

The background of the cover is a collage of four circular images. The largest circle, at the top, shows an aerial view of a lush green golf course with a winding path and a sand trap, surrounded by dense trees and a blue sea in the distance. The bottom-left circle shows a person in a hat standing on a grassy hill, looking out over a mountain range. The bottom-center circle shows the ancient stone ruins of Machu Picchu nestled in a valley. The bottom-right circle shows a golfer in mid-swing on a green field at sunset.

# Golf Tourism Development Strategy for Peru

An IAGTO Report for the Ministerio de Comercio Exterior y Turismo

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# Site Inspections



## Analysis of Peru's Existing Product

All golf tourism promotion and development strategies must begin with an analysis of the existing golf courses and their suitability for the international tourism market. This is presented below together with an overview of the current status of golf tourism to Peru.

Figure 1 – Peru's Golf Courses





Six of Peru's 14 courses have less than 18 holes (five of 9-holes and one of 12-holes). For international golf tourism, 9-hole and 12-hole courses rarely play a significant role and those that have been successful tend to be located in established golf destinations where there are a number of 18-hole courses nearby and where the 9-hole course has a unique selling point.

Of the remaining eight 18-hole courses, three are outside of Lima all in the southern tip of Peru:

**Arequipa:** At 2330m above sea level, the Arequipa Golf Club, a 6990 yard par-72 course, was originally founded in 1918 and like many golf clubs built at the turn of the last century in Latin America its history was related to the British railway companies. It has been situated in its current location and has been operating more or less uninterrupted for 65 years. Benefiting from the historic city centre's status as a World Heritage Site, Arequipa is Peru's third most visited city with approximately 25% being international. The city has also grown rapidly in importance commercially and industrially. At present, however, Arequipa cannot be considered to be an attractive for international golf visitors.

**Moquegua:** At 2300m above sea level the Cuajone Country Club is located in Moquegua which is a popular tourism destination. Currently the course has 9 holes grassed and 9 holes of earth and is therefore not of interest to visiting golfers.

**Tacna:** At 2600m above sea level and built in 1964, Toquepala Golf Club is located in the city of Tacna on the border with Chile. Tacna is of little interest to international tourists and cannot be considered as a potential golf destination.

### *Lima's Golf Courses*

Lima has five 18-hole courses, including the Asia Golf Club located some 94km south of the city. All five are predominantly private golf clubs based on either a membership or residential business model.

Dating back to 1924, the **Lima Golf Club** is undoubtedly the most prestigious club in the country and remains highly regarded throughout Latin America. It is centrally located on 45 hectares of land in San Isidro and has become a modern and dynamic country club with many facilities for its members. The course itself is well maintained and has 18 very scenic holes and a par of 72 reaching 6947 yards off the back tees. From a tourism perspective it has the benefit of being adjacent to the Country Club Lima Hotel. Visitors staying at the hotel enjoy access to the golf course but otherwise access is limited largely to members and their guests.

Founded in 1957, the 6933 yard 18-hole **Country Club de Villa** is situated within the ecological reserve of Pantanos de Villa the Country Club de Villa. The country club boasts exceptional sporting facilities, including some 12 tennis courts and four swimming pools. The links style courses is situated within 64 hectares which has enabled the course to incorporate 24 lagoons which are abundant with wildlife. The golf club is relatively accessible to visitors but in order to attract international golf travellers it would require both a redesign and the implementation of an enhanced maintenance programme in order to become 'export ready'.

Built in 2007, the **Asia Golf Club** is located approximately one hour south of Lima and 94km from the city centre on the coastal side of the Panamericana Highway with clear views of the beach and the sea. The course is the longest par-72 in Lima at 7603 yards and is very well maintained. The Asia Golf Club is very much a private facility designed for the villa owners, club members and their families and it is not looking to attract pay and play visitors from abroad or elsewhere. If and when access is provided, the green fee is therefore very high and does not reflect value for money in comparison to international courses of a similar standard.

The **Country Club La Planicie** is built on 42 hectares in one of the most exclusive residential districts of Lima at an altitude of 858m. The 6700 yard par-72 course dates back to 1958 when the first 9 holes were constructed. Whilst predominantly a country club designed for the benefit of its members, the golf course does have a rate for hotel guests and allows corporate golf days.

Constructed in 1945 on 57 hectares of land, **Los Inkas Golf Club** is located in the suburb of Monterrico and with 1650 active members it is very much a private golf club.



### *Is Lima an Existing Golf Destination?*

With five 18-hole courses it might appear at first sight that Lima could already position itself as a golf destination. However, as with many capital cities, all five golf courses operate primarily as private member country clubs and have little if any interest in receiving visitors with the exception of members' guests. Furthermore, whilst all five courses are set up to cater perfectly well to the needs of their members, not all five golf courses can be described as 'export ready' – suitable and attractive to international golf travellers, mainly due to design and maintenance.

This is not just a theoretical statement. We are fortunate to be able to draw on the experience of an experienced golf tour operator and their efforts to develop, promote and sell golf holiday packages to Peru. Andean Origins, an IAGTO member tour operator based in Cusco, tried to develop golf packages to Peru, principally to Lima, between 2008-2010. Even with 10 years' experience of packaging and selling golf holidays both to and from Argentina, the founder of Andean Origins, Mario Canessa, found it impossible to develop golf packages in Lima that met the conditions demanded by international golf operators. The biggest obstacle proved to be the lack of any commercial approach to green fee sales amongst the existing golf clubs, which is essential for the successful operation of any international golf tour operation.

The experience of Andean Origins highlighted three challenges that Peru would need to face in order to have a chance of becoming a golf destination:

- 1) New golf courses would be required to attract international golf visitors;
- 2) Any new golf courses would need to adopt commercial business models that would embrace pay & play as well as membership and residential revenue streams;
- 3) Lastly, Andean Origins discovered that the Customs authorities at Peru's international ports of entry were requiring every foreign golf visitor to pay a deposit when bringing a set of golf clubs into the country, and register each individual golf club within their golf bag. Fortunately, after much work and with the support of PromPeru and the Ministry of Tourism this obstacle was removed to clear the way for the future development of golf tourism to Peru.





## Selection of Regions for Site Inspections

With the assistance of Peru Golf Development (PGD), IAGTO visited four regions of Peru for consideration as future golf destinations:

- Lima Sur
- Paracas
- Cusco
- Valle Sagrado

Within each region specific sites were visited which had been identified by PGD as having the potential for golf course development. For reasons of commercial sensitivity we have not disclosed full details of each site although we have been able to present a full account of the potential for golf development in each region as a result of the various site inspections.

### Peru Golf Development

PGD is the only Peruvian company focusing on the planning and implementation of new golf resort projects in Peru, under full consideration of the sustainable development principles and conditions fostered by international organizations and relevant business circles. This philosophy commits PGD to a holistic approach, integrating new golf ventures in both the environmental and the social context of the location and its closest 'influence zone'. In this spirit, each specific golf course project shall be envisaged in a wider sense as real estate development with participation of all involved stakeholders. PGD maintains close technical contacts and working relationships with several internationally recognized golf course designers.

#### PGD Services:

- Preliminary & Pre-feasibility Studies
- Feasibility Studies (market – location alternatives – basic project design)
- Project Finance schemes
- Master Plans for Golf Resorts
- Legal Advisory (particularly regarding real estate property issues)
- Studies on Environmental & Social Impact Issues
- Detailed Project Engineering (Bidding/Tendering)
- Construction Supervision
- Management Concepts / Operational Start Up

There are many regions of Peru that will be suitable for golf course development in the future. However, our objective was to identify those regions that will have the greatest impact at an early stage of a golf destination's development. It is essential that the first golf courses built are commercially successful and that they portray the characteristics that will make Peru attractive as a golf destination.

The following considerations were taken into account:

- Overall appeal from a tourism perspective
- Accessibility from international gateways and local accommodation centres
- Attractiveness of the terrain in terms of topography and land use
- Suitability of the terrain in terms of environmental sustainability, water availability, cultural and historical sensitivity
- Potential for enhancing employment, education and opportunity within the local community
- Availability of existing golf infrastructure and access to potential national golfing populations

Within Peru's golf development strategy it is entirely legitimate to consider projects outside of the selected regions. Those projects that include some dependence on international golf tourism should, however, be required to adhere to the guidelines established within the national golf tourism development strategy.

Lima itself is the principal gateway city for virtually all international visitors and will feature within the itinerary of 99% of first time tourists. As mentioned previously, Lima itself cannot currently be considered to be a golf destination, but because of the high visitor numbers, locations accessible from Lima should be considered for golf development. Lima Sur (the South Lima Coast) is without doubt the most suitable region for golf development close to the city centre.

Paracas is interesting as a potential golf destination because of a) its proximity to Lima, b) its development as an integrated tourism destination, c) its natural beauty, and d) the opportunities for land development.

Nazca was not visited by IAGTO although sites there have been inspected by PGD. We would consider Nazca and other tourism destinations within Peru for secondary phase golf development once Lima Sur, Cusco, Valle Sagrado and Paracas have been developed.

Cusco and the Valle Sagrado were obvious choices because of the region's popularity as a tourism destination and a topography that is well suited to spectacular golf course development.

## Lima Sur

IAGTO visited a number of potential golf course sites on both sides of the Carratera Panamericana Sur on the 160km stretch where it runs parallel to and within sight of the Pacific coastline from approximately Km 20 to Km 180.

|        |   |
|--------|---|
| Km 21  | The Panamericana Sur hits the coastline and turns south.  |
| Km 40  | Punta Hermosa marks a gradual land-use shift from well developed urban areas to land use that is more rural and mixed with a series of towns and coastal resorts on the Pacific side of the road. |
| Km 94  | The Asia Golf Club is an important landmark for future golf development.  |
| Km 185 | The Panamericana continues to hug the coastline until the road turns east towards the town of Chincha   |
| Km 246 | The Panamericana runs inland but parallel to the coast from Chincha through Pisco and on to the resort and reserve of Paracas   |

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### *Golf Tourism Appeal*

For Peru to develop as a serious and sustainable golf destination, it is important that golf visitors are provided with an opportunity to enjoy golf whilst visiting Lima. The development of golf courses in Lima Sur, accessible to visitors, is therefore a priority.

Whilst international visitors will be able to enjoy and take advantage of the golfing opportunities in Lima Sur, the return on investment for these projects will be driven primarily by the national market. Domestically golf developments in Lima Sur will offer recreational, short break, retreat and residential opportunities that will be welcomed by Limeños. Internationally Peru will be able to offer a new product to the hundreds of thousands of leisure and business visitors that combines dramatic coastal scenery and the comfort of first class facilities.



## *Business Model*

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Before considering the key components of future golf developments on Lima's south coast, it is worth looking at the Asia Golf Club which is a successful golf real estate development just over 90km from the city centre.

### **Asia Golf Club**

- Coastal side of Panamericana
- Uninterrupted views of the ocean
- Direct access to the beach
- Quality golf course and club house
- Up-market real estate development
- Exclusive use of golf course for its members

We understand that the Asia Golf Club business model has been successful but its exclusive positioning means that it cannot be accessible to visitors. In order to contribute to Peru as a golf destination whilst also being economically viable, we recommend that the business models of future golf developments include a broader mix of revenue streams and incorporate the following elements:

### **Recommended Elements for Lima Sur Golf Developments**

- High quality golf course
- Club house & function rooms for social and business events
- High quality visitor facilities including locker rooms and VIP suites
- Topographical interest including ocean views and mountain views
- Real estate sales
- Membership sales
- Green fee pay & play sales
- Practice & Academy including facilities for beginners and families
- Hotel accommodation depending on location
- Caddy service

## *Accessibility*

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The business models are likely to differ according to the golf development's distance from Lima. Ideally new golf developments should be as close to Lima as possible, minimising the driving time.

Golf developments within 70km of Lima are going to be more successful at attracting pay & play visitors and will drive more business in general through the golf course, including member rounds and members' guest rounds. It is important for a golf course to have a relatively high 'occupancy rate' (not only at weekends) as this makes the golf course itself more sustainable and is better for local employment.

The closer a golf development is to Lima, the more meetings, conference and social functions it can attract and therefore Club house and function room facilities become all the more important. The locker room facilities must also be large enough to accommodate groups who wish to change and shower before enjoying the catering facilities of the golf club before returning to Lima.

The decision whether or not to include hotel accommodation within the master plan will depend on the distance from Lima and also the topography of site, including access to the beach and views of the ocean and mountains.

### *Topography – Inland & Coastal Sites*

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Any viable return on investment for golf developments in Lima Sur is going to depend on domestic sales - real estate sales, hotel room sales, green fees and business/social functions. For that reason the sites must be selected primarily on their national appeal (rather than international tourism appeal).

Land prices on inland sites (to the east of the Carratera Panamericana) tend to be lower and are therefore an attractive option if they can be commercially viable. Due to the preference for real estate on the coastal side of the road with direct access to the beach, inland sites should aim for the following:

- Unrestricted ocean views across the highway
- Spectacular golf course setting making the most of mountain views
- Highest quality golf course with a 'status appeal'
- Easy access to a 'beach club' or similar resort area on the coastal side

Distance from Lima will also have a specific bearing on inland developments:

- Inland locations are more likely to succeed if they are relatively close to Lima
- Inland locations close to Lima need to offer multi-functional facilities to attract business and social events as well as real estate sales, club membership and pay & play.
- Inland sites tend to increase in variety and vegetation the further they are from Lima, and land prices generally become more affordable.

Much of the inland areas close to Lima have been earmarked for industrial use which is an important consideration for prospective golf developments. Any inland golf development must be protected against any future industrial development that might impact on its scenic appeal.

The main topographical advantages on inland locations are:

- Mountain view backdrops
- Sloping terrains can provide natural amphitheatres and uninterrupted coastal views from both the golf course and residences

- Rivers, streams and ravines can be incorporated into both the golf course and the real estate master plan

Coastal locations for golf developments will be most popular for the following reasons:

- The demand for real estate with direct ocean views and direct access to the beach
- The existing resorts, towns and infrastructure on the coastal side of the Panamericana

Topographically the coastal sites can also have advantages including:

- Direct sea views
- Hills, spurs and cliff tops surrounding the bays, providing scenic relief to the flatter developed coastal areas
- The sandy soil will be relatively easy for golf course development



Inland side of Panamericana - Low Productive Arable Land

## *Environmental Sustainability*

Coastal environments are always important ecological zones, particularly the inter-coastal area where the sea meets the land. Mixed urban and rural land-use is common along the coast and development is beginning to take place more rapidly.

Golf developments provide an opportunity to manage large sections of land in a way that stabilises entire areas, providing a balanced mix of housing, infrastructure, managed landscaping and preserved natural areas. This contrasts with the majority of non-industrial land sales which are generally for much smaller pieces of land for housing development. It is easier to implement and manage sustainable environmental policies in a single golf development than across a number of small and independent housing developments.

Golf developments are one of the few land-uses that leave so much land within their boundaries undisturbed. For this reason golf developments should actually be encouraged in areas where the gradual encroachment of urbanisation is considered potential environmental danger.



Companies investing in constructing an 18-hole golf real estate development have to purchase a large area of land in the region of 100 hectares. Land prices however are geared to smaller plots (2-5 hectares) for housing developments. Most golf developments preserve a significant part of the land in its natural state, but this land must also be purchased at the premium rates targeted for the housing market. Golf developers are therefore at a disadvantage because there appears to be little reduction in land price even given the low intensity of the land use within the golf development. High prices can lead developers to purchase less land than is necessary to preserve environmental stability.

Most of the sites suitable for golf development on the coastal side of the highway are either unfertile arid terrains or low intensity pasture and poultry farms. In both cases a well designed master plan would ensure that any golf development would contribute positively to the environmental sustainability of the area.

On the inland side of the highway most of the suitable sites are arable but currently unproductive. Conversion to a golf development would once again be a positive step for environmental sustainability as it would allow for the preservation of endemic vegetation and create nesting and feeding grounds for wildlife.

### Water Conservation

Any golf development in Lima Sur would use Paspalum grass for all grassed areas of the golf course. Paspallum is a unique grass that thrives on high salinity water and can therefore be irrigated with diluted salt water. Paspallum will even survive for a time if watered directly with sea water. The main advantage of Paspallum is therefore that it dramatically reduces the need for fresh water irrigation by up to 90%.

Golf courses are also now designed to use recycled water and the courses themselves can form an important part of the water treatment process through the natural filtration and closed-loop drainage systems.

The density of the housing on a golf development will also impact the water usage, which is why it is important for golf developments to be built on sufficiently large and cost effective sites where real estate construction can be kept within manageable limits in terms of water consumption.



Existing water pump in a disused Oliver Grove



Unproductive Olive Grove

IAGTO makes the following recommendations for all new golf course developments in Lima Sur:

1. The design, construction and master plan must place the highest priority on water conservation, treatment and recycling;
2. Agronomy to incorporate water efficient grasses;
3. Integration with water recycling plans for local communities;
4. Government incentives for desalination plants and water treatment plants that benefit the community as well as the golf course.

Some of the locations, particularly the old orchard and plantation sites have existing water sources that can be harnessed for use by the golf development.

### *Social Responsibility*

IAGTO has recommended that golf developments within reach of the city centre should have multi-level revenue streams and a diverse range of facilities. In short, a multi-functional master plans. These golf developments should aim to generate a constant flow of visitors during weekdays as well as weekends. Greater 'traffic' leads to higher and more constant employment. As an example, we have listed below the different types of business and different types of client that multi-functional golf developments in Lima Sur could attract:

- Real estate owners 7 days/week (for developments within commuting distance)
- Real estate owners at weekends
- Golf Club members at weekends
- Golf Club members and Pay & Play members during weekdays
- Corporate Golf Events during weekdays
- Special Events and Tournaments during weekdays open to members and non-members
- Domestic & International Tourists visiting from Lima
- Domestic & International Tourists travelling to or from Paracas (when golf is developed)
- Weekday business & golf functions
- Wedding receptions & social functions
- Academy groups of students and all ages during weekdays and weekends
- Family days with combined access to Academy, Practice Facilities, Golf Club & Beach Club

This list does not include the additional visitor business that would be attracted to a development with an on-site hotel.



Wasteland can be put to good use to employ local people

Wherever possible, all new golf developments should be 'Caddy Courses' with caddies trained and employed from the local towns and villages. The employment of caddies is most sustainable when golf is not limited either to weekend play or to real estate owners and club members. Caddies need to work regularly and therefore it is important that all new golf courses aim to achieve a high number of rounds per year, regularly throughout the seasons and 7 days a week.

Golf developments in Lima Sur are within commuting distance of the city and therefore have the advantage being able to employ professionally trained hospitality staff. There will also be plenty of opportunity for employment and training for local communities:

- Golf Course 'gardeners' bring local knowledge of climate, horticultural and agricultural conditions which they can apply with pride to their local golf course;
- Golf Course 'green keepers' take this a step further and are trained by experienced Superintendents to maintain the greens, fairways and tees;
- Golf Course 'caddies' enjoy many advantages in addition to regular employment as they a) learn a new trade, b) are provided with the opportunity to learn, play and practice golf, c) interact with visitors from other countries, and d) are rewarded financially directly in relation to their efforts to learn new skills.

It is important also that all new courses in Lima Sur have a programme for engaging the local community and also providing training facilities for talented kids from a wider catchment area that can include Lima itself.

### *Cultural Heritage*

Peru is so rich in cultural heritage that it is no surprise that there will be areas of archaeological interest along the Lima Sur coast.

Our recommendations are that archaeological impact assessments take place at an early stage of all golf developments. Any development covering over 60 hectares on a coastal site is likely to uncover something of archaeological interest, which of course might otherwise remain undiscovered. Because golf courses can incorporate natural spaces, we recommend an approach that would use the finances of the golf course development to help preserve and showcase sites of archaeological interest.



Part of this process would ensure that the golf developments not only help to uncover, preserve and showcase interesting sites, but that public access is also provided. A good master plan will ensure that the golf course also reflects interesting aspects of the area's cultural heritage. There are many examples of this around the world where old agricultural walls have been incorporated into the course design, or where the design of the course itself reflects the natural and cultural surroundings.



## Paracas

Paracas is located just under 250km south of Lima, a three hour drive on the Carretera Panamericana Sur, and just 17km south of Pisco. From a tourism perspective, two things set Paracas apart from all of the coastal towns between Lima and Nazca: The Paracas National Reserve and the resort's first class hotel infrastructure.

The Paracas National Reserve of the Paracas Peninsula, coastal areas and tropical desert extending to the south slightly past Punta Caimán, covers a total of 335,000 hectares of which 65% is in marine waters. Its main purpose is to preserve the marine ecosystem and protect the historical cultural heritage related to ancient indigenous peoples, mostly of the Paracas culture.

The reserve is home to many species of wildlife, particularly birds, which are largely concentrated at the water's edge. Established in 1975, it is the oldest marine reserve in Peru, and it incorporates a variety of marine habitats and tropical desert.

Paracas has a beautiful coastline with views of the north-western spur of the peninsula. Within the past few years a number of first class hotels have been developed including:

- Hotel Libertador Paracas Resort & Spa – a Luxury Collection Resort
- Doubletree by Hilton Resort Peru
- La Hacienda Bahia Paracas

New hotels are currently under construction and the resort's infrastructure is being rapidly developed.

### *Golf Tourism Appeal*

In terms of tourism infrastructure, Paracas is definitely in its early development phase with much more work yet to be done. However, the destination's appeal is its tranquil setting and beautiful scenery, a far cry from the hustle and bustle of Lima. Both the Libertador and the Doubletree hotels offer a first class service that will match those of the best hotels in the capital.



The authorities in Paracas are aware that they will need to develop a wider range of attractions and facilities in order to significantly grow the number of visitors and most importantly the duration of stay. Currently the average stay is only 2 nights.

The authorities have already recognised that golf should be one of the products offered to visitors and the signs that welcome visitors to the 'Paracas Golf Resort' are an indication of this enthusiastic foresight, if a little bit premature!

With the appropriate golf facilities of the highest standards, Paracas could become an very popular short break destination for the national market, with couples and families visiting for not only a weekend but for extended stays if the golf and complementary facilities are readily available.

High quality golf courses on the perimeter of the National Park will literally transform the destination in terms of its appeal to golfers and non-golfers alike. Golf courses constructed on the 'moonscape' of Paracas would create a truly spectacular green backdrop to the ocean-front resort. It would also provide an opportunity to re-introduce native plants long lost from the area whilst increasing the value and adjacent land earmarked for development.

A first class golf and marine destination with great hotels and an accessible national reserve can also make an impact on the Latin American holiday market. For the long haul international market, the development of golf in Paracas will make it a more popular destination to combine with Nazca for those travelling to Nazca by road. A successful golf destination in Paracas combined with quality golf courses along Lima's south coast will help to put Lima Sur on the map as a golf destination to rival others in Latin America.

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### *Business Model*

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The golf course developments in Paracas do not require a hotel component as there are sufficient first class hotel rooms in the resort, with more on the way. Real estate opportunities would need to be provided for the golf course developer on adjacent land outside the National Reserve in order to make the golf course investment worthwhile.

