as wood and stone;
- Use of certified timber on clubhouse cladding;
- 100% of sand and topsoil for use on fairways, tees, roughs, bunkers, waste bunkers and surrounds has been sourced on site;
- Use of materials from the site to build 100% permeable cart path surfaces (Crushed stone (gravel) with stabilizer = 6.330 m x 3 m, Crushed stone walking path = 430 m x 1,2 m);
- Centrally located maintenance facility reducing fuel use and improving logistics;
- State-of-the-art maintenance facility;
- Maximum chemical storage safety;
- Use of most efficient turf maintenance machinery (hybrid mowers and equipment that use biodegradable hydraulic fluid);
- Staff resource, maintenance equipment and furniture sharing relationship with Praia D'el Rey;

- On-site plant nursery for turf and other species to reduce reliance on external sourcing.

## Community

### Design Goal

*Provide opportunities for local expertise to contribute to a genuinely Portuguese golf links.*

### Key Achievements

- The golf facility and the resort will be free-access to the public;
- The golf course was designed for all levels of end user with generic tee;
- The clubhouse is *accessible* for people with *disabilities* and complies with accessibility requirements;
- *The project includes a new cycleway, connecting cycle routes and walking paths across the resort with the existing beach public access;*
- The golf facility is managed by Praia D'el Rey Golf management team, situated less than 10 minutes' drive from West Cliffs;
- The management team has a policy that places great emphasis on locally hired labor, along with locally available materials and equipment. More than 50 Portuguese *companies* will have worked on the *project* and most of the construction work force was *hired locally* (an average workforce of 30). It has been estimated that the golf project will create: 24 jobs in operations of facility, 15 green keeping staff and 4 seasonal green keeping staff;
- The management team aims to promote accessible forms of golf, to increase awareness of and demand for golf experiences, from both local residents and visitors to the area, and aims 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.

## 6. Continued Development Points

The following points should be addressed in further developing the sustainability vision of the project:

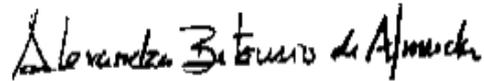
- Continue to gather hard data to support and promote sustainability messages derived from the project by enrolling in the GEO's OnCourse® programme, the programme provides a pioneering pilot project documenting and demonstrating the practicality of seamless transition from sustainable development to sustainable management.
- In order to reduce energy consumption the management team can implement lower cost efficiency upgrades, employ awareness building strategies around energy usage, and behavior-changing tactics that offer the opportunity for increased staff and club member involvement (e.g. vending misers cut energy consumption in half for beverage vending machines, replacing traditional incandescent bulbs and CFL bulbs with LED bulbs in the maintenance facility can cut lighting costs by up to 75%, place adhesive stickers on light switches to remind everyone to conserve energy by turning off the lights, etc.)
- Consider installing a solar water heating system in the maintenance building, projected to use sunlight to heat water and eliminate greenhouse gas emissions.
- Monitor the amount of wildlife living in the golf course area and maintain the surrounding areas, namely woodland, wetland and, pine forestry areas, providing increased aesthetic interest for golfers.
- Maintain an on-going written inventory of at least bird and mammal species to document and track wildlife use of the property.
- Label indigenous plants to both educate players/visitors and help remind maintenance crew which plants are intentional.
- Continue to naturalize out-of-play shorelines with emergent aquatic and shoreline plants - wildlife is most abundant when shallow water includes emergent aquatic vegetation.
- Train maintenance staff in the basic tenets of integrated pest management and water conservation techniques.
- Investigate opportunities for further direct links with local communities through education and practical activities to help promote environmental awareness and the positive health and wellbeing aspects of playing golf.
- Consider starting a garden to provide part of the produce for both clubhouses (West Cliffs and Praia D'el Rei) and a composting program, in order to reduce food waste from ending up in the garbage.

## 7. Recommendation

Based on the scope and findings of the verification assessment, the site visits and the available information provided by the West Cliffs Golf Links management team, The Recommendation of the Verifier further to the certification review process is that the project, West Cliffs Golf Links, should be formally awarded GEO Certified® - Development status for excellence in sustainable golf development.



Jonathan Smith  
Executive Director of GEO Foundation



Alexandra Betâmio de Almeida  
Verifier for West Cliffs Golf Links

## Appendices

### A. Supporting Documents Schedule

## A: SUPPORTING DOCUMENTS SCHEDULE

Document / Drawing Reference Name	Reference Number / Title	Responsibility
Document	Project Appraisal	GEO
Document	Blueprint V1 Final	Client/Verifier
Document	Blueprint V2 Final	Client/Verifier
Document	EIA, environmental studies and environmental permit – DIA 9.09.2009, 23.10.2015 (addition) Monitoring Reports (Construções Pragosa/Pragosa Ambiente) Environmental Authority site visit report – 23.08.2016	Client
Design and Construction Drawings	Phase 3 – Final routing with strategy option B – rev. 24.01.2016  Phase 3 – Final Grading Plan option B – rev. 24.01.2016  Phase 3 – Final Cut & Fill Plan option B – rev. 24.01.2016  Phase 3 – Final Drainage System Plan option B – rev. 13.06.2015  Phase 3 – Final grassing Plan option B – rev. 23.2.2016 and 3.05.2016  Phase 3 – Final Clearing Plan option B – rev. 3.05.2016  Phase 3 – Final Cart Path Plan option B – rev. 4.10.2016 and 17.03.2017  Soft Landscape Documents and Specifications 2016	Dye Designs
Planning/Design and Construction Drawings	Clubhouse and Maintenance Facility - Site plan (09.2015) and floor plans (08.2015), indicating measurements, details and proposed uses of all rooms and spaces. Water, electricity and drainage systems.	Blue Office and Sua Kay architecture
Planning Drawing	Final Irrigation Plan, 2016-5-14	JCL
Planning Drawing	Lakes specifications and connections/operating system plan 10.2015	Pragosa Construções
Planning - Photos	Aerial Photos – 2010, 2012, 2015	Client
Construction Drawing	As-built drawings (June 2017) Designs, technical details and specification of golf cart paths, Soil Management Plan and Construction Logistics Plan, suppliers list,	Golfscape

	list of indigenous plants, golf course maintenance equipment list, list of staff and Grow-in plan	
Construction - Photos	Photos - Golf Course, Clubhouse, Maintenance Facility 2016,2017 Photos (water, electricity and drainage systems)	Client/Verifier
Document	PAM docs - natural cladding materials – local stone and gravel, wood (chain of custody CoC Certification PEFC D 1003:2010/PEF ST 2002:2010, Directive 89/106/EEC, DIN 1052:2008)	Client
Document	Clearance plan – ficope, 19.05.2016	Client
Document	Water Permits - 2 boreholes licensed	Client
Document	Surveys, training records and environmental monitoring reports Aug 2015 – Feb 2016 Waste management statement 28.11.2016	Pragosa Ambiente
Document	Irrigation and pumping station study, 24.04.2017	Client/João Lourenço
Document	Purchase invoices - cladding materials	Client
Document	Clubhouse - SCE N.º 141889738 ECP (Portugal's certification system for buildings - Energy and Indoor Air Quality Certification)	Client
Document	Maintenance Plan and list of current staff	Client