The golf developments must be integrated into the resort, providing ample learning, improvement and practice facilities that couples and particularly families can enjoy, in addition to quality 18-hole golf courses. The financial model will need to be significantly different in Paracas with hotels being the major benefactors of golf course development. Key factors to enable to development of golf in Paracas should include:

- Re-zoning of the perimeter of the Reserve to allow for golf course development in the least sensitive areas of the desert landscape;
- Involvement of the landowners will be necessary to reduce the cost of the project, based on the premise that the golf course/s will transform the destination for the benefit of the local community, enhance the environment and provide a unique return on investment that would otherwise not exist;

- Funding would be required from the hotels and real estate developers as the golf course/s will be designed to benefit all accommodation providers;
- Developers must be given incentives in terms of adjacent real estate developments and lower purchase and operational costs;
- The golf course and extensive practice facilities would operate very much on a public course basis with the revenue from participation fees designed solely to offset annual maintenance costs.

Developing golf on the perimeter of the National Reserve will make the development of golf on the inland side of the Panamericana financially viable in the future.

### *Topography*

Most of the land on the coastal side of the Panamericana is very flat and devoid of natural vegetation. Strong offshore winds are also a common and must be taken into account in the design of any golf course. The inland side of the Panamericana, some distance from the resort itself, is arable and has more relief and mature vegetation which will make it suitable for golf course development.



### *Environmental Sustainability*

The local authorities have the complicated task of balancing the requirement of protecting the Paracas National Reserve whilst developing tourism revenue for the destination.

A re-zoning of some perimeter areas of the National Reserve is currently under consideration, and we would recommend that land use be considered for golf course development where appropriate.

Golf courses without real estate provide perfect buffers between urbanised resort areas and totally protected national reserves. They also provide visitors with a new way to experience the reserve without disturbing it, by integrating parts of the reserve into the golf course itself. It is common with golf courses of this nature to have areas within the boundaries of the golf course which are preserved in their natural state.



In order to construct the golf course in a desert area, it is necessary to provide irrigation. Once this has been done it provides a unique opportunity to re-introduce native plants that have long since been lost to the reserve. The careful re-introduction of native plants can also then lead to further protection of wildlife which will inhabit the course and its environs. The golf course itself would become a nature and environment trail for the benefit of visitors and the local community alike.



Low Productive Arable Land Nearby Paracas

### Water Conservation

All water for tourism purposes in Paracas must come from desalination plants to begin with, and water treatment plants once there is sufficient grey water produced by the hotels, apartments and restaurants. Whilst Paspallum grass can thrive on salt water, significant volumes of desalinated water will still be needed to maintain the golf course in good condition.

For this reason any golf development would need to build its own desalination plant. The golf course's irrigation system can also perform an important role in treatment of grey water produced by the resort. In many golf resorts around the world, the golf course provides an important stage in the water recycling process.

Taking all of this together, the golf developments can actually become net contributors to the resort's water supply.



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### *Social Responsibility*

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As with all golf developments in Peru recommended in this report, there will be ample opportunity for local employment for the maintenance and operation of the golf courses. Learning facilities and practice holes will be central to the resort's golf development and this will also provide a unique opportunity to engage with the local community. The transformation from arid desert to lush greenery on the edge of the national reserve provides an opportunity to involve schools and local communities from an early stage, as well as providing opportunities for gardeners and greenkeepers.

Plans can also be implemented to make the golf course accessible for the local community to enjoy at specific times of the day on a regular basis when not being used for play.

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### *Cultural Heritage*

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The Paracas National Reserve protects not only the marine and desert environments but also prehistoric sites of the Paracas culture and other ancient civilizations. Near the Museo Sitio de Julio C. Tello is the Paracas Necropolis, comprising the Cabezas Largas and Cerro Colorado burial sites, and also in the reserve is Pampa de Santo Domingo, where human remains have been dated to 6500 BC.

Any re-zoning of the perimeter of the National Reserve would take this into account and therefore golf course development would in no way impact negatively on the Paracas' cultural heritage. We would suggest that the local schools be involved in the naming of the golf course holes, which is another way to bring to the attention of visitors images of Peru's rich cultural heritage. For example, a decorated flute or 'quena' found in Paracas is believed to be the first musical instrument of Peru. The name or the instrument itself could be incorporated into the course design. The photographs below show how various golf courses have incorporated local crafts and cultural images into their design.



## Cusco & the Valle Sagrado

We register Cusco and the Valle Sagrado as two separate golf destinations because of the driving time between them, although because there is definitely a cross over between the two we are considering them both together in this section.

As Peru's premier international tourism destination, the region encompassing Cusco and the Valle Sagrado is an obvious contender for the development of a first class golf destination. Provided that the most suitable land can be acquired in the most appropriate locations at the right price, then we have absolutely no doubt that golf can become an important new driver of tourism to Cusco over the coming decade.

### *Golf Tourism Appeal*

As a World Heritage Site receiving some 2 million visitors a year, Cusco is a very well established tourism destination. Even as the city has grown it has lost none of its appeal and has been extremely well preserved and is serviced by a hotel infrastructure offering more than 2000 rooms.

Popular tourism destinations also tend to have good access to accommodate the large number of visitors, and this is the case with Cusco which enjoys many daily flights from Lima in addition to Arequipa and a few other cities. The development of the new airport at Chinchero will increase capacity still further.

The hospitality industry is extremely well developed and there is a wealth of opportunities for golfers to combine golf with culture (both ancient and modern), fine dining, spa, sightseeing and the great outdoors. The roads are good and travel to locations in the Valle Sagrado is straight forward and very scenic.

Currently visitors can enjoy the mountain and valley scenery through visits to sites of archaeological and historical interest around Cusco and by visiting Ollantaytambo and from there on to the breathtaking spectacle of Machu Picchu itself. The development of golf will provide another way for visitors to enjoy the magnificent views afforded by the snow-capped Andes, particularly for those without the stamina to take on the Inca Trail.



Typical Panorama close to Cusco



## Topography

The landscape surrounding Cusco is stunning and there is no doubt that golf courses here have the potential to be amongst the most spectacular in the world. Stunning landscape is, however, often accompanied by development challenges. For Cusco and more specifically the Valle Sagrado, the difficulties that will be encountered are the altitude and the steepness of the terrain.

With Cusco sitting at 3400m above sea level, and with most suitable sites visited lying above 3000m, the altitude simply means that more land is required as golf courses need to be longer as the golf ball travels much further in thinner air. At 3000m a golf ball will travel 20% further than at sea level. In theory this means that a golf course of a similar difficulty would require 20% more land.

Golf courses need to be designed with cart paths because most golfers will find it difficult to walk the courses at this altitude unless the courses are particularly flat. Sites that incorporate steep terrain also require more land as fairways and greens require natural or engineered flat surfaces, which often leads to higher construction costs.

Therefore the topography of the Cusco and Valle Sagrado region will facilitate spectacular courses but usually at a higher cost because of the additional land required and the higher construction costs. There are exceptions to this and we have visited potential sites on flat pasture land which does not face these challenges.



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### *Business Model*

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As well as being a massive draw to international visitors, Cusco is also very popular for domestic tourism offering a refreshing break from the rigours of Lima city life. There are many Limeños with second homes in Cusco and we expect that many of them will relish the opportunity to play golf during their visits to Cusco.

Golf Club membership both for residents of Cusco and those with second homes in the city will certainly be popular. There is plenty of hotel accommodation, over 2000 rooms, in Cusco and therefore courses within a short distance of the city are unlikely to benefit from building hotel rooms, although courses further away, particularly in the Valle Sagrado could incorporate a boutique hotel if they offer spectacular views.

Real estate is at a premium in Cusco as the available land is physically restricted by the valley sides. Land prices in the city centre are some of the highest on the continent. Cusco is therefore expanding in only one direction, south east down the valley. This provides opportunities for golf development and the Kuntur Cancha project at Huacarpay, some 30km from the city centre, is already looking to take advantage of this.

Real estate, if close enough to the city, will be residential, whilst for sites further away, particularly those towards the Valle Sagrado are more likely to be aspirational second homes in a villa style offering magnificent views, fresh air and a peaceful environment. The business model of any golf course in and around the Valle Sagrado is therefore also likely to include a villa rental pool which tourists will be able to take advantage of.

Visitor green fees will be an important revenue stream as all courses will seek to attract both national and international visitors.

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### *Environmental Sustainability*

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Environmental sustainability is a prerequisite for all golf development in Peru, but in the pristine environment of Cusco and the Valle Sagrado environmental sustainability should be a visible component of all golf developments. Most of the sites suitable for golf development will be conversions from low-yield agricultural land (arable, pasture or fallow) and in these cases environmental sustainability is relatively easy to achieve.

The biggest challenge for golf developments in the region will be to ensure that sufficient land is purchased to allow for longer golf courses, natural areas, spectacular views and enhanced environmental sustainability.

#### **Water Conservation**

Water is unlikely to be an issue in a number of sites around Cusco and the Valle Sagrado due to the rainfall and available water sources, although extended dry spells can occur. For example there is an abundance of water at the Huacarpay site which is adjacent to a major wetland and other development or land use would be very difficult for this site for that reason.



Water quality in the rivers in and around the Valle Sagrado is much poorer than perhaps would be expected in an Andean environment with pollution levels quite high. In Aguas Calientes, for example, sewerage treatment is not 100% effective and the river waters suffer as a result.

This provides a great opportunity for the golf courses as water treatment plants can play a role in re-oxygenating the water before it returns to the water table and on to the rivers.

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### *Social Responsibility*

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As an example, the Kuntur Cancha golf development at Huacarpay is anticipated to employ 60 people plus 1 employee for each hotel room. Golf developments further away from Cusco will employ more people, particularly those with villa real estate and if all courses adapt a caddy policy then the numbers will exceed 200 per golf course.

Two or three export ready golf courses within the region will attract more national and international visitors with foreign tourists largely opting to stay in Cusco's existing hotels. This will generate incremental revenue for the existing tourism sector and support employment. It is anticipated that visitors who play golf in Cusco are likely to stay longer in the region than the current average stay of 4 nights.

There is also a great opportunity for the rural communities outside of Cusco to be employed to work on the course or to learn the skills of a caddy. In our opinion, where there is land-use shift from pasture, arable or fallow fields to richly landscaped golf courses, it is important to be able to involve the community by providing them with employment and even educational and training opportunities.

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### *Cultural Heritage*

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With Cusco a World Heritage Site, and Machu Picchu perhaps the most magnificent of all seven wonders of the world, the preservation of ancient and modern heritage is more important here than perhaps at any other potential golf destination in Peru. For sites that are being converted from pasture or arable farmland cultural heritage preservation can again be enhanced, by incorporating features of centuries of architecture into the golf course and real estate designs, whilst minimising disturbance to any existing structures.

Once again, golf development can reinforce cultural, environmental and historical facets of the destination whilst providing new experiences for visitors and more educational and employment opportunities for local communities.

# **The Value of Golf Tourism**

## High-Revenue Low-Impact Tourism

Governments and tourist boards around the world have recognised the importance of golf travel and the great potential it has to generate sustainable growth in high revenue, low impact tourism. Golf has been used to change the image of a destination, increase 5 star hotel room sales, attract meetings & incentive events, generate real estate sales, draw inward investment, improve environmental sustainability, enhance water conservation and create leisure and sporting opportunities for underprivileged kids and skilled employment for caddies, greenkeepers, managers and all areas of the hospitality industry.

**USA** golfers take approximately 39.5 million golf trips annually. The typical profile of the US golfer is as follows:

- Age: 48.5
- Household Income: US\$104,000
- Annual Rounds: 25.7
- Number of vacation golf trips annually: 3.3

The average income of the **Canadian** golfer who takes golf holidays is double that of the average Canadian holiday maker (C\$100,000 compared to C\$50,000). In 2008 Canadians spent C\$13.5 billion each year on golf, of which C\$1.8billion was spent on golf tourism.

The average **Japanese** golfer spends US\$5,924 a year on golf related activities. **Female** golfers over 50 spend the most, averaging over \$8,000 a year.

It is estimated by the private Leisure Industry Institute that **South Korean** golfers took 635,000 golf trips in 2006, spending US\$1.18 billion.

**European** golfers take 8.8 million golf trips annually. 26% of European golf travellers are from **Socio-Economic Category AB** which is a total measure of economic and social position in relation to others, based on income, education, and occupation. Socio-Economic AB individuals in Europe are employed in higher and lower managerial and professional occupations and have an average household income of approximately US\$90,000.

An average of **33%** of European golfers take golf trips annually.

There are over **55 million golfers worldwide**, with many of these playing regularly and thereby becoming potential golf travellers. Their numbers break down approximately as follows:

Figure 2 – Selected National Golf Populations

|                      |            |                                      |             |
|----------------------|------------|--------------------------------------|-------------|
|                      |            | Specific golfing populations include |             |
| <b>NORTH AMERICA</b> | 33 million | <b>USA</b>                           | 27 million  |
|                      |            | <b>Canada</b>                        | 5 million   |
|                      |            | <b>UK</b>                            | 3 million   |
| <b>EUROPE</b>        | 8 million  | <b>Germany</b>                       | 800,000     |
|                      |            | <b>Sweden</b>                        | 1 million   |
| <b>ASIA</b>          | 13 million | <b>Korea</b>                         | 1.7 million |
|                      |            | <b>China</b>                         | 1 million   |
|                      |            | <b>Thailand</b>                      | 800,000     |
|                      |            | <b>Malaysia</b>                      | 450,000     |
|                      |            |                                      |             |

50% of all regular golfers have taken a golf holiday and **Golf Travellers represent the wealthiest 50% of all golfers.**

Of golfers that play regularly, between **20-30% will take a golf holiday in the coming 12 months.**

Golfers spend on average **120% more per person per day** in destination (more than double the spend of the average leisure tourist).

Whilst **12% of American adults play golf, they are responsible for 27% of America's total travel spend!** Therefore our recommendation to the Mexican government in 2004 was that they promote Mexico to American golfers regardless of whether they travel to Mexico to play golf.

**Golfers are frequent travellers** and contribute disproportionately worldwide to travel associated with family holidays, business travel, conference attendance, travelling to and from overseas second homes, expatriate travel and of course regular golf vacations.

Golf tourism has grown **2.5 times faster** than general leisure tourism over the past 20 years.



Direct revenue to golf tourism suppliers represents only **approximately one quarter of the total benefit**. The high quality golf infrastructure increases:

Figure 3 – Golf Tourism drives Indirect Sales



- Meetings & Incentive Business
- Real Estate Sales
- International Inward Investment
- Upmarket Image of a Destination

Golf tourism **recovers twice as fast** as general leisure tourism to economic downturns and other drops in consumer confidence.

### *Selected Examples*

**Mexico:** In 2004, golf tourism represented 2% of all visitors to Mexico but 3% of total tourism receipts (even without allowing for a higher estimated spend per person per day in destination).

**Portugal:** In the Algarve coast of Portugal, Europe's second most important golf destination after Spain, golf tourism represented 12% of the region's total tourism revenue in 2011 even though the Algarve only has 30 18-hole golf courses. Furthermore, 93% of all golf was played by foreign visitors. What is even more important to the Algarve is that the majority of this business comes in the shoulder and low season (the European winter season) and therefore the economic impact on the region has an even greater value in terms of employment and lengthening of the tourism season.

**Mauritius:** Although located 12 hours by air from their principal markets, the Indian Ocean island of Mauritius attracted 55,000 golf tourists in 2011, representing 6% of all arrivals, despite the destination having only seven 18-hole golf resorts.

## The QAPP Principle

The preceding section of this report considered the value that golf developments can bring to a destination. However, these benefits will only materialise if all new golf developments are economically viable. In this section we present the factors that will determine whether a golf course destination will be financially successful on an operational level.

A number of factors affect the success of any golf destination, but over 15 years IAGTO has determined that no golf destination has consistently achieved success in golf tourism, particularly in the more uncertain economic times, without scoring highly in four key areas:

- **Quality**
- **Access**
- **Price**
- **Promotion**

This was first identified in 2003 and has become known as IAGTO's **QAPP** Principle.

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### *Quality*

With supply generally running ahead of demand in most golf destinations, golf travellers will only choose to play golf courses that meet their specifications. If a destination does not have sufficient courses that meet these requirements the golfer will simply go elsewhere. The first criteria of the golf traveller is Quality...

- Quality of golf course design and maintenance along with club house facilities and service;
- Quality of accommodations and the service provided by inbound tour operators;
- Quality also extends to the commercial relationship between the golf clubs, hotels, inbound operators and also outbound golf tour operators in key markets.

The further a golfer travels, the more important Quality becomes. This applies both to the distance travelled to the golf destination and the distance travelled from the hotel to the golf course. The different aspects of Quality combine to become the '**Golf Experience**' that the golfer enjoys.

## Access

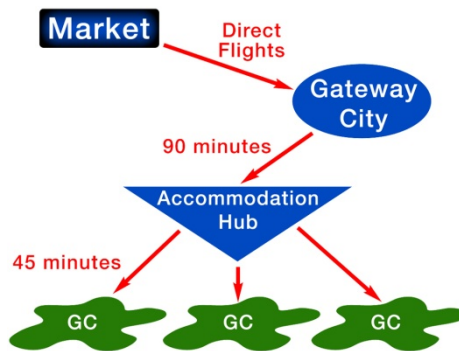
Access has both international and local aspects:

**International Access** – The ease with which golfers can get to the golf destination

**Local Access** – The ease with which golfers can get from their chosen accommodation to the golf courses

International access from key markets should be straightforward involving either direct flights or easy connections along with un-complicated golf club carriage. Direct flights are preferable with the accommodation centre being no more than 90 minutes drive from the airport, with at least 3 courses within a 45 minute drive of the hotel or accommodation hub (see Figure 4).

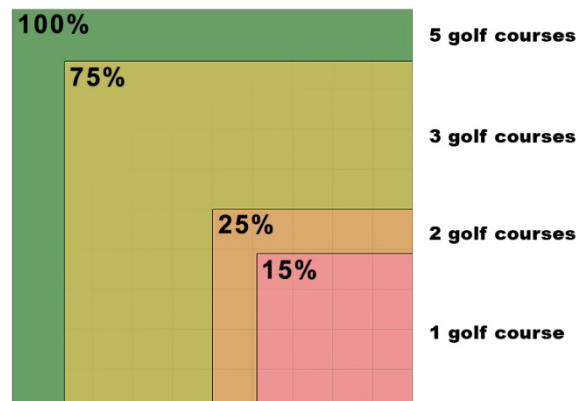
Figure 4 – International Access



Golf courses should be comfortably accessible from the chosen accommodation centres. A minimum of 3 tourist friendly or 'export ready' golf courses should be reachable by car no more than 45 minutes drive from the accommodation hubs. To accommodate all forms of golf travel, a minimum of 5 export ready golf courses should be easily accessible.

Although this varies from market to market and depends on the average length of stay, evidence shows that 75% of golfers will consider a destination with 3 golf courses easily accessible from their hotel, whereas 100% of golfers will be happy with 5 courses within a 45 minute drive (see Figure 5).

Figure 5 – Local Access



## Price

More important than the precise green fee or room rate is the value for money that the golf package represents. The price paid by the visitor must represent value for money when compared to golf courses and golf destinations of a similar quality in competing golf destinations.

## Promotion

Scoring highly on Quality, Access and Price alone is not enough unless golfers in key markets are very familiar already with the destination and the offer. For emerging destinations striving to make an impact and relatively new to the international golf traveller scene, cost effective and targeted promotion is absolutely essential if the destination is to achieve momentum in terms of rising golf travel sales.

## Other Success Factors

Whilst the variance in quality, access, price and promotion will determine the relative success of every golf destination, other factors will also have a bearing on the appeal of a golf destination and these include:

- Good golfing weather at the time that golf travellers wish to visit
- The variety of different golf course experiences (not just the number of courses)
- The perceived security of a destination
- Local restaurants and bars; spa and shopping facilities
- Places of interest to the discernible tourist

**Peru will score highly in most of these areas and therefore the key to the commercial success of the new golf developments will depend very much on the QAPP principle defined above.**

Kiawah Island (South Carolina, USA)





## Social Responsibility

Golf tourism creates jobs. This is one of the most important benefits of the development of this lucrative niche market. Furthermore, golf tourism provides an opportunity for education, cultural interaction and sports development.

Golf courses generally employ a high proportion of local people. And golf courses offer diverse employment opportunities with good pay and career development plans. For example on one course Mauritius the average employee age is 24 and the golf course has contributed to ensuring that the younger generation can find work, learn new skills and interact with people from various cultures. Because many of the jobs require specific skills, the courses may also contribute to a desirable pursuit of education and qualifications amongst local people. Where appropriate, for touristic courses we certainly encourage the use of caddies who tend to have a long tenure and occasionally can break through to become world beating players e.g. Carlos Franco (Paraguay), Angel Cabrera and Eduardo Romero (Argentina).



Carlos Franco with Peter Walton

Golf courses can employ from 50 to 500 staff depending on their location, operational priorities and business model. Simple municipal golf courses can sustain a minimal clubhouse and pro-shop and maintain a golf course with as few as 15 greenkeeping staff. However, the majority of tourism based golf resorts employ many more people in different areas.



Caddy Training Indonesia





The Bogor Raya Golf Club in Jakarta, Indonesia, employs a total of 500 staff including 150 gardeners, 30 green keepers, 150 caddies, 50 restaurant and 80 other clubhouse staff.

In hotels the guest/staff ratio is often quoted as being 1:1 whereas in integrated golf resort developments the ratio can be even higher. One of the most striking differences between hotel and golf resort employment is that golf resorts and golf courses tend to provide more opportunities for local employment and local training. Golf courses by their very nature tend not to be in city centres. This provides opportunities for employment from nearby rural towns and villages.

In the hotel industry it is often necessary to bring in well trained staff from distant cities, whereas with golf courses there are many jobs that do not require training at city based hospitality academies, particularly those that involve working on the golf course in a maintenance capacity or as caddies. Caddies, greenkeeping, maintenance, engineering and gardening are major areas of employment on a golf course. This is in addition to the customer-facing positions in the club house, pro shop, changing rooms and restaurant facilities.

In greenkeeping, existing rural skills can be incorporated and enhanced, and in caddy programmes young adults are given invaluable language and communication training; whilst the clubhouse and restaurant facilities are excellent training grounds for the hospitality industry as a whole.

Furthermore, golf clubs are keen to identify talented youngsters from the local towns and villages communities and fulfil an important aspirational role in the community.

Whilst job shifting and displacement can happen when land use is changed, golf has been the catalyst for tourism development in some areas where previously the local community has had to endure real hardships. And well planned golf developments can substantially impact and improve the lives of local people.

In the Azores an abandoned rocky area, unsuitable for farming, and with poor access for real estate was transformed by the construction of a golf course, where there is now housing and employment (Batalha Golf Club).

Golf tourism developments:

- Employ a high proportion of local people
- Provide a diverse range of career opportunities with good pay
- Encourage local education & training
- Provide caddies with a long tenure
- Act as a catalyst for improving lives

Many golf courses are actually used by local communities as part of an education programme on how to care for the environment. A number of courses educate locals and visitors alike by identifying indigenous trees and providing bird guidebooks. Roco Ki, the new Nick Faldo designed golf course in the Dominican Republic works with a local orphanage; Fish River Sun in South Africa supports 3 schools through its Corporate Social Investment program. Foundations for the community have been set up by a number of golf resorts including the Legend Foundation in South Africa, bringing clinics, medical dispensaries, HIV education, religious/social/commercial space for local people.

Extended social responsibility programmes enacted by IAGTO member golf courses include:

- School programmes
- Caring for the environment
- Foundations & charities
- Virtual nature trails



## Environmental Sustainability

**Good environmental management is NOT a luxury... it's just good business practice!**

In summary good environmental management:

- Reduces energy, water, fertiliser and pesticide costs
- Increases customer satisfaction
- Creates better working conditions

A change of land-use, particularly from arable or fallow land to golf development, can very easily lead to greater environmental sustainability:

1. Only the fairways, greens and tee boxes on a golf course are intensely managed. So provided that sufficient land is purchased for the overall golf development, large natural areas of the site can be allowed to thrive with the added benefit of being managed and cared for.
2. Golfers want to play on golf courses that feel part of the natural environment. Therefore the commercial interests of the developers are served by building an environmental management strategy into their overall master plan.
3. Because of the revenue generated by a successful golf development, private funds can actually be allocated to pro-actively preserving and managing natural areas and wildlife populations without being a drain on the public sector.

In this report we defer to the **Golf Environment Organisation** (GEO) for all technical matters regarding environmental sustainability. GEO is the leading global organisation in this area and we recommend that Peru works hand in hand with GEO to ensure that its golf development programme puts environmental sustainability at its core.

However, within IAGTO's membership we have numerous examples of golf courses being environmentally sustainable and contributing positively to the local ecology, in many cases preserving and showcasing endemic species of plant and animal life. In the remainder of this section we have provided just a few examples from IAGTO members in order to highlight the many ways in which golf course developments can contribute to environmental sustainability.



## *Maintaining Environmental Equilibriums*

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One of the major changes over the past two decades is that there has been a dramatic drop in the use of chemical fertilizers and fungicides on golf courses with organic fertilizers and natural plant extract insecticides now common. Just as one example of the advances in golf course agronomy, the use of Paspallum grass designed for golf courses can reduce the need for herbicides by 90%.

## *Wildlife Sanctuaries*

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Cozumel Golf & Country Club in Mexico's Riviera Maya has earned certification as an Audubon Cooperative Sanctuary. The golf course has become one of the premier spots on the island for birding and provides a habitat for a wide variety of fauna. The golf club makes charitable contributions to environmental concerns on the island and as part of its Audubon commitment it provides access to school groups for supervised bird watching. As part of their environmental commitment with the government, they reforested any areas that were over-cleared. There are 54 conditions with which they have to comply and they submit quarterly reports to the environmental agency to prove that they are meeting the requirements and not harming the environment.

## *Wildlife Abundance*

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The diversity of wildlife inhabiting the Grupo Questro golf courses in Los Cabos on the tip of Mexico's Baja California, speaks for itself. The native Baja vegetation is thriving and foxes, coyotes, wildcats, rabbits, iguanas, chameleons and rattlesnakes cross the fairways and birds such as quail, woodpeckers, cardinals, bluejays, pigeons, ducks, eagles, falcons and roadrunners are at home in the corridors of natural vegetation between, on and around the fairways.

## *Birdlife*

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Birdlife is often a major benefactor of well designed and maintained golf courses.

- The Resort Yacht & Golf Club Paraguayo in Paraguay protects a 200 hectare natural park and is a member of Birdland whose members meet regularly at its hotel.
- When Kiawah Island Golf Course was built in South Carolina, they reclaimed 25 acres of wetlands.
- The Doha Golf Club in Qatar has become a migration staging posts for flocks of birds.
- The Quinta da Marinha Golf Club near Lisbon in Portugal works closely with the Portuguese Bird Protection Agency to monitor birdlife on the golf course.
- The Praia del Rey Golf Club in Portugal's Oeste region has built bird boxes and floating islands for nesting birds, and they even carry out autopsies on any dead animals found in order to determine the cause of death.
- Druids Glen in Ireland works with Bird Watch Ireland and employs a full time conservation project manager and a wildlife warden.



- Bro Hof Slott Golf Club in Sweden, home to the Scandinavian Masters, built a 75-hectare bird sanctuary and nature trails on the golf course land.

### *Animal Conservation*

Throughout the world, animal conservation usually requires nature reserves and significant funding. However, because all golf developments by definition require relatively large areas of land, golf developments can also play an important, self financing, role in animal conservation.

- Fish River Sun Golf Club in South Africa employed Environmental Rangers to stop poaching which lead directly to an increase in the wild buck population.
- Once rampant, hunting on the land belonging to a golf club in the Azores located in the mid-Atlantic, has now been outlawed.
- Roco Ki in the Dominican Republic protects its mangrove swamps and has taken steps to maintain the integrity of important breeding grounds for endangered crustaceans.
- The number of different animal species at El Plantio in Alicante in Spain grew from 42 to 114 over the 18 year period from 1990 to 2008 – according to a study made by the International Foundation for Animal Protection (FIPARM).

Fish River Sun, South Africa, supports 3 schools through its Corporate Social Investment programme



### *Indigenous Vegetation*

The sites visited in Peru do not require the removal of trees or mature natural vegetation. All environmental impact assessments will aim to minimise disturbance to existing trees and native vegetation. Golf course architects are very sensitive to this issue and in cases where trees have to be removed, many more trees are generally planted to compensate. Overall, hundreds of thousands of trees are being planted by golf courses around the world.

- Golf courses in South Africa have helped to preserve the endangered Cycad tree.
- The Doral Golf Resort & Spa in Miami, with 5 golf courses, recently undertook a scheme to replace 30 acres of turf with native plants.
- Many golf courses worldwide work with environmental agencies to re-introduce indigenous vegetation

**The re-introduction of indigenous vegetation is an opportunity that a golf development would bring to the arid land of Paracas.**

### *Buffer Zones*

Many golf courses have buffer zones, or protected areas, within them and a golf course itself can become a buffer between an entirely protected area and a touristic, urban or agricultural zone. Wildlife can thrive in corridors of protected areas which is why **IAGTO recommends all new golf developments in Peru allocate sufficient land for the golf courses so that natural corridors abound and where possible connect.**

## Water Conservation

Water conservation is one of the most sensitive issues in golf course development, particularly of course where water is scarce or is in danger of not meeting the needs of the local population. It was envisaged that water availability would be a major issue in Peru, but we found that irrigation water for the sites selected by Peru Golf Development would either a) have to come from desalination plants built for the golf course, or b) perform a role in improving the water quality that was available from existing water sources.

### *Water Usage*

For both economic and environmental reasons, courses are constantly looking for new ways to reduce water usage. Where there is regular rainfall, many courses do not have to irrigate their fairways for months at a time.

The PGA National in Palm Beach, Florida managed to reduce water usage by 40% in one year. They did this by a combination of accurate forecasting and installing a more efficient mechanism for distribution. As mentioned previously, Paspallum grass for example uses one sixth of the water for typical lawn grass. Advanced capturing mechanism for run-off containment can help to ensure that the majority of water used to irrigate a golf course can filter back into the ground water for re-use.

### *Water Source – Recycled/Reclaimed/Grey/Bio-Recycled*

One way to generate water suitable for irrigation is to put dirty water through a treatment plant. Sources of dirty or 'grey' water include effluent, hotel laundry, sugar cane mills etc. Where grey water sources are available and large volumes of irrigation water are needed, it is particularly useful to have a treatment plant (TSE) of some size. A commercially viable golf development has the capacity to invest in TSE's and this can generate excess water that can be used for the community, perhaps for watering parks and gardens.

For example the Cozumel Golf & Country Club made a sizeable donation to the city for water treatment and also helps to maintain it. The water treatment plant at Estepona in Andalucia is connected by a piped network to 18 courses and is expanding. Treated water can also be used for the wash-down of golf course maintenance equipment, where courses have developed 'closed loop systems' with zero wastage.

**The development of golf courses in Paracas will require the construction of desalination plants, whilst water treatment plants can work hand in hand with the hotel and resort developments.**

### *Water Enhancement*

Water treatment plants can use micro-organisms to purify water and they can also re-oxygenate water. An extreme version of this can be used in the desalination or reverse osmosis plants that make sea water drinkable. Aside from this, turf grass is actually an excellent natural filter. In Mauritius it has been discovered that the quality of water in rivers has improved since the change in land use from sugar cane cultivation to golf course development.

**Land-use shift can improve water quality: This is an important concept for golf developments in the Valle Sagrado.**



Unsuitable for farming, Batalha Golf Club in Azores created housing and employment for local people

# **Mission, Vision & Objectives**



## Background & Introduction

Established in 1997, IAGTO (International Association of Golf Tour Operators) is the global trade organisation of the golf tourism industry. IAGTO has more than 2000 member golf resorts, golf courses, hotels, receptive operators and tourist boards in 88 countries. The membership include over 470 golf tour operators in 59 countries who between them control more than 85% of all golf holiday packages sold worldwide with annual sales exceeding US\$ 1 billion.

In the past decade IAGTO has been commissioned to produce the golf tourism development and promotional strategies for more than 25 countries and regions worldwide, including Brazil, Mexico, Guatemala and Paraguay in Latin America.

Following a period of consultation and preparation, the Ministerio de Comercio Exterior y Turismo (MinceTur) engaged the services of IAGTO in 2012 to prepare a Golf Tourism Development Strategy for the country. A series of site inspections by IAGTO's Golf Development consultant, Nick Edmund, was followed by a 14-day visit by IAGTO President, Peter Walton during which site inspections took place in Lima, Lima Sur (the coast to the south of Lima), Paracas, Cusco and the Valle Sagrado (Sacred Valley), along with interviews and meetings with public sector bodies and private sector companies.

On Friday 3<sup>rd</sup> August a discussion forum on golf tourism took place at the Hotel Atton in Lima focusing on the value of golf tourism and included a presentation on the initial conclusions from IAGTO's site inspections and meetings alongside a presentation on the experiences of Peruvian golf developer and golf tour operator Peru Golf Developments/Andean Origins.



## Mission, Vision & Objectives

The creation of a golf tourism sector in Peru will be dependent on the construction of new golf courses which themselves will require an increased level of golf participation on a national level to remain sustainable long term. Therefore the objectives and vision for this project and for Peru as a golf destination must incorporate golf as a leisure and sporting activity for Peruvian citizens as well as a tourism activity for international visitors.

This report is designed to establish the parameters that will help ensure that all new golf developments will be economically viable and sustainable. The report concludes with an Action Plan which sets out the steps for the implementation of a strategy that encompasses the following objectives.

- To develop new golf courses in Peru that cater for and are accessible to both national and international visitors;
- To create golf destinations in Peru which will attract 'high-revenue-low-impact' tourism from a range of sectors including golf holidays\*, holiday golf\*\*, luxury vacations, meetings, conventions, incentives and business travel;
- To ensure that all new golf developments are 'export ready'<sup>#</sup> and therefore tourism friendly, delivering an experience that all golf visitors will find enjoyable, memorable and remarkable;
- To encourage participation in golf amongst Peruvians in order to ensure that all new golf developments are economically viable and sustainable in the long term;
- To develop a national golf infrastructure that is inclusive and delivers on a socially responsible agenda, providing opportunities for education, employment, leisure and sport;
- To ensure that all new golf developments are not only environmentally sustainable but also contribute significantly to the ecology of the region;
- To ensure that all new golf courses contribute positively to water quality and conservation;
- To create an additional 'face' or image of Peru for the outside world that will attract new markets and inward investment through the construction and promotion of great golf courses.

All of these objectives can be achieved by committing to an integrated national golf development strategy that will include incentives for the development of appropriate golf projects and international promotion for the new golf destinations. Success will depend on the motivation of the private sector and investors who will then work in tandem with the public sector. How best to achieve this vision and these objectives is set out in this report.

### Definitions

- \*Golf Holidays = holidays where golf is the primary purpose of travel
- \*\* Holiday Golf = holidays where golf is not the primary motivational factor in destination choice
- <sup>#</sup>Export Ready = golf courses that are suitable and attractive to international visitors from the perspective of quality, accessibility, cost and appeal

# **SWOT Analysis**

## **The Potential of Golf Tourism to Peru**

## Strengths

**Global Recognition:** Peru is frequently ranked amongst the Top 10 countries that people would like to visit. Peru is a 'bucket list' destination for discerning travellers. Golfers have a higher than average disposable income and golf travellers represent the wealthiest 50% of all golfers. Subjectively we can assume that golf travellers as a demographic are globally aware and pre-disposed to be attracted to interesting destinations worldwide.

**World Heritage Sites:** The labels of Machu Picchu and Cusco can be attached to new golf destinations.

**Tourism Infrastructure:** Tourism has long been a government priority, and Peru has managed its historical, cultural and natural assets very well. Therefore there will be an expectation that its golf destinations will be similarly well presented and managed.

**Experienced Hospitality Industry:** Lima, Cusco and Paracas boast some top end 4 and 5 star hotels with a wide range of excellent restaurants in both Lima and Cusco.

**Latin American Market Strength:** Whilst golfing populations are nowhere near the size of those in North America, Europe and Asia, golfers represent the highest net worth demographic in Latin America and the number of golfers is growing rapidly along with their tendency to take golf vacations.

**Potential for Domestic Growth:** With only 2900 golfers and 8 full length golf courses, Peru has proportionately a far smaller golf market than the majority of its Latin American neighbours. We have demonstrated that, provided with the right facilities, Peru's golfing population should rise rapidly to perhaps four or five times its current size.

**Knowledgeable Golf Community:** Whilst the number of golfers in Peru is small, there are five well established golf clubs in Lima, some with a very long history. The existing golf community will have an important role to play in the growth of Peru as a golf destination.

**Ideal Golf Locations:** Lima Sur, Paracas and Cusco/Valle Sagrado represent topographically interesting and varied golf destinations, with Lima Sur and Cusco/Valle Sagrado easily accessible from the country's two major tourism hubs.

**Topography:** The topography in Lima, Paracas, Cusco and the Valle Sagrado can deliver spectacular first class and memorable courses with a unique Peruvian character if the best sites are selected.

**Economic Strength & Real Estate Demand:** There is a growing demand for high quality housing in both Lima Sur and Cusco.

**Access:** Direct flights to Lima from the key Latin American markets of Chile, Argentina, Brazil, Mexico, Colombia and the international golfing markets of the USA, Spain, France & the Netherlands.



**Stability:** Peru is generally considered as a safe and stable destination which is just as important for potential investors as it is for potential golf visitors.

**Clean Slate:** It is much easier to create a successful golf destination from scratch than to improve an existing golf destination that has a bad reputation.

**Mincetur & PromPeru Support:** With government support from the outset, Peru has a much greater chance of long term success. In our experience no new golf destination, outside of an economic boom, has achieved sustained success without the public and private sector working together for a common goal.



STRENGTH: Spectacular Topography

## Weaknesses

**An Unknown Golf Destination:** Peru has not in the past, from a tourism perspective, capitalised on having five well established golf clubs in its capital city. Therefore Peru will be starting virtually from ground zero as a golf destination and will need to build awareness and a strong reputation from scratch.

**Cost of Land (1):** Land prices can be comparatively high in locations most suitable for commercially viable golf courses. House prices appear to be relatively low when assessed against the purchase price of the land. Therefore to achieve an attractive return on investment within seven years, golf developments would either need to sell a large number of houses, a large number of memberships or have a diverse and dynamic range of revenue streams.

**Cost of Land (2):** Golf developments will look to purchase between 80-100 hectares for a single 18-hole project. Although the square metre land prices are targeted at smaller housing developments, the prices do not seem to be adjusted downwards for large land acquisitions. This is despite the fact that there are very few business other than golf developments that would purchase such large swathes of land.

**Cost of Land (3):** In land sales, no allowance is made for the fact that a significant proportion of the purchased land will remain in its natural state. Golf development land use is far less intense than either farmland or housing developments.

**Government Land:** There appears to be little government owned land in locations suitable for 'first phase' golf developments, therefore removing the opportunity for government sponsored golf developments. The one exception to this is the possibility for a golf academy and short course development on the reclaimed land at Miraflores in Lima.

**Community Land Ownership:** The complicated nature of community land ownership in many areas makes the purchase of large tracts of land for golf development untenable.

**Lack of Familiarity with the Business of Golf:** With the exception of one or two companies including PGD, there is a lack of experience and therefore familiarity with commercial golf developments in Peru amongst investors, developers and landowners. Landowners in particular are not familiar with the long-term benefits of becoming a partner in a golf development, reducing the up-front cost to the investor. Short-term rental of land for agricultural use may generate less revenue but is more familiar and involves no risk to the landowner.

**Water Management:** In Paracas and Lima Sur a combination of desalination and water treatment plants will need to be built and financed. In Cusco and the Valle Sagrado water treatment plants will be required to help re-oxygenate the water returning to the water table. Construction costs will be higher because of the need for advanced and closed-loop irrigation systems in the driest locations. Water management is likely to double the annual maintenance costs.

**Lack of Tax Incentives:** A lack of existing tax incentives will be an impediment to high value investment from hotel groups and other national investors.

**Requirement for International Investment:** Although national investment is growing rapidly in Peru, it is anticipated that, due to the high cost of golf development, investment from national companies, organisations and institutions will be insufficient by itself to fund a project outright. It is therefore likely that all projects will require investment from international sources.

## Opportunities

**Sustainable Development:** Peru has the opportunity to implement a national integrated golf tourism development strategy that embraces environmental sustainability, water conservation and social responsibility. This is an opportunity not to be missed.

**Potential for Rapid Growth:** Golf participation levels in Peru are currently way below those in comparable Latin American countries, and as demonstrated earlier in this report, given the right facilities, domestic golf participation could grow rapidly to levels perhaps five times current levels.

**Golf Academy in Lima:** Reclaimed land on Lima's coast near Miraflores would provide the perfect opportunity for a Golf Academy and practice facilities for Lima residents interested in experiencing and taking up the sport.



## Threats

**Colombia:** If Colombia builds golf courses in popular tourist destinations such as Cartagena, its resurgence as a safe tourist destination will position it as a strong competitor to golf destinations in the region.

**Land Use Re-Zoning:** If the re-zoning of land use on the perimeter of the Paracas Natural Reserve does not allow for golf development then opportunities for developing golf in the resort will be set back.

**Industrial Development:** Developments in Lima Sur and Paracas will need to be protected from the encroachment of neighbouring industrial developments which can damage the value of real estate and reduce the appeal of golf courses to international visitors.

**Uncoordinated Approach:** An uncoordinated scattergun approach, common to many other destinations, would seriously impede the development of Peru as a serious golf destination.

**Cutting Corners:** If developers in Cusco and the Sacred Valley do not allocate sufficient land to the golf course itself there is the danger of courses lacking the additional length necessary at high altitude (10% per 1500m above sea level).

# **Positioning, Product & Market Strategies**



## Positioning Analysis

We have demonstrated that, despite having eight 18-hole golf clubs, Peru cannot promote itself as a golf destination without first constructing new 'export ready' golf courses with commercial business strategies that embrace domestic and international golf visitors. Before laying the foundations for the development of new golf courses, it is important to look at neighbouring countries and selected golf destinations to see what can be learned from the comparisons.

However, care must be taken when making comparisons between destinations because the variables are often very large. In our opinion there are only three areas where the available data can shed light on the potential for sustainable golf and golf tourism in Peru, and these will be looked at individually:

**1) National & City Golfing Populations**

**2) Number of Golf Courses**

**3) Tourism Arrival Figures**

Golf came early to many of parts of Latin America with the arrival of the railways at the beginning of the 20<sup>th</sup> Century, often coordinated by companies from the United Kingdom where golf was already established. However, after the establishment of a number of country clubs in and around the region's major cities, until recently golf development only really took off in Argentina, Chile and Mexico. Now Brazil, Colombia and Costa Rica together with Guatemala and Panama to a lesser extent, have all enjoyed growing national golfing populations, more courses and in some cases golf tourism.

Figure 6 – Golf Courses in Latin America

| Country                | No. Golf Courses | 18 Holes   | 27 Holes  | 9 Holes    | Other     |
|------------------------|------------------|------------|-----------|------------|-----------|
| <b>SOUTH AMERICA</b>   |                  |            |           |            |           |
| Argentina              | 326              | 128        | 12        | 170        | 16        |
| Brazil                 | 121              | 49         | 2         | 63         | 7         |
| Colombia               | 65               | 62         | 0         | 3          | 0         |
| Chile                  | 58               | 38         | 2         | 18         | 0         |
| Venezuela              | 24               | 15         | 0         | 9          | 0         |
| Peru                   | 14               | 8          | 0         | 5          | 1         |
| Uruguay                | 11               | 9          | 0         | 2          | 0         |
| Ecuador                | 10               | 7          | 0         | 3          | 0         |
| Bolivia                | 9                | 6          | 0         | 3          | 0         |
| Paraguay               | 6                | 4          | 0         | 2          | 0         |
| <b>Total</b>           | <b>644</b>       | <b>326</b> | <b>16</b> | <b>278</b> | <b>24</b> |
| <b>CENTRAL AMERICA</b> |                  |            |           |            |           |
| Mexico                 | 210              | 122        | 5         | 84         | 9         |
| Costa Rica             | 13               | 7          | 0         | 6          | 0         |
| Panama                 | 11               | 7          | 1         | 2          | 0         |
| Honduras               | 8                | 2          | 0         | 6          | 0         |
| Guatemala              | 6                | 6          | 0         | 0          | 0         |
| El Salvador            | 4                | 3          | 0         | 1          | 0         |
| Nicaragua              | 3                | 2          | 1         | 0          | 0         |
| Belize                 | 2                | 1          | 0         | 1          | 0         |
| <b>Total</b>           | <b>257</b>       | <b>140</b> | <b>7</b>  | <b>100</b> | <b>9</b>  |

Figure 7 – Golfing Populations in Latin America

| Country                | No. Golfers    | National Population<br>2011 (millions) | GDP Per Person<br>\$ 2012 |
|------------------------|----------------|--|---------------------------|
| <b>SOUTH AMERICA</b>   |                |  |                           |
| Argentina              | 50,000         | 41                                     | 10,931                    |
| Brazil                 | 25,000         | 197                                    | 12,593                    |
| Chile                  | 14,000         | 17                                     | 14,393                    |
| Colombia               | 11,000         | 47                                     | 7,079                     |
| Venezuela              | 10,500         | 29                                     | 10,819                    |
| Peru                   | 2,900          | 29                                     | 6,010                     |
| Uruguay                | 1,700          | 3                                      | 13,824                    |
| Bolivia                | 1,500          | 10                                     | 2,416                     |
| Ecuador                | 1,500          | 15                                     | 4,558                     |
| Paraguay               | 1,200          | 7                                      | 3,636                     |
| <b>Total</b>           | <b>119,300</b> | <b>395</b>                             |                           |
| <b>CENTRAL AMERICA</b> |                |  |                           |
| Mexico                 | 50,000         | 115                                    | 14,800                    |
| Costa Rica             | 3,000          | 5                                      | 12,100                    |
| Panama                 | 3,000          | 14                                     | 5,100                     |
| Honduras               | 2,000          | 4                                      | 14,300                    |
| Guatemala              | 1,000          | 8                                      | 4,400                     |
| El Salvador            | 350            | 6                                      | 7,600                     |
| Nicaragua              | 300            | 6                                      | 3,200                     |
| Belize                 | 200            | 0.3                                    | 8,400                     |
| <b>Total</b>           | <b>59,850</b>  | <b>158.3</b>                           |                           |

### *The Potential for Growth of Golf in Peru*

There are currently an estimated 2,900 golfers in Peru, representing 2.5% of all golfers in South America and 1.6% of golfers throughout Latin America.

From Figures 6 and 7 we can see that as a percentage of the population, golf participation in Peru is:

- 3 times lower than the average across South America
- 12 times lower than in Argentina
- 8 times lower than in Chile

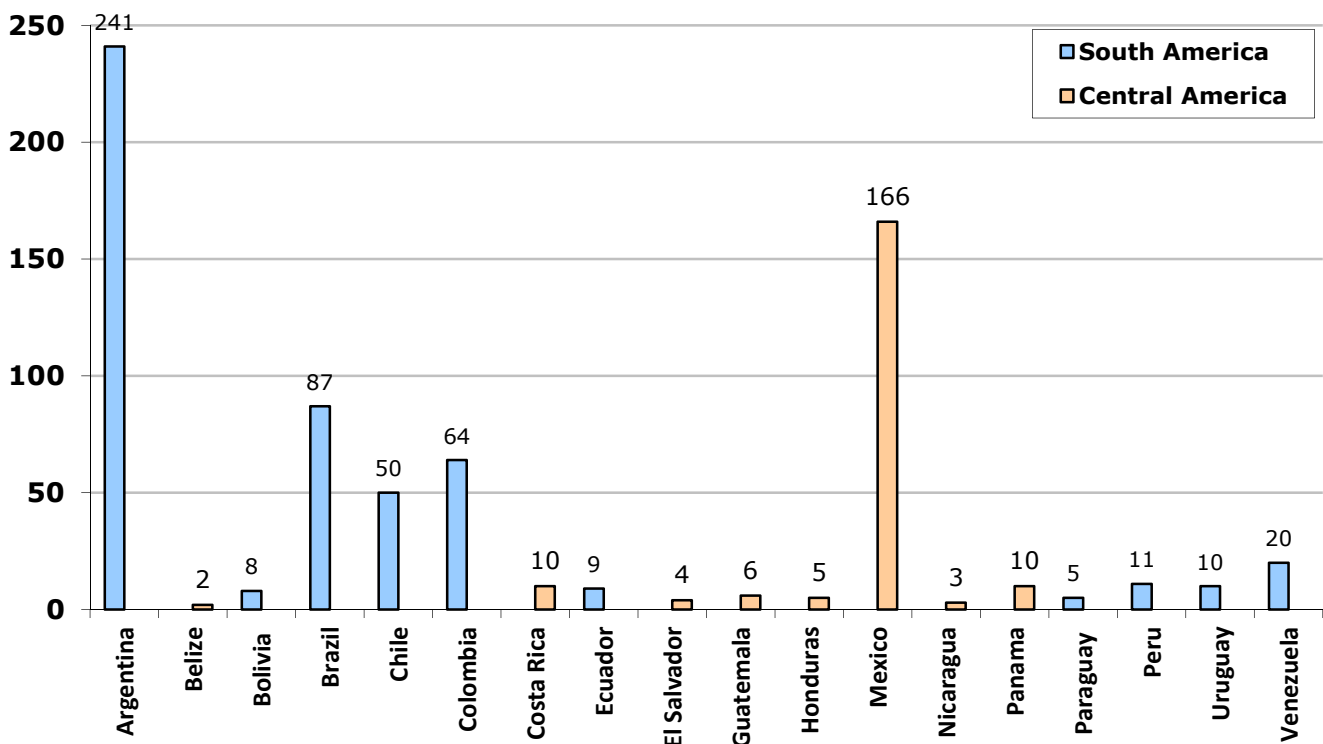
- 6 times lower than in Uruguay
- 2 times lower than in Colombia

If we factor in the national population and the GDP per person in order to give each South American country equal weighting, every South American country apart from Brazil (because of its very high population of 197 million) out performs Peru in terms of their golfing population by at least a factor of 2 (Chile by a factor of 4).

This is a very crude method to gauge where a country stands in relation to its neighbours in terms of golfing population development. However, this clearly shows that, in comparison to other South American countries, Peru is much further down the evolutionary scale in terms of golf population development than it should be according to basic socio-economic factors.

Golf participation is of course limited by the availability of golf courses, and *Figure 8* below shows where Peru stands in relation to all other golfing nations in Latin America in terms of the number of golf holes.\*

*Figure 8 – Quantity of Golf Facilities throughout Latin America*



\*Golf holes are used as the most accurate measurement of the quantity of golf facilities in a country i.e. a destination with two 18-hole courses and one 9-hole course has a total of 45 holes of golf. In the chart above the total number of golf holes have been divided by 18 to provide a comparative number of golf courses in each country.

This is an even clearer indication that Peru has far fewer golf courses than would be expected for a successful South American country of its size with a rapidly growing and stable economy.

## *Golf Tourism to and from Latin America*

There is very little data available on golf tourism to and from Latin American countries, but IAGTO's involvement with golf resorts, golf clubs, hotels and tour operators in the region provides us with an insight into the market.

The table in *Figure 8* would clearly suggest that both the strongest golf markets and golf destinations are Mexico and Argentina, which is correct. In 2004 IAGTO carried out the first and only golf tourism analysis for **Mexico**, demonstrating that golf tourism to the country was then worth \$270 million per year with the potential for a \$70 million growth without the need to build any additional golf courses. 94% of all golf tourism to Mexico was at the time from the USA, but in the Cancun/Riviera Maya region non-USA business represented 22% because of the good flight connections with Canada and Europe. Mexico is Latin America's leading golf destination and outbound golf market.

**Argentina** has by far the largest number of courses in South America with 140 18-hole and 27-hole courses (plus a further 186 courses of 9-holes or similar). Whilst the figures put forward by the golf federations of both Mexico and Argentina suggest that there are some 50,000 golfers in each country, we expect that the numbers are actually significantly higher than this. However, the requirement to have golf club membership in both countries does to a certain extent limit their growth in terms of golfing populations. Despite its distance from the large North American and European markets, Argentina has built a strong incoming golf tourism business. The strengths of Argentina as a golf destination can be summarised as follows:

- Well managed 'old' golf courses in the major tourism cities that are accessible to visitors;
- Excellent 'new' golf courses recently built in Patagonia providing a real incentive for golfers to stay longer and play in two or three locations whilst visiting Argentina;
- A coordinated travel industry with eight specialist and highly experienced IAGTO member inbound golf tour operators who handle all incoming golf tourism;
- Funding from the Ministry of Tourism for international promotions;
- Commercial golf tournaments designed for international visitors to participate in which provides added value to the golf traveller's trip.

Argentina is a very popular golf destination amongst seasoned golf travellers. However, the image of Argentina, just like Peru, is so strong in people's minds, that a golf tour operator in Poland was able to run an 'Argentina-themed-golf-tournament' at a Polish golf course in 2010 and then take 50 bookings for a golf holiday to Argentina that very same day!

Most long haul golf visitors to Argentina (i.e. all markets outside of South America) stay for approximately two weeks and play golf in three locations including Buenos Aires, Patagonia and either Cordoba, Mendoza or one of the other destinations of touristic interest. Latin American golfers will either just play in Buenos Aires or combine with one other destination including the coastal resort of Mar del Plata.



Long haul visitors do not tend to visit Mar del Plata because the quality of golf is not particularly high, and it is less interesting culturally, historically or scenically, despite its proximity to Buenos Aires. Patagonia has become a strong draw for international golf visitors because of the quality of the golf courses and because the scenery is spectacular. This is an important comparison for the future development of golf in Cusco and the Valle Sagrado.

Over half of **Brazil's** 51 18-hole and 27-hole courses are in the vicinity of Sao Paulo. There are a handful in Rio de Janeiro and the rest are spread around this vast country. As a destination Brazil has not yet taken off despite the interest that golfers have in visiting Brazil to play golf. The reason for this is that as yet the courses in Rio de Janeiro are either not very attractive or not very accessible to visitors.

Sao Paulo is not a tourist destination, and none of the other tourist hot spots have more than one golf course. Brazil also suffers because the quality of the golf outside of Sao Paulo is rarely of a high enough standard to be considered 'export ready'. The perfect example of this is the Iguassu Golf Club. International golf tour operators have been very keen to include Iguassu in their golf packages to Brazil and to Argentina. However, the maintenance of the course is so poor that operators who have sent golfers there will never do so again.



Terravista Golf Course (Brazil)

Brazil has an incredible opportunity to build very successful golf destinations on its north-east coast. However, it has not yet been able to do this for the following reasons:

- A lack of local or national guidance on the building of golf destinations as opposed to individual golf courses, has made the commercial viability of individual projects weaker and **less attractive to investors**;
- The planning, approval and **environmental impact assessment processes** are so drawn out that investors have been reluctant to put in the much needed seed capital when they know that it might take five years before construction can begin;
- Despite the availability of national investors with sufficient capital for large projects, investors are wary of golf developments because in the past **poor planning procedures** have lead to projects being stopped mid-construction because of legal challenges.

Despite there only being some 25,000 golfers in Brazil, they are now travelling around the world to play golf. Groups of Brazilian golfers are not only travelling domestically and to Argentina, Uruguay, Paraguay and Chile, but also to the USA, Scotland, Ireland, Portugal, South Africa, Australia and Thailand!

Similarly to Brazil, the majority of **Colombia's** 62 18-hole courses are in and around Bogota which is not particularly attractive as a golf destination. However, after the construction of a Jack Nicklaus golf course 45 minutes from Cartagena, we anticipate that a cluster of golf courses will follow which will make Cartagena a new and exciting golf destination for the North American, European and Latin American markets.

Worldwide, approximately 25% of golfers who play regularly will take a golf holiday within the coming 12 months. **However, it appears that in Latin America, the vast majority of golfers will play golf whilst travelling to other countries at least once a year!**

Golf participation in Latin America is growing rapidly and as a source of outbound golf holidays, IAGTO considers Latin America to be ranked No.1 in terms of rate of growth alongside China and SE Asia. Just as one example, Sales Director of the famous Trump Doral Golf Resort (with 5 golf courses) in Miami states that individual leisure bookings have grown 18% year on year for the past three years from Latin American markets and 15% year on year for group business. Latin American business represents 40% of leisure sales to the Trump Doral Golf Resort.

## Positioning Statement

Taking into account everything set out in this report, we can build up a picture of how Peru should aim to position itself as a golf destination in the long term. This is presented below as a Positioning Statement for Golf Destination Peru.

*Golf Destination Peru* will be recognised internationally as having some of the most **spectacular golf courses** in South America.

*Golf Destination Peru* will consist of **clusters of 18-hole golf courses, easily accessible** from accommodation centres, in locations that are **appealing topographically and attractive touristically** to both international and domestic travellers.

Golfers in the key markets of Latin America, North America and Europe will be aware that *Golf Destination Peru* comprises a **wide variety of golf courses** that all have **good designs**, are **consistently well maintained** and **deliver an incredible experience** to the first time golf visitor.

The golf courses of *Golf Destination Peru* will be **accessible to visitors** at prices that will be considered to **deliver extremely good value for money**.

Peru will be recognised as a country that **embraces sustainability in environment, people and communities** in all of its golf developments built from 2013 onwards throughout the country.

Every visitor travelling to Peru to play golf will be able to see and **experience elements of Peruvian culture, history and ecology** as well as its great vistas, simply through the act of playing golf.

The people of Peru will be **proud of the positive contribution** that all new golf courses make to the country's ecology, water conservation, employment, education, cultural exchange and economy.

All new golf courses in Peru will be **certified** by the Golf Environment Organisation and IAGTO giving **credibility** to the destination's claim to be one of the **best and most rewarding golf experiences that Latin America has to offer**.

Golf as a **sport and leisure activity** will become ever more accessible to the people of Peru and talented youngsters will be identified and supported by the country's golf industry.

The creation of *Golf Destination Peru* will **enhance the country's position from the perspective of international investors**.



Golf around Cusco can enhance the environment



Golf & Beach on Lima Sur



Greenery in the desert of Paracas



Preserving natural habitat amongst the sands of Lima Sur



Greenery in the desert of Paracas



Valle Sagrado





## Product Strategy - Sustainable Development

There are a number of organisations around the world that specialise in environmental sustainability and some that have a division dedicated to golf. Of all the organisations, IAGTO considers the Golf Environment Organisation (GEO) to be beyond doubt the most important body specialising in sustainability for the golf industry worldwide. GEO works with all areas of sustainability including people and communities as well as environmental.

For the last six years GEO has been the world's most dynamic sustainable golf solution provider, entirely dedicated to supporting and promoting credible and practical action in development, course and club management, and tournaments.

With a strong, collaborative, non-profit governance structure, GEO brings comprehensive and directly relevant guidance, programmes, communications and industry ecolabel.

GEO is supported by, and works with golf, governmental and environmental bodies around the world, including The R&A, European Tour, IAGTO, the Club Managers Association of America, the United Nations Environment Programme and the Golf Course Architect Associations of Europe, America, Australia, China and Japan.

GEO is developing and sharing the commitments and achievements of the growing and diverse global community of people and organisations that are leading golf's sustainability movement.

Promoting a positive and business benefitting outlook and vision, and a comprehensive sustainability agenda that can be integrated into any golf development, any golf facility and the staging of any golf tournament.

- Landscape and Ecosystems - protecting and enhancing the ecological value of sites and their surroundings and enriching biodiversity
- Water - maximising the efficient use of recycled sources
- Energy - maximising the efficient use and transitioning to renewable
- Products and Supply Chains - reducing waste, reusing and recycling, and supporting a green economy through ethical and environmental purchasing
- Environmental Quality - protecting and enhancing the quality of water, air and soils
- People and Communities - maximising golf's social return through outreach, investment and education

### *Golf Development*

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GEO provides the following services, programmes and resources to support and promote sustainable golf development:

**Strategic planning** – expert advice for regional and national governments in setting policy and / or spatial frameworks for the growth of golf;

**Project conceptualization, design and construction** – the GEO Legacy programme supports approved developments, leading to the prestigious GEO Certified™ Development ecolabel;

**Golf facility management** – the GEO OnCourse programme supports golf facilities in their continually improving operations and rewards with the ongoing retention of the third party verified GEO Certified™ ecolabel;

**Communications** – working with partners such as IAGTO to increase visibility and promote leadership, and helping facilities to market their GEO Certified status.

### *Recommendations for Peru*

As an addendum to this report, please find attached the 60-page Sustainable Golf Development guideline document produced by GEO. The Chief Executive of GEO, Jonathan Smith, has been briefed by IAGTO on the Peru Golf Development Strategy project. In the Action Plan at the end of this report, IAGTO recommends that GEO be engaged by the relevant government body to establish the process for undertaking Sustainability Impact Assessments, including the environment, people and communities, for every new golf development in the country. This would need to be coordinated hand in hand with Peru's existing environmental impact assessment organisations.



## Product Strategy – Delivering the Experience

For over a decade IAGTO has carried out golf tourism audits to help golf courses, golf resorts and golf destination deliver the best possible experience to the visiting golf traveller.

In the concluding section of this report, we recommend that all new golf developments in Peru that will depend at least in part on tourism revenue, take account of recommendations made by IAGTO in terms of creating the most enjoyable environment for the first time golf visitor.

By necessity, our recommendations would be tailored for each development. IAGTO's recommendations can be seen as setting minimum standards in terms of facilities and experience, but in no way should they be considered as standardising the golf developments themselves. The joy of golf travel lies in the variation and uniqueness of the golf experience in different countries and destinations.

### *IAGTO Checklist Examples*

More golfers rely on the advice of fellow golfers in the choice of their golf destination than on any other source. For that reason it is essential that every golf visitor becomes an ambassador for the golf experience in Peru. For that to happen every golf club needs to look at the service it provides through the eyes of the first time golf visitor.

Below are some examples of facilities, services and commercial activities that IAGTO looks at when recommending minimum standards for golf courses.

#### **Golf Course Experience**

- Caddy service
- Caddy language capabilities
- Caddy training and education
- Pocket course planners
- Buggy availability
- Can buggies drive on the fairways
- Buggy cool boxes
- On course refreshments
- On course payment method
- Speed of play management
- Tee box hole maps
- Ball washers
- Distance markers on tee boxes
- Distance markers on sprinkler heads
- Distance markers on course
- Consistency of distance marking between courses in same destination



On course rest room facilities

Lightening shelters

Green to tee box signage

### Golf Clubhouse Experience

Signage to and from car park

Bag drops

Signage to and between reception, pro shop, locker rooms and practice areas

Reception

Pro Shop

Starter

Practice facilities

Transportation – availability of taxi and shuttle services

Massage & Spa facilities

Locker rooms

Showers

VIP rooms

Restaurants

Function rooms

### Value For Money

Green Fee Package – what is included in the green fee

Buggy cost

Caddy cost

Club rental cost

Club rental quality

Number of rental sets

Ladies & left handed sets of rental clubs

### Sales & Marketing

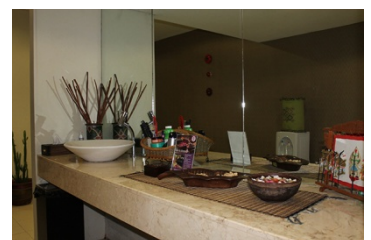
Seasonal variation in green fee pricing

Yield management in green fee pricing encouraging early bookings

Ability to make bookings 12 months in advance

Net prices and commissions

Caddy client feedback





## Market Strategy

The marketing of Golf Destination Peru should be planned in detail two years before the first new golf course is due to open to visitors. The marketing strategy must be developed and revised each year and as new courses are added to the Golf Destination Peru portfolio.

However, it is already clear what the main markets will be and the categories of visitor that will be attracted to Peru either for the primary purpose of playing golf or where golf is played as an additional activity.

### International Markets

In Figure 9 below we have listed the top 17 markets for tourism arrivals into Peru in 2010 from Chile in first place to Holland in 17<sup>th</sup> place. Interestingly, 16 of the 17 countries (Ecuador being the exception) all have high golfing populations.

Figure 9 – Comparison between Top Tourism Markets for Peru and their Golfing Population Rankings

| Tourism Arrivals to Peru 2011<br>17 Top Markets | Golf Market Position per Region |               |        |                    |
|---|---------------------------------|---------------|--------|--------------------|
|   | Latin American                  | North America | Europe | Asia & Australasia |
| Chile   | 4                               |               |        |                    |
| USA   |                                 | 1             |        |                    |
| Argentina                                       | 1                               |               |        |                    |
| Brazil  | 3                               |               |        |                    |
| Colombia  | 5                               |               |        |                    |
| Spain   |                                 |               | 6      |                    |
| France  |                                 |               | 4      |                    |
| Canada  |                                 | 2             |        |                    |
| Ecuador   |                                 |               |        |                    |
| Germany   |                                 |               | 3      |                    |
| United Kingdom                                  |                                 |               | 1      |                    |
| Mexico  | 2                               |               |        |                    |
| Japan   |                                 |               |        | 1                  |
| Italy   |                                 |               | 10     |                    |
| Australia                                       |                                 |               |        | 3                  |
| Holland   |                                 |               | 5      |                    |

The five most important markets for general tourism to Peru are also the five most important golfing markets in Latin America (Chile, Argentina, Brazil, Colombia and Mexico).

The USA (27 million golfers) and Canada (5 million) will be of enormous importance to Peru.

In Europe, the only large golfing market that does not feature highly in terms of tourism arrivals to Peru is Sweden, which is currently the 2<sup>nd</sup> largest golfing market in Europe. But all other 5 nations in the top 6 in Europe are important to Peru (Germany, Spain, France, UK and Holland).

Japan (11 million golfers) is the largest golf market by far in Asia, with Australia (1.2 million) having only half a million less than 2<sup>nd</sup> placed Korea.

The percentage of golfers who will travel to Peru for the primary purpose of playing golf will be inversely proportional to the distance they travel. So the greatest percentage of 'Golf Travellers' will come from the closest markets. Golfers travelling greater distances will tend to combine playing golf with touring Peru and visiting its cultural, historic and natural attractions.

### *Domestic Market*

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The domestic market is going to be pivotal for Paracas and Lima Sur. Domestic tourism to Cusco and the Valle Sagrado will increase because of the access to great golf courses there.

Golf needs to become a primary driver of tourism to Paracas for families and for business events. The Lima Sur coast will enjoy the broadest mix of visitors types as the golf developments will be the most multi-functional of all. However domestic tourism to Lima Sur will be lower than to Paracas, Cusco or the Valle Sagrado, as most golf will be played on a daily access basis, without staying overnight.

Domestic travel itself will also facilitate greater real estate sales in all locations which will be central to ensuring that the golf developments deliver a decent return on investment within a seven year period.

# **Securing Investment for Peru Golf Development**

## Positioning for International Investment

The investment required for a real estate golf development in Peru will often be in excess of US\$50 million. From discussions held during the inspection visits, whilst investment from companies in Peru is growing, it is unlikely that all investment for golf developments will come from national companies and organisations. International investment will therefore be required.

In Paracas, Cusco and within 70km of Lima on the coast it is unlikely that the golf development master plans will include a hotel. Smaller boutique hotels are more likely to be included in Valle Sagrado and in Lima Sur further away from Lima. Therefore the involvement of international hotel groups will not always be the solution. Conversely in Paracas, the existing hotels and those that are to be constructed will benefit enormously from the development of a golf course and should therefore be involved in the investment process.

Securing international investment is not straight forward, and there is no 'blueprint' for this as investment tends to be country specific. For example, in China and Brazil, investment is predominantly from national institutions. In Morocco, the investment is primarily from State (national government), French and Spanish companies. In Cuba, there are 13 planned golf developments, all with international investors who are based in Canada, Spain, Vietnam and the United Kingdom.

Peru will need to seek investment partners from the major Latin American players including Chile, Brazil and Mexico in addition to the USA, Canada, Europe and Asia. Golf developments represent a new direction for investment in Peru, and investors will be understandably cautious.

Therefore the best advice that we can provide will be for the government and private sector to work together in demonstrating to potential investors that their investment will be secure and that projects in Peru represent the best chance of a good return on investment over seven years. Below we list the most important steps that the government should considered to deliver maximum confidence to the investor market.

### *Optional Government Actions*

**Government Incentives:** Any investor looking not only to build and sell but to build and operate a golf development will without look for incentives that will reduce operating costs and therefore increase profitability. Hotel groups have told us that 1;1 tax credits on profits or on equipment and employment credits are both valuable incentives.

**Reducing Land Acquisition Costs:** Landowners must be encouraged to become stake holders in the golf development instead of simply looking for an immediate cash return. Tax incentives for landowners to become investors in golf projects on their own land will help reduce the up-front investment enormously, thereby attracting investment.



**Real Estate Fund:** Establish an investment fund for approved golf developments in Peru may be attractive to investors. This avoids the need for the investor to be tied exclusively to one development and can happen of course if there is confidence that a viable national strategy will be implemented.

**Planning Permission Approvals:** Investors can be deterred by the experience of long delays in planning permission process. The island government or cabildo of Gran Canaria avoided this by preparing a 'Plan Territorial' which identified 18 sites on the island which the cabildo had pre-approved for golf development. Investors will be drawn to any destination that promises speedy planning permission approvals of multiple sites.

**Fast-Tracking:** A government commitment to help developers and investors navigate the various stages of permissions and authorisations, both national and provincial, will be beneficial.

**Funding of Impact Assessments:** Rigorous sustainability impact assessments (environment, cultural & historical) must be undertaken with approval either granted or denied at an early stage. Ideally these assessments should be completed before pitching to international investors. The alternative is a 'chicken and egg' situation whereby the developer does not have the funds for the necessary environmental licenses until seed money is raised from investors. Our specific recommendation is that MinceTur establish a Sustainability protocol with the Golf Environment Organisation (GEO) who can then oversee the environmental and social impact assessments. Providing sites are carefully chosen, we would recommend that the government consider funding the impact assessments and sustainability studies. We envisage that these would be carried out by authorised Peruvian organisations in coordination with GEO.

**Real Estate Demand Study:** Most investors will be seeking a seven year return on investment, primarily based on real estate sales. Studies to demonstrate the quantity, demand and pricing of real estate in Lima Sur, Cusco, the Valle Sagrado and Paracas will be central to the attraction of international investors.

**Import Duty Holiday:** Specialist machinery and spare parts will need to be imported for the maintenance of first class golf courses to a standard not yet seen in Peru. We would recommend that import duty be waived on such machinery for a fixed period, with a longer window for spare parts. This will help ensure that all new golf courses are maintained to the highest of standards. In return, the new development can be instructed to agree, where appropriate, to share some of the machinery which is not required on a daily basis with not only other new courses but with some of the existing courses in Peru to raise golf course standards throughout the country. It may also be necessary to import specific machinery for the operation of the golf course, including the irrigation systems.

**Tax Holiday for Equipment Sales:** A further tax holiday or favourable terms could be considered for golf carts and sets of golf clubs to be used as rental items on commercial golf courses (open to visitors). Each new golf development will need at least 50 electric golf carts, each of which has a price tag in the region of US\$5000.

**Commitment to International Promotion:** Investors will look for assurances that PromPeru will invest in the promotion of golf tourism to Peru in the long term, should they invest in the development of Peru's golf tourism product.

**Research & Development:** Government support for approved developers to invest more time in locating the best sites for golf developments in Peru, and preparing proposals for international investors could be considered.

**Investment Opportunity Showcasing:** A small fund could be established to help offset the costs of developers in their pursuit of international investors. For example for attending international investor events, visiting investors overseas and hosting investment sales missions in Peru.

**Training:** A commitment to supporting the training of local workers in new skills related to golf course operation, from green keeping to English lessons for caddies. This will be well received by potential investors.

**Water Conservation:** Subsidies for the construction and operation of water treatment and seawater desalination plants can be offered, in order to operate a sustainable water programme whereby the community benefits from either or both a) an additional source of purified or recycled water, or b) an improvement to the quality of local water sources (e.g. treatment and oxygenation of water in the Valle Sagrado).

**Lima Academy & Short Course:** Support for the development of a golf practice facility in Lima on the reclaimed land in Miraflores would demonstrate to investors the commitment of the government to the development of golf as a national sport and leisure activity for people of all backgrounds and from all communities.

## Case Study - Brazil

To illustrate some of the points made previously and to put golf development into perspective, we have provided below some experiences of the stages that golf developments go through based on recent projects in Brazil. Delays are common in Brazil and elsewhere, which demonstrates the importance of the implementation of national and regional golf development strategies to fast-track the permits and to attract investors.

### *Land Acquisition & Landowner Involvement*

There are various opportunities in Brazil when negotiating with landowners. In many cases the land is provided to the developer in a 'barter' agreement whereby the landowner will become a stakeholder in the development and receive a percentage of the revenue sales in return for contributing the land to the project. A common situation in barter agreements is for the land may be worth 15% to 25% of the real estate revenues, although this of course may vary considerably.

The landowners generally have no responsibility with regard to the costs of construction or the operation and sales once complete. This 'landowner to stakeholder' arrangement avoids the immediate payment of a land transfer tax (ITBI) which is around 2% of the real land value.

The next stage which has again become common is the establishment of a Real Estate Investment Fund (REIF). When the project incorporates hotel development, the land utilised for these establishments are also usually subject to barter agreements, and these can be negotiated with revenue share from the hotel sales. Once a REIF is established, the original landowner becomes one of the share holders.

In Brazil it can take around 120 days for a REIF to become operational as it requires approval by the relevant financial and government authorities. The value of the REIF will be equivalent to the projected value of the entire development, including real estate, hotels and golf course. The definition of the rules of the REIF will determine how many shares can be sold to different investors.

Where the land is bought outright by the developer or project owner, the landowner would of course not participate in the REIF. There are also cases where the landowner does not participate in the REIF, but receives payment for the land in instalments over time. Once the land has been paid off, its freehold ownership is transferred to the REIF. Again, this financial structure reduces Land Transfer taxes.

### *Paperwork – Permits & Licenses*

Securing the necessary permits is the cause of the greatest delays in golf development, the thought of which can also scare off potential investors. This is a global issue and in Brazil as elsewhere it is important to work very closely with the local municipality and the State Government.

It is very often the size of the project (in terms of hectares) that determines which authority provides the development permit. For example in some states of Brazil the local municipality can unilaterally give permits to projects if the land is no larger than 100 hectares, but over this size the responsibility reverts to the State Government and in some cases the Federal Government. Even where the permits are issued by the State or Federal Government, the key is still to work very closely with the local municipality as they are normally the most interested party in developing the project for the benefit of the local community.

From the experience in Brazil, the following preparation can dramatically speed up the processing of permits:

- 1) **Site Evaluation:** Clearly define the location and boundaries of the golf development and include detailed maps and data showing existing land-use, land quality and topography. A benchmark is important in demonstrating either the current 'low value' of the land or the lack of potential it has for other forms of development.
- 2) **Job Creation:** The very first stage is for the developer to evaluate and prepare documentation on a) the potential employment the project can provide for all its project units (real estate, hotels, golf courses, commercial areas, residential maintenance, residential house-keeping etc). Much of this work force will benefit the local municipality population, which means community spirit, local jobs, improvements to standard of living, and incremental local GDP.
- 3) **Spin-Off Value:** Golf developments generate additional work for local companies. This 'spin-off' concept is well understood, for example, in the automotive industry, where the supply chains are clearly defined. It is important the golf developments invest time in presenting the spin-off value of their construction phase and operational phase, which will include local shops, restaurants, laundries, hotels and guest houses, supermarkets, transportation companies etc.
- 4) **Incremental Tax Contribution:** Taking into account (2) and (3) along with the core revenue streams of the development, an audited presentation of 'likely incremental tax revenue' should be created so that the financial value of the project can be viewed from a municipal and state or federal basis.
- 5) **Political Support:** Ensure that the relevant departments of the State and/or Federal Government understand the vision.
- 6) **Municipality Support:** Approach the Municipality via the higher government offices, or vice versa, depending on which is most appropriate. In most cases in Brazil it is the State that is the body that authorizes concessions, and the State that is approached first.
- 7) **Multi-Faceted Presentation:** The next stage is to approach local council and ensure that all aspects of all stages of the proposed development are presented clearly. Golf developments are often complicated mixed-use projects that may take shape over a number of years. For each part of the project that could be considered independently (e.g. golf course, real estate, villa rentals, hotel, club house & function rooms) ensure that the necessities, impact and benefits are clearly defined, so that permits are not

delayed or denied because of just one part of the project. Many communities have licensing committees that are made up of people with specific skills or qualifications, such as architects, lawyers, commerce associations etc. Time must be taken to address the impact of the project from each of these angles.

- 8) **Land Use By-Laws:** After consultation between the developer and the local council, it is sometimes useful or necessary for the local council to establish a by-law specific to the project. For example, a site selected by a golf developer might be a low productive rural area in what might otherwise be described as an important agricultural zone (for example, fallow land that has been exhausted by over intensive coffee plantations in Brazil). If the local council agrees that the golf development will be the best use for the site, they might need to write a by-law to change the land-use regulations for that specific site. This can avoid problems and delays further down the line. A by-law might be necessary, for example, to increase the square metres that can be used for real estate developments, in order for the golf development to be financially viable.
- 9) **Community Services:** Many golf developments will include the provision of additional facilities or services which are of benefit to the local community. This might be anything from parks, sports fields, clinics or school rooms or a museum. Agreement is often reached between the developer and the local council for 'compensatory facilities' such as these which in turn bring tax benefits to the developer.
- 10) **Improved Infrastructure:** Another key point is the great improvement in local infrastructure that a golf development can bring to a community. This includes access, energy, water supply etc. Such infrastructure developments are frequently highly subsidised by governments due to the tax contribution from the project and the direct benefit to the community. Infrastructure development will often also have a major impact on attracting more businesses to the area.
- 11) **Tax Concessions:** Tax breaks or 'tax holidays' are essential for the construction period of a golf development due particularly to the length of time between the costs of constructions and the revenue of operation. There are a number of areas where tax concessions are appropriate:
  - a. The non payment of land transfer taxes on real estate sales. This tax will only be paid by the property buyer on signing of the contract. This can be a huge financial incentive for the developer and investor (with a nominal value of 2% in Brazil);
  - b. Property land tax, only to be paid on the sale of a property. This has a nominal value of around 4%;
  - c. VAT reduction or exemption during construction period;
  - d. Reduction of employment tax during construction;



- e. Liberation of property tax for tourism establishments for 10 years as an incentive to develop this lucrative new niche market and generate tourism expansion, this may include a reduction on VAT as well;
- f. Non payment or reduction of construction licenses fees during the construction period.

One of the common obstacles that golf developments experience in new golf destinations is stems from the lack of specific technical knowledge related to golf development amongst local government technicians. This lack of experience can generate insecurities amongst government officials and is often quoted as a reason for large golf development projects not advancing.

Therefore everything must be done to make sure that local government officials charged with the responsibility of providing the permits are given the support they need to make appropriate decisions. It helps, for example, for the developer to use an national architectural firm which is experienced with working with local councils. In South American architects tend also to be experts in planning and environmental laws for construction. The local language and technical information in the processing of permits tends to be regional and somewhat bureaucratic. The experience in Brazil is that the local officials react much better to the approach of local architectural firms who understand the processes than to direct interaction with the international investors or developers. One comment was 'Keep the investors away from local meetings'!

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### *Environmental Impact Assessment*

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The recommendations in the preceding 'paperwork' section relate to standard development permits. However, it is important to note that many countries do not have any defined environmental law for golf.

This is why IAGTO strongly recommends that the government in Peru work closely with an organisation like Golf Environment Organisation (GEO) to ensure that the Environmental Impact Assessment for all golf developments are relevant, beneficial and tailored to the destination.

Outlining clearly the preservation areas is an essential part of the planning. In terms of taxation, golf courses can be considered to be 'Park Land', which reduces or totally exempts taxation. The heavy taxation of golf courses in some countries is a major contributor to a lack of interest from potential investors due to the differential risk between revenues and tax on large land areas.

The environmental license procedure in Brazil is in four stages as follows:

- Provisional License Application (LP)
- Project Guides Lines
- Project Memorial (list of properties and constructions on site)
- Occupation Plan

On producing the information and registering the project a Technical Instruction (IT) list is defined which in Brazil can take up to 90 days to register.

The IT is the first step in getting the EIA/RIMA underway which will liberate the LP. The IT is based on the information supplied and the developer must then adhere to this list. Working closely with the local government speeds the whole process up. Again the local 'Environmental Engineer' appointed by the developer must work in conjunction from local community and normally has direct access to local government planning technicians.

180 days is the normal period that it takes to complete this process, but a close working relationship with the local technicians can speed up the process. In Brazil, once this has been done a Public Audience is required, which must be advertised 30 days in advance and is open to the local community to ask questions of the developer and local council. If there are no complaints within 30 days of the meeting, the developer receives an authorised LP.

From this stage the developer is required to submit detailed project plans and then to submit more detailed plans with a time-line at the beginning of each phase of the construction, which is the normal planning procedure.

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### *Attracting Investors*

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If the landowner becomes a stakeholder in the development, it is important that the ownership of the land is transferred in its entirety to the Project, and that it does not remain in a family name as this can bring long term problems with inheritance and other family issues.

During the process of signing up an investor, the following steps are common:

- Due diligence on tax concessions and tax liabilities in cooperation with the municipality where the land is registered is essential.
- Due diligence on the landowner to ensure that there are no pre-existing legal or ownership disputes that may delay or prevent the deal from going through.
- It is essential that all properties on the site, of any form including shacks and storage buildings, are accounted for on the deed of sale. There have been cases, for example, where the landowner may in the past have promised a building to an employee. In some countries there are also 'rights of possession' where an individual can receive resident rights if they can show, through testimony of friends and family, that they have occupied a building for two years or more. Some countries have laws that protect the population to the right of residence if they prove that is their only place of residence.
- Particularly if any of the buildings on the site have an electricity connection, it is imperative to verify that the bill is in the landowner's name, otherwise this could lead to major disputes.

- The correct property boundaries must be recorded on the official registry. Many properties have old registrations that have not been updated and through time boundaries can move through irregular occupations of neighbours or for other reasons including the building of roads and access ways. This is imperative as, in Brazil, it can take 60 days to apply and make changes to the Registry of Boundaries and may require aerial photography as well as verification from neighbouring properties.
- Financial due diligence on the proprietors to verify that land is not been used as guarantee with financial institutions.
- As soon as negotiations begin with the landowner it is essential to have a legal agreement that prevents the landowner from selling, transferring or negotiating the sale of the land to third parties. This restriction of course will have a time limit. All costs relating to this agreement should be met by the landowner as even the disclosure of the discussions regarding the potential project usually add value to the price of the land.
- When government land is involved the same processes should be applied, and when land concessions are used, the value of the usage and obligations must be negotiated carefully. This is best done through municipal, state and federal bodies, taking into account that personnel and governing parties can change with each election.

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### *Considerations for Developers*

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If a developer is not an investing partner in the project and just a contractor, the process for the developer is fairly simple. The key of project progression is to find an investor who understands the vision of the project and its timeline. The master plan is the key to the eventual success or failure of the project and many projects fail at this early 'concept' stage by either over populating the real estate wrongly assessing the potential demand.

Contractors tend to shy away from investing in projects as they tend to be very focused on their revenue per square metre business model. Contractors generally have little understanding of the operational side of a golf development and there are a number of examples in Brazil of projects that have not been operationally successful, and this has hindered the expansion of the golf resort market in the country.

At an early stage it is important to clearly define the roles of the different participants in the project, from landowner to developer and from contractor to investor. Right from the outset it is important to consider the operational viability of the end product and the sustainability of the project. For this reason international organisations such as IAGTO and GEO should be brought in at an early stage in order to prepare, respectively, a long term Golf Tourism Positional Analysis and Social & Environmental Sustainability Plan for the development.

### *How to Minimise Delays*

The two most common causes of delay with golf developments are the pythons of bureaucracy and finance. Meticulous preparation with the backing of the highest level of government, following an agreed order of actions which laid down in a national golf tourism development strategy, is the key to avoiding bureaucratic delays.

Government support, at all levels, is essential in order to provide potential investors with the confidence that they need. In Brazil in the past decade there were 15 golf development projects that became public knowledge but did not get off the ground. For six of these it was due to a breakdown in the financial structure or a simple lack of investment. The other nine projects did not go ahead because they were unable to secure the necessary permits.

The best golf developments will find investors. Therefore delays in attracting the necessary financial investment can be avoided simply by demonstrating with authoritative backing that a) the project will be economically viable and will deliver a desirable return on investment within an acceptable time frame, b) that all of the necessary permits and decisions have either already been obtained or will proceed quickly and efficiently, and c) that a national framework exists that inspires confidence in the investor that the golf tourism sector will continue to receive government support in the long term.

**IAGTO would like to thank golf development consultant and director of Golf Corporate Brazil, Michael Nagy, for providing the detailed insights into golf development in Brazil in this section.**



# **Recommended Action Plan**



## Operative Plan & Parameters for Competitiveness

In this final section we set out the general guidelines for an Operative Plan including general actions, indicators and goals. The Golf Environment Organisation and IAGTO itself are the two leading global organisations working specifically with the Economic and Sustainable world of golf tourism.

The government of Peru has a unique opportunity to shape the development of golf and golf tourism throughout the country. The situation is unique because golf development has not yet begun in earnest. The implementation of an integrated national golf tourism development strategy is necessary because golf course developments do not survive on their own. They are dependent on the success of neighbouring golf courses and on the growth in national popularity of golf as a sport and leisure activity.

The role of the government is to create the conditions necessary for Peru to become a first class successful and sustainable golf destination that benefits the people and communities of Peru. The steps that the government should take can be summarised as:

- Delivering the confidence that investors look for by committing to a long term golf development strategy;
- Laying down the rules to ensure that all new golf developments are environmentally sustainable and socially responsible;
- Encouraging the development of golf only where it contributes to the national golf and golf tourism strategy;
- Providing support mechanisms to ensure that the most suitable land is made available for the development of golf projects;
- Creating incentives and providing data (e.g. real estate demand) to attract investment and to help ensure that all new golf developments become and remain economically viable;
- Investing in the promotion of Peru as an integrated golf destination to all key markets worldwide;
- Providing conditions that encourage the growth in golf participation throughout the country.

To achieve all of this we recommend that the government adopt the following Action Plan.

### *Stage 1 - Establish Sustainability Criteria*

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Before publicly announcing the government's support for an integrated golf tourism development strategy, it must ensure that it has in place a clear process for ensuring the environmental sustainability and social responsibility of every new golf development.

- 1) The government should first of all engage the services of the Golf Environment Organisation (GEO) to establish the process undertaking Sustainability Impact Assessments (SIA) including the environment, people and communities.
- 2) All new golf development projects must be required to undertake an SIA.
- 3) The government should consider subsidising the cost of undertaking SIAs. The subsidy would only be provided for developments that meet the criteria of the 'Plan Territorial' for golf tourism development (see Step 2).

### *Stage 2 – Establish a 'Plan Territorial'*

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Golf tourism depends on the existence of clusters of 'export ready' golf courses in the most appropriate locations. Broad guidelines for this Plan Territorial have been set out in this document. However, the Plan Territorial is fluid and can be adapted to include other destinations and locations. IAGTO can be consulted throughout this process.

The incentives recommended in this Action Plan should be made available only to golf developments that meet the criteria of the Plan Territorial and only to those developments that are considered to be Export Ready and will therefore make a positive contribution to the country's integrated golf tourism development strategy (see Step 3 for identifying Export Ready status).

### *Stage 3 – Qualifying Export Ready Golf Developments*

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In Steps 1 and 2 we recommend that only those golf developments that are considered likely to be both Sustainable and Export Ready will receive government incentives. The SIA covers the question of future sustainability and IAGTO can be consulted on the question of being export ready. For a course to be export ready it must have a business model that is relevant to golf tourism. It must also make a commitment to undertake a raft of best practices that have been referred to in this report, in order to ensure that all commercial golf courses developed in Peru meet and exceed minimum standards.

The great variety of golf courses and golf course developments means that the business model and plans for each golf development must be assessed individually, and best practises applied accordingly. IAGTO can work with the government on these assessments in a similar way that we recommend GEO work with the government on sustainability assessments, on a project by project basis.

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### *Stage 4 – Tax Concessions and Incentives for Investors*

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Our example from Brazil showed that almost half of proposed golf developments failed to get off the ground because they were unable to secure the required investment. This can either be because costs were too high to make a return on investment viable, or simply because the most suitable investors were not found.

A principal role of the government will be to inspire confidence in national and international investors and to provide tax concessions and incentives that will help not only attract investors but will reduce costs and make the operation of the golf developments more productive and therefore the return on investment more secure.

The package of tax concessions and incentives that can be offered will be up for debate, but we have listed a number below that have been mentioned in this report.

- 1:1 tax credits on profits or equipment
- Employment credits
- Land transfer tax waiving (see Step 5)
- Land sales tax waiving (see Step 5)
- Import duty holiday for maintenance machinery and spare parts
- Tax holiday for golf carts and rental clubs
- Subsidies for construction and operation of water treatment plants

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### *Stage 5 – Land Acquisition*

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Some golf developments fail simply because they were built in the wrong place! Sometimes golf courses are built purely because 'that is where the land was available' instead of holding out for the best location for economic and environmental sustainability.

Therefore we strongly believe that the government should invest time and resources in helping to ensure that the private sector partners are able to consider all possible land options.

- 1) A national survey should be conducted of government land, over 60 hectares in size. This should be conducted in two phases: 1) In regions covered by the initial Plan Territorial, and 2) in all other parts of the country accessible and interesting to visitors.
- 2) Logistical support should be given to companies like Peru Golf Developments (PGD) in their search for appropriate sites. This may involve ensuring that national, provincial and municipal authorities lend their support to recognised golf development companies (PGD for example is an IAGTO member).
- 3) Landowners should be encouraged to become stakeholders rather than purely seeking cash for land sales. Incentives can be used for landowners who choose this option, such as
  - a. Waiving of land transfer taxes
  - b. Waiving of land sales tax

Such incentives could also be used for landowners who reduce their square metre price in proportion to the percentage of land that will remain preserved and undeveloped in accordance with the SIA study.

### *Stage 6 – Government Liaison & Technical Body*

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Golf tourism and golf development is relatively new to Peru but requires a high level of specialised skill from officials who will take decisions on permits and licenses etc. This has been addressed to a certain extent through our recommendation of involving both GEO and IAGTO in carrying out sustainability and golf tourism viability assessments. However, it is important that officials at all levels, particularly on the local municipal level, have access to government officials at the provincial and national level who are involved in the golf tourism development strategy and who can advise on technical aspects.

This is particularly important where local authorities have to consider the re-zoning of land-use, for example.

### *Stage 7 – Investor Sales*

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All of the previous steps have been designed to position Peru as a very investable destination in terms of new golf developments approved and recommended by the government. As stated previously, finding investors is not at all easy. The size of investment required for golf developments will usually mean that international investment is required.

We recommend the establishment of a small Investor Sales fund that can be applied for by private sector companies that wish to attract investors for approved golf developments. Examples for its use could include:

- Commissioning of studies designed to demonstrate the economic viability of a project (e.g. 'real estate demand in Cusco and the Sacred Valley');
- Sales missions to relevant Investment conferences overseas or independent sales missions to meet with potential investors;
- Invitation of investors to Peru or the attendance of relevant investor events in Peru
- Research on reducing development or operational costs or sustainability enhancements (e.g. research to identify the most cost effective water treatment or desalination plants for golf developments in Peru; or the importation of environmentally friendly buggies for golf courses).

### *Stage 8 – Public Commitment to Golf Tourism Development and the Growth of the Game in Peru*

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Once all of the above is in place, we recommend that the government declares its support for the implementation of an integrated golf development strategy.

This should include a commitment to the promotion of golf tourism once new courses are in place. A golf tourism promotion plan should be put in place by PromPeru approximately two years prior to the opening of new golf courses. IAGTO can assist with this process.

It is also important to support the growth in the participation of golf in Peru, ensuring that a hand is extended to underprivileged kids and beginners with talent, and not only those with the means to attend an existing private golf club.

The development of golf participation in Peru can be coordinated by the Peru Golf Federation which can request assistance from the R&A (Royal & Ancient) all of which can be assisted by GEO which works with most of the important global bodies in golf.

The development of a golf academy and practice facilities, open to the public, should be considered for Lima on the reclaimed land on the coast close to Miraflores.

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### *Stage 9 – Mission Statement*

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The implementation of a national integrated golf and golf tourism development strategy should be rigorous but flexible. In preparation for any public announcement we recommend that a Mission Statement be prepared, in coordination with GEO and IAGTO, and that this form the basis of all that follows.

The strategy itself should be reviewed every year and adjusted when appropriate to take account of changing conditions. Although the basic premise and government commitments must of course remain unchanged.

***"If in case of a planet catastrophe we would have the choice to choose from one country to save and rebuild the planet from, undoubtedly I would choose Peru."***

Renowned ecologist David Bellamy



## Conclusions & Recommendations

Although Peru has eight 18-hole golf courses, it cannot currently be considered to be a golf destination. However, Peru has the potential to become a successful and sustainable golf destination provided that a coordinated development approach is adopted with the support of both the public and private sector.

The implementation of an integrated golf tourism strategy will deliver not only incremental 'high value low impact' tourism but also more jobs, education and sporting opportunities, additional leisure activities, increased domestic travel, housing and international investment. Environmental sustainability can be guaranteed and the carefully planning of golf courses can also be used to showcase the country's unique cultural and historical heritage.

The value of golf development is not limited to the golf tourism that it generates as there will be a powerful knock-on effect in other sectors including meetings, incentives, conferences, real estate sales and luxury holidays. The development of successful golf destinations in key locations will also raise Peru's profile as a tourism destination amongst entirely new markets.

To achieve these goals Peru must build the right courses in the right places and the right time, ensuring that all developments make a positive contribution to environmental sustainability, water conservation and social responsibility. Whilst golf development in Peru must be made attractive to the investor, every golf development must also become part of a national legacy for the people of Peru to benefit from and enjoy.

# Appendix

# Sustainable Golf Development

Creating a Positive Legacy

# Partners & supporters

*GEO is an international non profit organization dedicated to supporting sustainability in and through the sport of golf, working with stakeholders across the golfing, government, environmental and academic communities.*

*Specifically, we'd like to acknowledge the financial and in-kind support of the following organizations, that made the creation of this guidance possible.*

*We are also very grateful to the members of the European Institute of Golf Course Architects, the American Society of Golf Course Architects and the Society of Australian Golf Course Architects for providing the real-world case studies that help to illustrate key elements of sustainable golf development.*



The R&A



European Institute of  
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The European Tour



European Golf Course  
Owners Association



Jacobsen



American Society of  
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Oxford Economics



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Golf Course Architects



# Driving the Green

Like all sectors of business, golf affects society and the environment, and has a responsibility to minimise negative impacts and maximise positive benefits. Unlike all sectors, golf's opportunity to jointly enhance quality of life and enrich the ecology of landscapes extends far and deep.

**A**s a multi-faceted land, leisure and economic development, golf's challenges and opportunities are complex and often closely interconnected.

There are no shortage of strategic challenges to the game's sustainable growth. On the one hand, external environmental designations and regulations are restricting land and water availability. Within the industry, investor profit motive often continues to over-ride 'common good' outcomes – without recognising the real compatibility of the two. And this is where the upside of sustainable golf development is obvious.

All over the world, consumer choices are being directly influenced by ethical and environmental issues. Governments are gaining votes for their policies on environmental protection, resource efficiency and pollution prevention. Energy, water and other essential costs are rising all the time. And the media is more than willing to spotlight

suggestions of 'injustice' or 'damage' at the push of a button – locally to globally.

Denying this inevitable trend is a losing battle which works against profitability. By contrast, the businesses best placed for success are those which adapt and embrace.

It's to this cause that GEO is dedicated. To do nothing other than promote and support sustainability in golf, driven by the vision that golf will be universally valued for maximizing its social and environmental contribution.

## ***Embracing sustainability***

GEO is unequivocally positive about both the concept and the reality of sustainable golf. For good reason. Which land-based, public-facing business would not want to be highly regarded and well known because it is resource efficient, ecologically rich and community integrated?

Like all sectors, golf has been going through the process of learning how to adapt. What to





Developing — or redeveloping — golf courses around a vision of social, environmental and economic sustainability is an extension of golf's roots. It's not a revolution but an evolution of age-old values

do, where to start, what are the big priorities and what is of lesser importance?— Golf has been learning the language of sustainability and reflecting on the wide range of modern day issues and concerns. That's not an easy process. Genuine sustainability solutions are often hard to identify and harder to build, and sometimes the harsh realities presented by a planet under pressure are not easy to accept.

That's why our approach is pragmatic and practical, making sustainability easier for everyone to understand and deliver. We have worked hard to refine golf's sustainability agenda into six themes that can be applied

to the entire industry — water, energy and resources, environmental quality, landscape and ecosystems, people and communities and products and supply chains. We want to take the mystery out of a broad and complex subject and empower people in golf to make the real world decisions and take the practical actions that make a difference.

### ***Evolution not revolution***

Sustainability is a great fit for the game of golf. It was part of golf from the start and it must be part of golf in the future. Sustainable courses respect their surroundings and honour the natural environment. They create green space

***Message from Jonathan Smith***  
*Chief Executive, Golf Environment Organization*

Sustainable golf development is successful golf development, where everyone wins. By bringing the conservation of landscape and ecosystems, resource efficiency and community integration to the heart of your project, you will create a more profitable outcome — in the full sense of the word.

This guidance explains why that is, and how you can make it a reality in your golf development — leaving a lasting positive legacy for people and the environment.

We also feature GEO Legacy™ — a programme which helps teams plan, deliver and articulate the sustainability of their project, from concept to conclusion, leading to the prestigious award of GEO Certified™ Development or Renovation.

Our thanks go out to all the people and organizations who have supported the production of this guidance. Our world is so complex and the issues we face so large in number and scale that there is no single solution from a single source. Individual leadership, within a framework of collaboration is key to success. We've tried to take that approach into this work, and we invite you to do the same at your club and in your golf development. There really is a role and reward for everyone.



where the land may have previously been abused. They 'pay the rent' for their existence by enhancing natural habitats and ecosystems, improving overall environmental quality and treading lightly on natural resources. And they seek to embrace the uniqueness of each site — not rewrite its history, culture, landforms, and wild plant and animal species.

This harks back to golf's very origins: the original Scottish courses where natural landforms, including knolls, hummocks, swales, coastal bunkers and ponds were existing features of the local terrain. No development required. Sheep sheared the

meadows and maintenance was decidedly low input and organic. The game was affordable, and accessible to many.

This reminds us that we can learn a huge amount from the older courses, particularly the way they work with the land, tread lightly, and respect the landscape that provides their form and context.

Sustainable golf course conception, design, and construction extends and encapsulates five centuries of golf tradition: enjoying fresh air and physical movement in an uplifting natural setting in a way that harms none and benefits all.





‘In sustainability, every decision is double edged – one way positive benefit, another – negative impact. The problem and the solution often found lying side by side.’

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# Create your Legacy

*GEO seeks to help golf development teams plan, deliver and articulate the social and environmental value of their project – from concept to construction and opening – leading to the prestigious award of GEO Certified™ Development or Renovation.*

Building on the GEO guidance for Sustainable Golf Development, GEO Legacy™ drives comprehensive and fully customized sustainability reporting for new projects and renovations.

## ***Multiplying the value of great golf design***

- Bringing development teams together around common vision and goals
- Supporting the presentation of a strong sustainability case to regulators and local communities
- Constructive evaluation and feedback from an Accredited GEO Sustainability Associate (GEOSA)
- Credible and long-lasting recognition for becoming a GEO Certified™ Development or Renovation.

The GEO Certified™ ecolabel for Development and Renovation showcases leadership, spotlighting the creativity and responsibility behind the planning, design and construction of a profitable, resource-efficient and ecologically-rich golf facility.

## ***Support and recognition***

GEO Legacy™ has been carefully crafted to integrate seamlessly into real world golf development. The efficient, collaborative process is based around focused dialogue, concise feedback and professional evaluation reports at each of five key milestones.

- 1. Enrolment** initial project appraisal and formal entry into GEO Legacy™
- 2. Planning** optimizing the use of land, matching site and locality with appropriate development model, and considering infrastructure needs
- 3. Design** integrating project component details in a cohesive package; painting a clear and powerful picture of your project's sustainability
- 4. Construction** sensitive realization of planning and design, retaining opportunity for creative refinements to enhance the product, preparing for the transition to management
- 5. Certification** and opening day announcement of the GEO Certified™ Development/Renovation ecolabel. Communications support and optional launch attendance.

## ***GEO Sustainability Associates***

The GEOSA Network is an international community of technical experts specializing in the business of sustainable golf. A small but highly qualified group of the GEOSA membership is accredited to verify Legacy projects. GEOSA have extensive field experience and are specially trained to support golf development teams.





## Golf's Ecolabel



Development  
& Renovation



Course & Club  
Management

### ***Evidence of your commitment and achievements***

At the heart of GEO Legacy™, templated statements from your project team are constructively evaluated by an Accredited GEOSA.

Combined, these four documents — and the creative thought behind them — carry proof of the project team's environmental and social considerations both internally and publicly.

For example, the Sustainability Blueprint in phase two is a highly valuable inclusion for planning applications and stakeholder consultation; a positive, engaging and relevant preface to detailed EIA reports.

In the context of overall development budgets, programme costs represent a solid investment. Depending on the size and complexity of the project, administration and verification fees scale accordingly. With a renovation starting at €15,000 and a large, high complexity development resort at €48,000, GEO Legacy™ is customized to suit each and every project.

GEO Legacy™ is an investment. An investment in access to world leading sustainable golf expertise and valuable programme content, that credibly and visibly connects your project with the global drive towards sustainability.



### **GEO Legacy™ Milestones**

The boxed GEO Legacy™ features throughout this document detail the milestone reports produced as you work towards the GEO Certified™ ecolabel for Development or Renovation.

The Legacy Field Manual can be found in full at [golfenvironment.org/legacy](http://golfenvironment.org/legacy).

Abbreviated checklists for planning, design and construction can be found at the end of the key chapters in this document.



# The Business of Sustainable Golf

*Sustainable development is all about the product you create, how you create it and how you communicate its unique qualities to consumers. It cuts to the heart of short and long-term profitability.*

Corporate responsibility and environmental stewardship are now expected from all developers. Evidence of environmental damage and unethical business practices can seriously impact profitability and public reputation. During the 2008 downturn, for instance, 'green' housing was one of the few areas in real estate that saw any demand.

Delivering social and environmental performance cuts to the heart of successful business planning, and a proactive approach to sustainability will deliver significant bottom line benefits through public goodwill, efficiencies, increased marketability and higher returns on investment.

Protecting and enhancing the environment is always cheaper, in terms of both construction and ongoing maintenance, than heavily engineering and modification. And while some of the latest sustainable building technologies might cost more initially to purchase and install, the lifecycle savings and payback periods make real financial sense. Whether the facility is a quick build-and-sell-on or a proprietary development with long-term operational interests, sustainability affects the bottom line.

The most significant 'sustainability versus profit' choices tend to arise during project conceptualization and masterplanning

in integrated golf, leisure and residential developments. In such projects the predominant model has often been to develop as much land into real estate as possible, squeezing that which is available for golf and other landscape and ecosystem features. While such projects might bring higher short-term returns on investment, a weaker golfing product, expensive maintenance of engineered fixes, and degraded residential views will all inhibit these projects' enduring success.

In addition, such projects usually lack meaningful and distinctive unique selling points and fail to engage the local population. Such a project may miss the opportunity to create a great golf course as the heart of a thriving golf business that continues to multiply value for itself and the community for decades to come.

Compare the lost opportunities of standard-design golf courses to the full potential reached by Old Works Golf Club (shown below), which restored a polluted industrial site, turned its historical equipment and natural features into unique attributes, created a range of direct and indirect skilled and unskilled employment, and provided recreation for the community. This really is golf as a catalyst for ecological and community regeneration. Here are some of the tangible benefits of embracing sustainability:

#### ON THE GROUND:

*Heythrop Park, Oxfordshire, United Kingdom*

*Designed by: Mackenzie & Ebert Golf Design*

This project exemplifies good practice in the integration of new golf development in historic landscapes. The project permitting was agreed subject to restoration of a minimum of 95 per cent of the original landscape design dating from the seventeenth century, which had become substantially degraded as trees became overmature and the park suffered general neglect. A combination of fieldwork and documentary research was required to identify the historic design: the golf course routing was then prepared around this using the landscape design as a primary constraint. The restored park is managed under a prescribed Historic Landscape Management Plan and is open to the public, with footpaths and bridleways crossing the course.



#### ***Faster planning approvals***

Environmental and social reasons are the most common cause for a project to be refused planning consent, resulting in by far the greatest potential for government- or community-induced delay. Faster approval times can be gained by investing in site and community research and a proactive approach to sustainability, which can result in less conflict. Contrast this to a spendthrift approach that 'saves' consulting fees and avoids environmental and social issues until they are forced upon a project because of local opposition. The resulting additional carrying costs and lost revenue due to delayed opening can far exceed any initial savings.

Doing research and pinning your colours to long-term sustainability early on allows the project team to:

- Become the site experts and know more about the local environment than potential critics
- Have knowledge to counter unfounded attacks
- Address most public and regulatory concerns before they are voiced
- Generate credibility and public and official confidence in the project from the start.

Given the costs and potential risk in golf course development, it is vital that investors in a project are confident of its success. A steady pace toward regulatory approval and demonstrated community acceptance reduces the likelihood of investor withdrawal.

The Legacy programme helps ensure the best possible product that will be more efficient to build and operate, while the GEO Certified™ ecolabel is an asset that you can market onwards to maximize revenue generation.



***Lower capital investment and construction costs***

Deliberately working with existing contours and mature vegetation minimizes engineered solutions, earthmoving, planting, and irrigation and thus reduces investment and construction costs. Further, potential problems due to hydrological changes, impeded drainage, erosion, die-back or wind throw of trees, over-shading of playing areas, and inappropriate planting and seeding can all be avoided.

***More unique selling points***

Retaining local, natural features and tapping consumer interest in sustainability and healthy lifestyles offers a golf facility a superior competitive advantage in the marketplace. A higher quality product, more positive public profile and a basis from which to articulate social and environmental responsibility can set one facility apart from its neighbours and enable more compelling marketing messages.

**ON THE GROUND:**

*Old Works Golf Club, Montana, United States*

*Designed by: Nicklaus Design*

Old Works is a pioneering example of a publicly-owned, community-driven development becoming the catalyst for the restoration of a major brownfield site. Commenced in 1994, the Old Works project in Anaconda, Montana, was the first golf development to be built on a Federal Environmental Protection Agency 'Superfund' site. The former copper smelting works was transformed by Nicklaus Design to create a layout which features trademark black bunkers, using crushed ore waste from the smelting process. Many historic relics of the smelter are also incorporated, including the flue and oven remains. The water quality of Warm Springs Creek, once utilized by the smelting operation, has been dramatically improved: it now hosts a healthy population of trout.





*Reduce long-term  
maintenance expense*

Investing in a large and resource-intensive land-based business that fails to insulate the business from rising resource costs increasingly represents a business risk. A more considered approach to planning and design can insulate the business from price increases and conservation restrictions to positively impact asset values.

It might sound  
counter-intuitive, but  
putting the planet  
first can actually pay.





# The Language of Sustainability

*What people understand as 'sustainable' is evolving all the time. Our collective knowledge is ever broader and deeper. Individuals and governments are better equipped to identify the real from the perceived. The overall bar of expectation is rising and the ability to articulate the true social and environmental impact of your development has never been more important.*

Governments, environmental and community-based organizations around the world are using new tools and concepts to try to determine how much and what forms of economic and leisure development can be deemed 'sustainable' in locations. It's recognized as important for society to try to understand at what point development moves from being beneficial to deleterious.

Of course, none of this is an exact science, nor is it rigorously and consistently applied around the world, and much depends on the type of development being considered. However, the following methodologies are being applied to help stakeholders gain a better understanding of when development will start to exceed the aesthetic, biological, energy, water, social and cultural capacity of our surroundings.

## ***Cumulative impacts***

Cumulative impacts result when the effects of one action are added to or interact with other effects. For example, several golf developments in close proximity may give rise to significant landscape, ecological or resource effects in combination, when none would have by itself. Analysis of cumulative impacts is important in identifying the carrying capacity of a biodiverse area under threat by humans, known as a hotspot, to accommodate multiple golf developments. Such analysis can also help reveal appropriate thresholds for sustainable development.

Conversely, clusters of golf facilities that have been well planned, designed and constructed can help to preserve the landscape and ecosystem fabric of larger units of land, and bring them under conservation-based management for decades and centuries to follow. Golf can be associated positively with increasing the ecosystem and resource-carrying capacity of a region.

## ***Carrying capacity***

Broadly, carrying capacity refers to the amount of an activity or resource use that a system can support sustainably, without showing economic, social and environmental deterioration and decline in the longer term. This fundamental concept underpins modern-day approaches to sustainable development. Strategic planning now seeks to define the capacity of areas to accommodate various levels of development of different types, and in accumulation.

Carrying capacity studies can be beneficial to developers in anticipating and addressing competition for limited resources and customers. Such studies can also help in phasing development. Energy and water capacities might increase through the use of new technologies, increasing the amount of permitted development.

## ***Thresholds***

By better understanding the carrying capacity for golf development for a defined area or region, taking into account its other land

#### ON THE GROUND:

*Yas Links, Abu Dhabi, United Arab Emirates*

*Designed by: Kyle Phillips Golf Course Design*

Yas Links saw a sustainable approach to the creation of a golfing landscape in the growing Middle East market. Located on Yas Island, an existing barren desert site with no vegetation or wildlife, the project was conceived from the outset to utilize reclaimed water for irrigation, resulting in the decision to limit the maintained turf area to 39 hectares within a total site area of 93 hectares, and to employ *paspalum* as the principal turfgrass species. There will be minimal use of pesticides, and a long term aim to enable a wholly-organic management regime. An existing mangrove and natural tidal area was preserved adjacent to site, and a bird sanctuary was introduced and expanded.



and resource use needs, it is possible to begin to identify thresholds for sustainable development. Although not usually precise, given the complexity and subjectivity involved, this concept is increasingly tied to strategic land-use planning decisions. For example, when governments release parcels of land for macro-scale tourism development, they often set a pre-determined ratio for the number of golf courses and density of residential units for that area. Doing so creates a planning framework that protects sensitive and vulnerable ecological and cultural zones. This approach also ensures that soft landscapes will be present amongst harder elements of development.

Threshold-guided plans for development are often of great interest to the local community, which may wish to see economic development and the creation of employment and wealth, but which also wants to protect

other valued assets, such as access to green space, protection of historical sites and biodiversity hotspots.

#### *A common language for discourse*

In many places where concern about the sustainability of golf development exists, the concepts of cumulative impact, carrying capacity, and threshold level can be used to help understand whether the concerns are legitimate or unfounded. Often people simply want to know that thoughtful consideration of environmental issues has guided the types and overall levels of economic and tourism development.

Within reason, the application of the above concepts can help everyone generate an understanding of issues that need to be considered when seeking to evaluate sustainable levels of golf development.

#### *Realities of a planet under pressure*

Growth in population and consumption present global society with tough choices on the use of land and resources, and there is no special dispensation for golf.

Not all proposed golf projects should proceed, even with a sophisticated design approach, and integration of the latest technology. Under sound, objective and scientific evaluation, certain sites and locations are 'inappropriate' or 'too sensitive' for golf development.

Some landscapes and ecosystems deserve protection from development. Some climates challenge the

basic concept of sustainable golf, with unavoidable impacts during development and throughout long-term management. Sometimes social and environmental sensitivities outweigh the benefits generated. And some places have enough golf and development – adding more may tip the balance beyond the natural or cultural carrying capacity of the area, leading to unacceptable environmental and/or socio-economic impacts.

Sometimes the cost and opportunity cost can simply be too high.

# Integrated Approach

*The best sustainability outcomes arise when skilled professionals come together around a clear sustainability based vision, ready to apply the principles and practices of sustainability throughout decision making, remaining prepared to evolve ideas and think outside the box.*

In part because of their multi-dimensional nature, good golf development thrives on iteration — continual refinement, exploring alternative options and testing possible solutions — to ultimately find the best fit of the project to the client's needs and the site. Design and construction are connected in a similar way: the best end products and outcomes occur when design details continue to be refined and polished as the development physically takes shape.

Strategic land-use planning establishes the political and spatial framework within which a project will be conceptualized, masterplanned, designed and constructed.

A comprehensive evaluation increases the project team's understanding of environmental legislation and land and resource use policies that apply to the site. It also brings forward specific details about the locality and region that inform the team about



ON THE GROUND:

*Chambers Bay, Tacoma, United States*

*Designed by: Robert Trent Jones II*

Chambers Bay is a celebrated example of golf development on a brownfield site, well integrated into a wider, mixed-use masterplan. The project restored a degraded landscape, created new municipal green space, repaired the natural fabric of the urban fringe, and also made significant use of construction materials sourced on site while demonstrating respect for its industrial heritage. Chambers Bay hosted the US Amateur in 2010 and will host the US Open in 2015.



the site and its surroundings, and identifies golf development permitting criteria against which proposals will be evaluated.

Next, integrated planning and design explores site options and possible solutions, all while seeking to design out negative impacts and design in positive outcomes. Concepts are visualized in detail, on paper and screen, ready to be transformed into reality. Outcomes emerging from this stage include site-specific design and spatial plans, detailed drawings and construction specifications.

The process of refinement continues even after construction begins, with skilled and sensitive work on site remaining adaptable to late-stage alterations that polish the quality of the product.

After construction, the transitional grow-in phase begins to fix the landscape's structure, and ancillary elements such as roadways and maintenance facilities are completed.

Finally, a comprehensive management plan will continue to protect and further enhance the designed-in sustainability features and to retain the integrity of the site's assets.

The biggest risk to sustainability lies in fixing concept and design ideas in stone before fully understanding the social, economic and environmental context of the project.

# Planning

*The biggest wins and losses are framed during the earliest stages of project planning.*

Integrated planning and design are crucial to a good outcome. Decisions made during early stage planning — particularly during conceptualization and master-planning — will have the most significant bearing on the environmental and social footprint of the development — both in the short and long term. For this reason, it is critical to get the product concept correct from the outset.

## ***Appreciating the context and getting to know the site***

Understanding the development context requires development team professionals to become fully aware of all the local laws and restrictions. Depending on the geographic location, the environmental and planning laws which apply to a golf development project can vary from the extremely rigorous to the virtually non-existent.

Even if regulations are lax, a good project will take steps to do what is best for the land and for the long-term benefit of the golf course business. Great and sustainable golf developments are not framed merely by doing the legal minimum, so after becoming familiar with all the laws that may restrict development, the next step is to thoroughly understand the site itself, particularly its unique natural and cultural qualities.

Thorough site surveys allow the team to discover what needs to be protected and enhanced — for example, how the native ecosystem functions and where the most sensitive and highest-quality natural areas are located. At the same time the team will identify less environmentally sensitive areas to locate components that are perhaps more heavily engineered and higher impact. The team should also seek to understand the cultural heritage of the area and any historical or archaeological features, as well as what access is currently available to the local population and what are their expectations and rights.



## **Legacy planning**

Produce a Sustainability Blueprint for your project. Paint a powerful picture of your sustainability vision and objectives; get on the front foot in local government and community conversations; demonstrate clearly and concisely how sustainability cuts to the heart of what you are seeking to create. Describe the ways that your project will benefit people and the environment, and how you are credibly addressing inevitable trade-offs and unavoidable impacts.



#### ON THE GROUND:

*Devil's Thumb, Delta, Colorado, United States*

*Designed by: Phelps-Atkinson Golf Design*

Devil's Thumb is an affordable public facility constructed in a rural Colorado community at over 5,000 feet above sea level. The site was dominated by heavily-eroded landforms (locally known as 'Dobies') sculpted from a sterile, high-sodium adobe clay. These provide a stunning visual contrast with the very tightly-defined playing area footprint, which minimizes overall resource input, resulting in a win-win scenario.



The land itself also needs to be thoroughly examined — for example, the depth of the soil, rock obtrusions, and steepness of the slopes. Also the hydrology: which areas are too wet to sustainably drain and would be better retained as functioning wetlands within the development? Can the natural hydrology of the site be improved — for example, by opening up agricultural drainage and connecting surface drainage and water bodies?

Information derived from site surveys should be carefully analyzed and properly evaluated to build a genuine appreciation of the interaction between the desired development and the host site.

Sustainable courses typically protect ecological hot spots on the property by steering clear of the most valuable habitats and biodiverse spaces. Working around ecological hotspots often leads to them becoming positive features that define the golf course and the landscape character.

Securing planning permits in a timely manner depends on fully understanding the regulatory and site contexts. Exploring and being able to demonstrate and communicate the team's in-depth consideration of the site's natural and cultural qualities, options and alternatives, can help assure governments and stakeholders that the developers have created the best proposal possible, economically, socially and environmentally.

#### *Purposeful regulatory relations*

In meetings with regulatory bodies:

- Enter discussions in a positive, open-minded way with a clear vision and objectives for your development
- Be prepared on all key issues of government policy and local concern and interest
- Understand the legitimate and priority concerns over the development, and be ready to counter concerns that are based on assumption or misinformation
- Avoid presenting the project as a fait accompli without room for adaptation.

Without a sound understanding of the site's core attributes, it is impossible to know what kind of golf development would be best.

# Conceptualization

*A big word but with a straightforward sustainability meaning. It's all about matching the right development type with site and locality.*

Another aspect of integrated planning and design comes in the form of knowledgeable conceptualization, which begins when the regulatory and site research is in hand. Although it starts as a simple idea, the project's core concept is central throughout the development process and frames the vision for an opening-day product that will carry forward for decades. The physical outcome of this stage is a development vision, based on some core principles and made tangible through some anticipated real-world outcomes. Broad-scale diagrams of key development features, framed within a plan that shows how the development will comfortably fit the site, are also useful to create early visualizations of the look, feel and plan of a sustainable integrated development.

Conceptualization should not be rushed. Quickly made decisions at this stage can be a source of regret — particularly during permitting, construction and the life of the development.

A good concept unlocks the opportunity to get the very best out of a site. A good concept matches the development with the land. Site conditions and the locality should be key drivers of conceptualization decisions and a major priority should be using landform and climate to best advantage.

Fitting the development to the site for one golf course meant maintaining lava flows, old walls, wetlands and coastal landforms. For another it involved retaining all the existing boundary features that interfaced the course with its surroundings — walls, woodland strips and hedgerows — to minimize the visual impact of the golf course on the landscape. In another it meant retaining world war two relics as visible reminders of the landscape's past.

## ***Conceptualization conflicts***

There are a few common and recurring issues that challenge the compatibility of a concept with its location. For example, preconceptions for the scale of the course or over-allocation of the land to real estate can both squeeze too many golf features into too small an area. Developers need to scale the development to fit the landscape, leaving space for natural vegetation and habitats.

When sizing the golf course, the development team should consider who will be playing. A heavy focus on resort and championship-level facilities can exclude opportunities for affordable grassroots development of the game. This consideration is at the heart of the course's business model: will the course have restricted membership and access or seek a broader business base from the local community and tourists? One golf course development team asked themselves this question and used their answer to conceptualize a model

Focusing on being eco-superior from the outset paves the way for a truly ecologically rich, resource-efficient and community-engaged development.

of accessibility throughout the development: the golf course, clubhouse and even the land around the clubhouse. In this regard more and more developments are trying to combine prestige with inclusiveness in order to maximize the diversity of customer.

Pre-conceived golf course design philosophy — for example links, water, forest, heathland, parkland — may drive a perception that these features have to be artificially created, even when they don't fit the site concept or make ecological sense. A radically land-altering concept leads to waste, unnecessary impacts, expensive mitigation, and other problems. It's more sustainable to adapt course features to each individual site. To embrace the values of the site and surroundings, rather than ignore them. It's stating the obvious but a free draining heathland site is perfect for a heathland course, without expansive artificial water features. A links course does not need artificial tree plantations, and a wetland site

should retain wetland characteristics. A desert course should, in fact, look like a desert, unless there is a genuine opportunity to build on existing 'oasis' qualities.

The concept of sustainable resource use may be another area that serves as a focus for a development concept. Some development teams set sustainability goals that drive their planning process, such as to use 100 per cent recycled water and waste recycling plus a defined percentage of renewable energy use.

Some teams adopt policies to utilize as many local and recycled materials as possible, sourcing rootzone from local compost manufacturers, wood from recycled and certified forest product sources, irrigation and drainage pipework manufactured from recycled plastic.

Even if your resource-use goals are not fully realized, they will set a tone of commitment to sustainability throughout the planning stage.

#### ON THE GROUND:

*Golfbaan Heelsumse Veld, Arnhem, Netherlands*  
*Remodelled by: Steve Marnoch, golfMarnoch*

A project with two complementary objectives – enhancing the golfing interest and quality of the original layout, and restoring degraded heathland habitat. Since the last ice age this landscape has evolved on a substrate of pure glacial sand. More recently, 20th century agricultural use produced a superficial layer of rich topsoil. The remodelling concept was inspired on the existing 'dry dales' (glacial meltwater channels) which are utilized as key strategic topographic features. Substantial areas of topsoil were removed creating new areas of bare sand and heathland habitats, with additional 'landscape ecology' benefits: the large-scale heathland patches contribute to the creation of a new network of wildlife corridors at a national level, allowing species to move between the north of Holland and the Rhine Valley.



# Masterplanning

*Masterplanning develops the concept diagram to the next level, and establishes the project's physical scale and footprint.*

Expanding on the visionary conceptualization with specific detail, masterplanning presents the project's land use balance and spatially represents what is to be created in a precise manner, though still at a relatively large scale. The masterplan should balance an appropriate density and form of development with natural and viable landscapes and ecosystems, in a layout that is optimal for the site. This stage is crucial in defining the overall environmental load of the project, and in retaining and enhancing functioning ecosystems that mitigate the load, so as to deliver a net environmental gain.

The masterplan will allocate distinct land-use parcels and reveal the spatial relationships between them, as well as define course routing configurations and human access patterns.

The masterplan's apportionment of the land directly impacts the sustainability of the development. Decisions made at this stage determine whether or not the project will successfully balance financial, community and environmental needs. Too much wild space and the project might not pay. Too much concrete and manicured amenity grass and there may not be enough space for ecosystems that function, biodiversity that can survive or unique landscape characteristics.

A more naturalized development is beneficial financially — particularly in integrated resort and residential developments. Thinking carefully about maximizing the quality of the development's water and land (known as the blue and green) will also have a positive impact on housing and course asset value — a good example of how sustainability can be equated to quality.



Although in theory masterplans allow for further iteration and refinement, in practice it is important to get the first published version of the plan right. This is the vision that investors and developers tend to fix in their minds' eyes.

Instead of allocating 70 per cent of the land to housing and 30 per cent to the golf course, a more sustainable ratio would be 40 per cent housing to 60 per cent golf course. 'Losing' 30 per cent of land does not mean losing 30 per cent of potential homes, as good overall design can intensify density (versus the sprawling nature of many golf communities) while creating exceptional features in the course and overall landscape that will better absorb and help sell those houses at higher individual premiums.

The scale of natural areas, whether around or integrated into the golf course — ideally both — must be sufficient to support viable, biodiverse populations, especially species targeted for conservation. In addition, natural areas should be able to deliver valuable ecosystem services, such as continual treatment and enhancement of water quality. For example, an integrated network of connected habitats, extending to join up with off-site natural areas, allows wild populations to access more resources.

Competing goals that interfere with efforts to balance land use should be resisted. For example, sensitive natural areas might be located precisely where intensive development is most desired. Constant pressure for higher-density development can compromise the retention and creation of viable ecosystem networks or preclude sufficient space for natural, lightly engineered systems. Oversized clubhouses or housing on visually sensitive high points can also compromise sustainability. In contrast, a course that maximizes natural areas as part of enhancing the golfing and overall lifestyle experience can increase value while reducing construction and long-term maintenance costs. Some of the courses highlighted throughout this document are among the most prestigious in the world precisely because of how they balanced development need with environmental consideration.

#### ON THE GROUND:

*Verdura Golf & Spa Resort, Sicily, Italy*

*Designed by: Kyle Phillips Golf Course Design*

The masterplan at Verdura is notable for its use of prime seafront land for two 18-hole courses, complemented by a more compact resort development. This innovative land use balance is supported by a commitment to enhance biodiversity by establishing true native Sicilian plant species throughout the site, which was formerly dominated by a monoculture of irrigated fruit trees on maintained bare soil. 25 per cent of the site is devoted to environmentally sensitive areas, and over forty different species of native shrubs, trees, and grasses have been established.





# Field Manual – Planning

*This is an overview of the comprehensive GEO Legacy™ Planning Checklists that can be found at: [golfenvironment.org/legacy/guidance/field-manual/planning](http://golfenvironment.org/legacy/guidance/field-manual/planning).*



## Landscape and ecosystems

- ☐ Visualise an ecologically-rich landscape at the heart of your golf product
- ☐ Study the ecology, landscape character, hydrology and geomorphology to understand the potential of your site
- ☐ Avoid predetermined design styles and marketing tags such as links, forest, wetlands, heathland etc.
- ☐ Avoid premature decisions on golf course length, and number of holes to be built
- ☐ Masterplan the development around, rather than through or over, the most valuable and interesting existing landscape and ecological features
- ☐ Consider carefully the visual sensitivity of clubhouse location



## Water

- ☐ Use broad-scale hydrological assessment to provide the basis for informed decision making
- ☐ Understand the quantity of water resources available to the project, and any future requirement or opportunity to transition or diversify water sources
- ☐ Incorporate zones of hydrological and watershed importance into masterplans and site layouts
- ☐ Think carefully and objectively about the suitability of open water features, and their environmental, construction and lifecycle cost
- ☐ On sites that are suitable for the creation of water features take the opportunity to maximize the value of new wetland and water ecosystems
- ☐ Adopt a 'natural systems engineering' approach for drainage and storm water management
- ☐ Masterplan development impacts away from existing natural zones of hydrological interest
- ☐ Conceptualize a grassing plan that is the most drought and disease tolerant, and leaves the smallest possible turfgrass footprint
- ☐ Adopt a landscape planting strategy that is based entirely on drought tolerant trees and shrubs



## Energy and resources

- ☐ Strive to conceptualize a project that could become a net energy exporter
- ☐ Understand the current energy infrastructure for your project and have an energy specialist explore the potential for on-site or local renewables
- ☐ Evaluate the potential energy flows to and from the project site such as waste heat from local industry, excess heat generated on site, aquifer/ground water heat transfer etc
- ☐ Optimize the location of buildings to benefit from natural heating, cooling and lighting
- ☐ Masterplan the irrigation system to maximize gravity-feed



## Products and supply chains

- ☐ Drive sustainability through the project's supply chain via a central ethical and environmental procurement policy
- ☐ Integrate all possible use of recycled materials
- ☐ Seek opportunities to pioneer new sources of local, fair trade and recycled materials
- ☐ Masterplan the site to leave space and suitable locations for the ongoing storage and handling of recycled materials



## Environmental quality

- ☐ Plan to enhance the overall environmental quality of the existing site, enhancing the quality of soil, air and water
- ☐ Avoid developing on or close to hydrologically sensitive parts of the site, where groundwater may be compromised
- ☐ Allocate the best quality areas of soil to 'softer' aspects of development such as fairways, semi rough and patches between holes
- ☐ Retain enough green space, vegetation patches and functioning ecosystems to allow natural processes to improve water, soil and air quality
- ☐ Understand the sensitivity and connectivity with any adjacent wetlands, water courses and aquifers



## People and communities

- ☐ Develop a project concept which will drive as many benefits to local people as possible. Engage, listen to and strive to meet their needs and aspirations
- ☐ Make it a determined part of your legacy to multiply meaningful benefits to local people for decades to come
- ☐ Undertake a socio-economic evaluation of the project – to explore practical ways in which local people and communities can derive benefit
- ☐ Consult local authorities to dovetail with local infrastructure plans, and to explore opportunities for joint public/private investment
- ☐ Masterplan for other users – local people and communities – not just investors and golfers, and other target consumers
- ☐ Engage with government at national and local levels to identify how the project might be a catalyst for other wider economic benefits
- ☐ Create real growth by adding to and diversifying golf facility provision, rather than competing with existing golf courses

Think comprehensively, understand your natural and cultural assets, respect them and use them to your advantage.

# Design

*Sustainable design is all about the details for individual project components coming together in a cohesive and integrated package.*



In the design phase, the details come together — and many important technical choices are made. Topographic and grassing plans, landscaping and ecological designs, drainage, irrigation and community access plans are among the critical components of sustainable golf design. When overlaid, these details should combine to paint a clear and powerful picture of the project's sustainability.

## ***Topographic plans and earthworks***

Topographic plans show the amount of physical landscape change that will take place. Efforts should be made to minimize earth movement while creating a golfing product with sufficient interest.

Earthmoving brings inevitable environmental impacts. It disturbs the soil structure and its ecology and can result in siltation and erosion. Clearly some topography is more prone to erosion than others. Moving earth can also put terrestrial ecology at risk and damage existing hydrological and watershed functions.

Naturally it costs more to move a lot of earth than to move little. Balancing a cut and fill within localized parts of a site will reduce labour, fuel and disposal cost during construction and restrict overall disturbance to well-defined zones of the site. If needed, a shortfall of fill material could be overcome by creating additional lakes and water features.

#### ON THE GROUND:

*Castle Stuart, Inverness, United Kingdom  
Designed by: Gil Hanse and Mark Parsinen*

A visually sensitive site on the shores of the Moray Firth, Castle Stuart saw an innovative and sensitive earthworks design lead to the creation of a golf course with a very strong and authentic sense of place. Views to prominent receptor points off site played a key role in defining both the routing plan and the detailed design of the finished topographic levels.



If done properly and in certain locations, earthmoving can also bring significant long-term environmental benefits, especially on brownfield sites. Reshaping the land can rejuvenate the landscape following industrial use or intensive agricultural use. It can regenerate ecosystems — the creation of new pond and wetland areas being perhaps the most obvious. It can also be used to create niche grasslands, such as wet hollows and dry knolls.

Shaping the landscape can be used in other ways too. It can be shaped to direct water — and golf balls. Slopes that feed balls back into playing areas can reduce the overall acreage of maintained turfgrass. In addition, positive drainage can deliver water into attenuation ponds and reduce the need for pipework.

The goal for all projects should be to design a cost-effective earthworks solution that delivers visual interest to stimulate and challenge the golfer, while reflecting the character of the local landscape.

Design is where the golf architect truly takes the stage, conducting the orchestra of individual specialists to produce the final symphony.

## Legacy design

Taking your expression of sustainability to the next level. Putting flesh on the bones of your Sustainability Blueprint.

Explain how your integrated approach has folded ecological richness, resource efficiency and community integration into the physical layout and design of diverse strands of development.

Visualize the sustainability of your golf course, clubhouse, maintenance facility and other components. Overlaying all your design details – for grassing, irrigation, drainage, landscaping, earthworks. Show how they come together for a complete real world outcome.



# Grassing, Landscape and Ecological Design

When one thinks of golf course landscaping, turfgrass first comes to mind. Naturally, sustainable grassing plans are based on the use of the most drought-tolerant and disease-resistant turfgrasses for the locality. The wrong grasses for the locale — especially on cold, dry or high-altitude courses — can shorten the available playing season. For example, in the Alps and Iceland, the playing season is very short, and those courses need grasses that will recover quickly with minimal water and fertilizer.

Just as importantly as species selection, however, is avoiding blanket turfgrass coverage in the first place. It can be costly to maintain and doesn't contribute much to habitat or biodiversity.

Rather than being a focus, grassy areas should be presented in the context of other vegetation coverage, such as semi-natural and natural grasslands, sandscapes, scrub and woodland plant communities. Good grassing plans include all these vegetative components, communicating not only that the footprint of the playing area has been minimized, but also describing the relationship and interface between turf and other vegetation types.

Good looking landscapes are not enough. They need to have a biological function if they are to regulate, provide and replenish. All living things need space to feed, breed and shelter, and populations need to be able to move. Giving biodiversity a long term chance means providing habitats that are large enough and well connected.

A golf course conceived without concern for sustainability often has a much greater hectareage planted in turfgrass than is really needed for a good game. The designer should look creatively for ways to integrate more natural, less resource-intensive non-turf vegetation into the strategy of the course. Making the fairway wider in typical landing

areas and narrower elsewhere can often reduce fairways considerably. A hilly course in the American Northwest is returning low-lying areas, normally carried by even high-handicap golfers, to a natural state with the expectation of reducing turf by 10 per cent or so. As the plan is developed, it should be carefully evaluated for economy. Given the short and long-term implications for water, fertilizer, pesticide, fuel and energy use in construction and maintenance, it pays to make the right decisions on grass coverage and species at the outset.

Closely related to grassing plans, landscaping plans provide additional detail on the specific nature and composition of grassland, shrub, woodland and other vegetation types. These plans should cover the entire development — even the area immediately around the clubhouse, gardens and communal green spaces in and around housing.

Emphasis should be on the use of native, drought tolerant species throughout the development, with care taken to select species and interfaces between species that will bring the greatest ecological value — for example, selecting one tree or shrub species over another because it has a greater association of fungi, birds and invertebrates.

Landscape designers should seek to retain as many habitats as possible, incorporating them into the golfing challenge and the aesthetic character of the course by utilizing them as natural hazards or carries. In addition, valuable vegetation species can be uplifted and replanted at alternative locations on site. Examples of successful translocation of vegetation include wetland species such as reeds, protected species such as orchids, and grassland and heathland turf.

Whether leaving trees and shrubs where they've grown naturally, transplanting or



planting anew, it's best to aim for continuous cover, which means making sure there are always generations of younger trees emerging. Continuous cover in woodlands ensures a consistent character and continuity of landscape over time by reducing the risk of sudden loss of tree cover.

In addition, finding ways to connect vegetation and reduce habitat fragmentation can improve population dynamics amongst wildlife. Hedges and walls can link habitat patches and provide cover for small animals. Designing with landscape ecology in mind will result in a variety of habitats in a wide range of shapes and sizes.

Habitat can be formed where you might not at first consider it. The topography at the bottom of a pond, for example, can create niches for diversity; varying depths stratifies water temperatures. Scaloping the edges of a pond with a gradation of submerged to marshy vegetation provides habitat at its margins. Golf courses have also been designed with floating nesting islands in the middle of ponds.

Vegetation can be established in more places than you might expect, as well, for example, by forming small ledges or pockets on rock faces. Cuttings may also be a potential wildlife habitat; sand martins, for example, have been known to use newly cut faces in softer material as nesting sites. Even the eaves of buildings can be used for habitat when fitted with built-in nest boxes.

Transitional zones of all types provide opportunity for diverse habitats. Woodland edges, where woodlands and shrubby areas intersect, are often the most species-diverse areas and can provide excellent habitat for a variety of animals, especially when the edges create nooks and crannies. Even the interfaces between turfgrass and rough grass, or turf and sandscape, has ecological value. Considering how transition zones will interface with playing areas can often be a key recurring design feature, and not always the easiest to get right.

#### ON THE GROUND:

*Golf Gleidingen, Laatzen, Germany*

*Designed by: Krause Golf Design*

This project showcases habitat enhancement on the grand scale. The 110 hectare site near Hannover was formerly intensive sugar-beet production. Now a modest 32 hectares of maintained turf is balanced by over 65 hectares of natural roughs and 10 hectares of lakes and wetlands.



# Drainage

*A fundamental aspect of water resource management that should work with rather than against the watershed.*

Drainage design determines how much drainage engineering is required on the site and how much is required to treat the waste water that emerges from the development. The golf course itself should be viewed not only as land that needs to be drained, but as a catchment that can receive and treat surface and sub-surface runoff through natural systems.

Open ditches are often underrated as components in the drainage system. Not only are they a means of achieving efficient, flexible flow rates and are relatively easy to maintain, but from the environmental perspective they provide habitat.

A well-designed and constructed open ditch, with a variable cross-section and gradient, rough bank profile, and naturally curved alignment, will rapidly colonise to provide a range of ecological niches and will become a useful wildlife corridor. Ditches may also be attractive landscape features and strategic golfing hazards in their own right.

Water-shedding characteristics should be integral to landform design. The intention should always be to achieve complete, positive surface drainage away from all playing areas, avoiding any potential ponding. Courses have successfully used landforms, slopes and swales to shed water to out-of-play areas, ponds and wetlands. In financial terms, there are huge construction and maintenance cost savings to be accrued through a focus on softer and more localised engineering solutions for site drainage.



Piped, culverted and canalized drainage systems can degrade natural catchment processes and ecosystems and create trains of engineering and mechanized treatment. Golf developments should use natural drainage flows as much as possible.

Dry regions need a different drainage approach than wetter regions. In the desert, open water features can lead to significant loss of this precious resource through evaporation. Instead, pipework along with engineered water treatment and underground water storage are better approaches to capture and reuse course runoff for irrigation.

Where piped drainage is required, the system should incorporate inspection chambers and silt traps in key locations – for example, where a change of direction, gradient or pipe diameter occurs. These are all potential locations for the deposition of sediment which may therefore be easily removed during routine maintenance to prevent transfer to adjacent watercourses. In addition, where piped drainage outfalls to a watercourse or water feature, headwalls are advisable to prevent the erosion of banks and resulting sediment contamination.

ON THE GROUND:  
*Wychwood Park, Cheshire, England*  
*Designed by: Hawtree Ltd (Ken Moodie)*

An early 1990s example of the adoption of a full 'natural systems management' approach to water management. The 180 hectare site was originally under agriculture and was zoned in the municipal land use plan for combined residential/leisure uses. The masterplan included two golf courses, a hotel, and a number of housing clusters.



# Irrigation

*There is no excuse for inefficient water use and attention to detail here is a basic requirement for every golf development and renovation.*

Sustainable irrigation can reap huge financial rewards — saving tens or hundreds of thousands of dollars a year. With water prices rising and vulnerable to disruption, and other large-scale users seeking reasons to take a bigger share of the resource, golf courses need to demonstrate the responsible use of water. One course installed a tertiary water treatment plant that allows it to get 60 per cent of its irrigation water from recycled industrial and domestic sources, with expected savings of US\$70,000 per year — year after year.

Like many elements of golf development design, sustainable irrigation planning and design is a specialized subject that deserves the input of qualified, experienced and ideally, independent advisers. Mistakes and missed opportunities can prove to be very costly.

The first mistake commonly made is irrigating more area than necessary. This is closely linked with grassing plan design, which should minimize the footprint of the course that requires irrigation. Minimizing irrigation is particularly important in dry regions.

The cost of irrigation can be reduced by using gravity, for example siting holding tanks and reservoirs in locations that minimize the energy required for pumping. These decisions are closely linked with site hydrology. One golf course cut the energy required to power its irrigation by 45 per cent by introducing a new water supply designed around gravity feeding.

On a more technical level, the irrigation expert needs to match water pressure with the valves to ensure the most efficient and effective application of water. Similarly, sprinkler head coverage should be located and targeted to provide an even application of water and avoid watering areas that don't require it. Placing a lysimeter on a green helped one course test the water quality running through the putting green's root zone. This approach could also help gather evidence of fertilizers and pesticides travelling through the putting green and into the soil and water table.

## ON THE GROUND:

*Celtic Manor Resort, Wales, United Kingdom  
Designed by: European Golf Design (Ross McMurray)*

The Twenty Ten course lies in close proximity to environmentally-designated areas within the Usk Valley including a Special Area of Conservation and a Site of Special Scientific Interest. Key elements of the golf course design included a programme to conserve and enhance wildlife corridors along the River Usk and throughout the site. Retained trees and hedgerows were incorporated into meadow 'reens' and pools crossing the site, which also enhanced 'support' habitats in the form of interconnecting corridors of tree lines, hedgerows and strips of uncut grass. These were of particular importance to maintain dormouse habitat. A 12m-wide protective buffer zone was created from the top of the bank of the Usk to prevent disturbance of otters, both during construction and afterwards.





# Community Access

*There are dozens of ways in which local people's needs can be met and even exceeded – very often to the direct financial benefit to the facility.*

Access plans are an important aspect of the overall sustainability of a golf development. As large spaces, often close to population centres, golf developments interface directly with local people. Given that social equity, justice and integration are important pillars of sustainability, golf developments that unnecessarily or deliberately disenfranchise people cannot be deemed sustainable.

Golf developments can overcome this risk by ensuring that existing and potential rights of way and traditional access routes are protected and, wherever possible, enhanced. Safety dictates that access should probably not lead to non-golfers wandering over the course, but most golf developments have non-golfing areas and boundary areas that can accommodate walking, cycling and horse-riding paths.

Creative access planning can be a major success story for golf developments – demonstrating understanding and accommodation of local people's needs and aspirations. By contrast, golf developments that seek to excessively restrict access to and over land are likely to be seen as excluding and exclusive in a negative sense.

It's a strange irony, but golf developments have often been criticised for working against, rather than for local communities. Demonstrating that this is not the case, and that golf always brings net gains, rests with every developer and every project team.

## ON THE GROUND:

*Mainzer Golf Club, Rhineland, Germany  
Designed by: Städler Golf Courses  
(Christoph Städler and Achim Reinmuth)*

This development saw the restoration of a quarry and subsequent landfill site, conserving and providing enhanced habitats for species including eagle owl, grey woodpecker, lizards and kingfishers. New public pathways and cycle routes around the site connect two local towns. It was described by the local environment authority as an “exemplary mix of leisure activity and nature conservation”.





# Other Design Elements

*Without a consistent approach across the details, the macro-decisions won't be bound together.*

## ***Roads, cart paths and car parks***

The more that paved surfaces are designed in to a golf development, the more resources consumed and the heavier the environmental footprint. Minimizing the amount of additional surface features such as roads, cart paths and car parks will minimize the environmental load caused by their construction and use. In the case of cart paths, designing a walkable course may negate or reduce the need for them, which in turn reduces short-term construction impacts and long-term fuel usage.

Where car parks, paths and roads are integral to the development, the designer should try to minimize their impact. Pervious materials, such as recycled gravels, aggregates, road planings, and geotextiles made from recycled plastics and other fabrics allow rainwater filtration and minimize waste water. When water runoff is inevitable, catch drains can harvest, treat and detain the flow for use in irrigation and equipment washing.

Cart paths also tend to create a visual intrusion on the game. Creating invisible cart path systems of geotextile or growing-cell materials allows them to carry wear without dominating the aesthetic. Further, locating cart paths discretely helps avoid visual intrusion and a disconnection between playing surface and adjoining vegetation. Alternatively, cart paths can contribute to the visual aesthetic when made of local materials, such as cobbles or slate.

## ***Bunkers***

Determining the location, form and overall number of bunkers is one of the most sensitive aspects of golf course design — and one that can have huge resource implications for construction and ongoing maintenance. Sand bunkers are one option for golfing hazards, but they are not an essential component.

Certainly, bunkering should not come at the expense of other more natural and lower impact forms of hazard that might be more appropriate to the site, or even already exist

### ON THE GROUND:

*The Castle Course, St Andrews, United Kingdom  
Designed by: David McLay Kidd*

The Castle Course clubhouse incorporates the use of geothermal energy where ten boreholes draw water and ground source heat pumps accurately control the heating and cooling needs of the building. The heat pump system supplies under-floor heating throughout the clubhouse and strategically positioned fan coils control a stable and comfortable environment.



on the site, such natural sandscapes, open water, wetlands, ditches, rough grasslands, rock outcrops and knolls. Bunkers needn't be over-styled or overworked.

### ***Tee and green complexes***

As well as being of huge importance in defining the identity of the course, and being perhaps the most scrutinized areas in terms of playability and enjoyment, the detailed design of tees and greens are also critical components in integrating the course into the landscape, in the levels of resource consumption the course will require, and also in the degree of risk the course poses to water quality (siting in proximity to water courses). Tee areas in particular often have considerably more turfgrass than is needed (for instance, behind or to the sides).

### ***Clubhouses and other buildings***

The clubhouse communicates the uniqueness of a course when a sustainability-focused architect designs in features that reflect local character together with environment-friendly building principles.

The key principle of passive building design can do much to design out short and long-term consumption of materials and resources. The architect should pay attention to siting and orientation of the clubhouse, for example, and how it fits into the overall landscape.

One developer, who has built courses in a variety of locations, uses shady and naturally ventilated locations for clubhouses and restaurants in hot regions; in cold climates he places buildings in sunny and sheltered areas that benefit from solar radiation and avoid the wind. Other green building principles include site stewardship and protection, rainwater harvesting and water conservation, use of sustainable materials, energy supply and conservation, and sustainable construction practices. Some real-world examples include the use of a ground-source heating system for a clubhouse. Although the system cost US\$20,000 more up front, it will pay for itself in five years. Another example is a photovoltaic panel system for a clubhouse roof. One golf course reduced electricity use from the public grid by 25 per cent, saving €4,000 per year, with a nine-year payback period and 30-year life expectancy.

The maintenance centre offers another excellent opportunity to integrate best practice methods to provide ecological benefit. Care should be focused on designing areas for chemical storage, washing, fuelling, and mixing and loading. The filling of sprayer tanks and refuelling in particular should take place on impermeable surfaces.

#### **ON THE GROUND:**

*The Carrick on Loch Lomond, Dunbartonshire, United Kingdom  
Designed by: Carrick Design*

The Carrick is a great example of landscape-led design within a National Park and National Scenic Area. Subtle contouring, carefully positioned tee and green complexes of appropriate scale, use of native vegetation on prominent areas – all combining to retain landscape character units and harmonize visual appearance from roadways, paths and loch.



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## Landscape and ecosystems

- ☐ Ensure topographic changes protect landscape character, taking the opportunity to enhance the most degraded and intensively man-modified areas of landscape
- ☐ Utilize materials that are typical of the neighbouring landscape, reduce the need for signage and furniture
- ☐ Pay attention to transitional zones between vegetation types and habitats. Maximise patch sizes and connectivity
- ☐ Reduce the intrusion of bunkers, tee and green complexes on visually sensitive sites
- ☐ Consider whether open water is appropriate for the site
- ☐ Avoid using liners wherever possible, but be aware that lined ponds can provide a valuable addition of open water 'oases' in otherwise wetland-impooverished regions
- ☐ Naturalize water features as far as possible. Sterile, synthetic, wet holes contribute much less than diverse, living water bodies
- ☐ Use native species in all landscaping designs, and drought-tolerant varieties where climate dictates
- ☐ Pay attention to detail in defining the extent of grassed areas. Every acre of managed turf is an acre less ecological habitat



## Water

- ☐ Design the smallest possible turfgrassed areas – each unnecessary acre of fairway and maintained rough increases the water footprint for decades to come
- ☐ Select the best-adapted turf species and cultivars for the local environmental conditions and most sustainable use of water – especially the largest areas, fairways and semi-rough
- ☐ Strive to use open drainage features as an alternative to pipework – including open ditches, swales, and filtration trenches
- ☐ Incorporate buffer zones, no-spray spaces and other 'structural' best management practices to ensure protection of water quality
- ☐ Design an irrigation system which will deliver the most efficient application of water to the smallest possible area of turf
- ☐ Integrate existing types of sand waste or dwarf shrub communities into the design to reduce irrigated area and integrate course into landscape
- ☐ Focus on important aquatic system design details such as littoral shelves and shallow margins, varied depths and convoluted pond and wetland edges



## Energy and resources

- ☐ In general, seek a design for the site that minimises the amount of earthwork, thereby reducing energy and fuel demands during construction
- ☐ Apply key principles of passive design to reduce energy demands, including solar gain, shelter, natural ventilation and insulation
- ☐ On some sites, higher levels of earthmoving will pay back over the lifecycle of the development in terms of enhanced landscape, enhanced biodiversity and economic multiplier
- ☐ Minimize the maintained area – every unnecessary acre of fairway, semi-rough and maintained rough increases the carbon footprint of the development for decades to come
- ☐ Minimize irrigation requirements. The treatment and pumping of irrigation water is a major source of energy consumption in golf developments
- ☐ Minimize excessively sloped and intricate shaping around bunkers and green complexes, which require labour and fuel intensive hand mowing
- ☐ Design a golf course that can be walked, thereby reducing the amount of fuel and resources used to maintain and fuel golf carts



## Products and supply chains

- ☐ Design buildings in a style that enables them to be constructed using local materials and local tradespeople, rather than shipping in prefabricated products and components from distance
- ☐ Design all landscape and engineering features to be constructed using local materials. The most significant might be walls, fencing, paths and paving
- ☐ Design out as many features as possible that will require long distance transportation of materials and products
- ☐ Integrate into design the ability to utilize on site materials that arise through construction — such as soils, stone, wood and existing cleared plant material



## Environmental quality

- ☐ Design a top-of-the-range maintenance facility to protect your development from the harmful effects, both in cost and reputation, of a pollution incident
- ☐ Protect water quality by designing rough grass soakaways and attenuation areas, swales and turfgrass biofilters. Use topography to shed water into natural attenuation areas and ditches
- ☐ Design healthy, balanced and functioning ecosystems in ponds and wetland areas to minimize the likelihood of nutrient over-loading and eutrophication
- ☐ Select stress, disease and drought tolerant grasses to minimize long terms inputs of water, fertilizer and pesticides and reducing risks to soil, water and air quality



## People and communities

- ☐ Design vegetation screens and vegetative buffers to separate golf from other potential recreational users such as walkers, cyclists and horse-riders
- ☐ Create secluded wildlife havens and habitat meeting points to create biodiversity hotspots that are accessible to non golfers
- ☐ Where appropriate, integrate features of historical and cultural heritage interest, establishing a sense of place and celebrating the connection with the past

Delivering sustainability best practice is not a formula or a straight jacket. Quite the opposite. It's a world of creativity, where subtlety, perception and acumen are fully rewarded.

# Construction

*During construction the practical and physical interaction takes place between the project and the host environment. It is when the landscape is actually altered, species and habitats disturbed, traffic introduced, and resources and products consumed.*

The on-the-ground aspect of construction makes it the time when environmental impacts and enhancements can be most easily observed. The local environment is subject to rapid change and environmental quality is most at risk.

The construction phase clearly has the most potential to generate pollution, through the emission of particulate emissions and dust, contamination of water and the generation of noise. In addition construction activities can also pollute and damage soil. Short-term construction impacts may lead to permanent, long-term detrimental effects. Many natural and semi-natural ecosystems are vulnerable when disturbed, and their innate capacity to recover may be destroyed.





#### ON THE GROUND:

*Bigwin Island Golf Club, Ontario, Canada*

*Designed by: Stanley Thompson, renovated by Carrick Design*

Set on a 500 acre island in the pristine Lake of Bays, the extensive redevelopment of Stanley Thompson's Bigwin Island raised water quality protection concerns among residents and locals during construction and post construction, with a particular focus on fish spawning grounds. A series of temporary sediment basins and ponds were constructed at strategic locations to trap and settle out sediments during periods of heavy rain on the exposed soil, protecting the shoreline of the island from potential erosion runoff. It was also necessary to develop a method of filtering storm water runoff before it was released to the lake from fairways, greens and tees. The smaller sediment basins in the treed areas remain in place today, still filtering runoff. Bigwin Island is proud that its environmentally-responsible golf course management techniques continue doing their bit for the unique and pristine natural setting.



*Adapted from An Environmental Approach to Golf Course Development. © American Society of Golf Course Architects. Download the full publication at [www.asgca.org](http://www.asgca.org)*

Construction is the time to find ways to deliver as light a project as possible. For example, one course phased in development of some parts of a site to reduce disturbance on breeding birds, feeding invertebrates, and flowering plants. Another used recycled vegetable oils to meet half the construction fuel needs. Another reported that they had an extremely positive experience engaging local conservation groups to monitor and minimize the adverse impacts. The advice added little overhead but significantly reduced negative results.

Use a professional, experienced constructor, and ensure the project manager buys into the true nature and significance of sustainability issues.

## Legacy construction

Reinforce your due diligence in protecting the quality of the environment and consideration of local people. Represent the comprehensive breadth and depth of best practices to be applied.

Create a resource which benefits project managers and constructors, and which satisfies regulatory needs. Leave a simple but effective grow-in and management hand over plan to ensure your sustainability legacy continues.



# Site Preparation

*A number of environmentally sensitive steps will help to prepare the site, including fencing off sensitive areas, routing site access, siting materials storage, designating haul routes, planning for waste disposal and scheduling utilities.*

## ***Cordons sanitaires***

Before commencement of construction, it is vital to isolate and fence particularly sensitive areas known as 'cordons sanitaires'. These include watercourses, ecological hot-spots, archaeological sites and high-quality landscape elements. Commonly, no construction machinery or activities will be permitted within the cordon sanitaire. The type of fencing used must be robust enough to deter entry by heavy equipment or it may be ignored. Although cordons sanitaires should always be shown on plans, on-site refinement by the appropriate specialists — ecologist, archaeologist, landscape architect — is recommended.

Specimen trees are a very common example of a landscape feature to be protected. The entire area of the root system of the tree should be included. Contrary to the popular misconception, the diameter of root spread is roughly two to three times the height of the tree, so protection should be placed well beyond the edge of the canopy. Within this zone, any change in ground levels or chemical spillage may cause permanent damage to the root system and ultimately the death of the tree. Physical damage to tree trunks should also be avoided.

Watercourses and wetland areas can be further protected by allowing a dense growth of vegetation to grow up on the edge prior to the start of work, acting as a buffer to sediment erosion and chemical ingress.

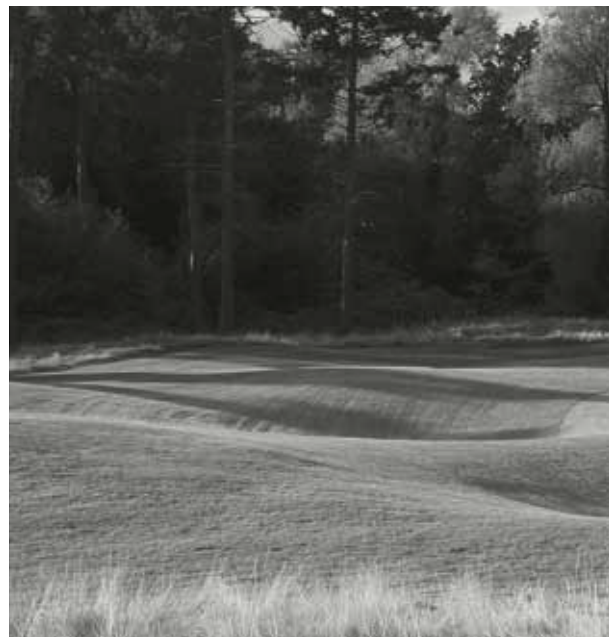
## ***Site access and compound***

The establishment of a suitable access point and compound to house temporary offices, storage and toilet facilities will be one of the construction contractor's earliest priorities. The location of the access point and compound should be carefully selected to take account of environmental as well as operational factors.

Because the main access point and compound will be a focus of traffic, materials handling and storage, and waste disposal, it should be sited well away from any watercourses and other sensitive habitats on an area of dry, well-drained ground to minimize the risk of water contamination during refuelling and mixing of materials. A temporary impervious area for handling potentially hazardous materials may be constructed. Use of a single access point is also desirable. In addition to improving safety, it will also restrict the area required to be rehabilitated.

Construction of the hard-standing surface required for access and parking of vehicles and earthmoving plant can often be coordinated with the permanent road layout, so the base courses may be laid as soon as possible and used as a temporary surface.

A designated maintenance area for machinery should also be provided, including an area for wheel-washing to ensure that oils, sediments, and seeds of invasive plants are intercepted. Sediment from the wash-down area should be further intercepted by a silt trap and, if uncontaminated, may be re-used as fill on site.



### ***Materials storage***

Closely linked to the establishment and management of the site compound is materials storage. While the aim should be to bring all materials to the site only when required, in practice this may not be possible or economical. Most critical will be fuel and chemical storage. Spillage response strategies should be identified. Diesel, other fuel oil, lubricant and hydraulic fluid may be contained by sandbags and other absorbent materials available on site as part of an emergency spill kit.

Temporary storage at localized working areas, e.g. storage of gravel or sand within the root zone or at green sites, should be discouraged, as it is generally more difficult to prevent contamination. If local storage is unavoidable, topsoil should be stripped from the area to be used before placing the materials.

### ***Haul routes***

Done well, the layout of a circulation system of temporary roads allows materials and machinery to move efficiently, minimizing both the construction cost and the potential environmental impacts. Topsoil should be stripped from these areas and stockpiled, and ideally the routes should coincide with the layout of permanent roadways. Routes should avoid fairways, wetter areas, and all environmentally sensitive areas, and avoid the potential for run-off to watercourses.

In general, haul routes should be minimized. If possible only allow one-way traffic to reduce slewing of vehicle tyres and tracks and consequent damage to soil structure in wet conditions. Haul routes to green complexes should always lead from the rear of the green, if possible, to avoid compaction of the approach. Temporary haul routes should be decompacted by ripping prior to reinstatement.





### ***Vegetation clearance***

Individual trees or woodland areas should be marked by the contractor and checked by the architect before felling. Specialist forestry contractors, tree surgeons, or others experienced in tree clearance work should always be used. Special care is required to avoid damage to adjacent trees, which may mean taking down individual trees in sections. Staged felling — working outwards from a centreline — allows the greatest control. The landscape architect should be given the opportunity to identify specific individual trees or areas of vegetation that can be successfully incorporated into the design.

### ***Waste disposal***

Waste disposal during construction needs to be managed effectively. For example, all waste material should be taken off-site to a licensed facility; empty chemical containers should be disposed of by a licensed agent.

Woodland debris and stumps can be chipped and the material re-used as mulch to suppress weeds in newly planted woodland areas. Felled timber may be sold or repositioned as habitat. Other organic waste can be composted where feasible. Burning should be minimized and only as permitted by local regulations.

### ***Utilities***

Scheduling a service provider to identify the location of underground utilities should be addressed from the outset and built into the site preparation timeline. The early and accurate location of services can avoid environmental damage and costly repairs. In expanding utilities, an effort should be made to have all the work done in sequence, to avoid areas being torn up repeatedly.

Once excavated, glacial landforms and mature vegetation cannot be replaced. Construction mistakes can be very costly.



# Conserving Topsoil

*Conservation of topsoil is a basic principle in landscape and golf course construction. For golf projects, a shortfall of healthy topsoil at the post-shaping replacement stage is extremely common, often with significant implications to the budget*

Respreading suspect or damaged topsoil is a risk not worth taking, as it will inevitably lead to later problems with the quality of the playing surface.

Topsoil is distinct from subsoil. Topsoil contains organic material and acts as a growing medium. Its physical and chemical properties differ from subsoil in colour, texture, acidity and nutrient status. Where doubt exists, sampling and testing can be conducted. Differentiating soil types allows topsoil of higher quality to be identified for use on critical playing areas, such as green approaches, green collars and bunker mounds. Soil types of different textures and fertilities should be kept segregated in storage and re-spread in areas similar to their original environment.

Soil can be damaged in storage. Good practice in handling will avoid many problems. Most importantly, the soil should be handled as little as possible — ideally avoiding the need to stockpile by stripping, transporting and replacing in the same operation. It should be moved only when dry and not frozen to avoid damage to the particles and voids that form its structure. Threshold soil moisture levels, above which work must be suspended, may be set

and tested with a soil tensiometer. Conversely, when the weather is too dry, especially when combined with windy conditions, soil particles may be lost as dust.

If soil stockpiling is required, stockpiles should be sited on level, well-drained ground of similar soil type cleared of its own topsoil. Such stockpiles should be sited away from watercourses and other areas vulnerable to deposition of eroded soil. Stockpiles should have a high surface area to volume ratio, should be free of weeds, are not trafficked by machinery once formed, and remain in place for no more than eight weeks.

If the vegetation won't be replanted, it's normal to pre-treat soil with an herbicide before soil removal. When the vegetation has died back, the soil should be rotavated prior to stripping. During stripping, other materials may be revealed underneath, including organic material, sand and gravel. Provided quality can be tested as suitable, these materials may be re-used — for example, in the construction of greens and tees — to reduce costs and improve the overall environmental sustainability of the project.

## ON THE GROUND:

*Geysir Golf Club, Haukadalur, Iceland  
Designed by: Edwin Roald Golf Design*

This project showcases the innovative use of simple, low-resource construction techniques. An enjoyable nine-hole layout has been created on a tiny 18 hectare site at an affordable cost, without compromising the authentic quality of either the golfing experience or the stunning natural setting. On-site sand and gravel deposits allowed zero import of materials for both green construction and drainage, and with fescues being the appropriate species choice in this northern climate, low input maintenance is rewarded by exceptional playing surfaces. Deliberate choice of a basic mobile pump, with minimal pipe infrastructure, means it becomes 'too much bother to over-water', and all playing areas can be mown by a single person in one day on ride-on machinery.





# Earthworks and Shaping

*The objective here is to minimise the amount of material shifted, in line with creating an enjoyable golf course in an authentic landscape setting.*

The bulk earthworks phase of the project covers the operations required to alter the basic topography of the site, as distinct from the subsequent fine-tuning of surface contours, termed shaping. The main activities at the earthworks stage are cutting to reduce surface levels and filling to increase levels. It is at this stage that the largest equipment is required; accordingly, the potential for environmental damage is high.

From an aesthetic perspective, care should be taken to ensure that the exposed cutting faces are finished to leave no scars from machinery and that an irregular natural appearance is achieved. The distinctive geological properties of rock should be revealed.

Where rock excavation is required, drilling or blasting is needed. This is clearly a specialist issue, and it has the potential to create significant vibrations, noise and dust. In most countries, health and safety legislation will prescribe acceptable limits.

Final shaping of the surface contours of the golf course will significantly affect the final course appearance. The skill of the machine operators will determine the successful interpretation of the architect's drawings. Accomplished shapers are genuine craftsmen and are much in demand, because of their ability to interpret an architect's vision, rather than produce a standard pre-defined shape.



The shaping operations will grade landforms below the finished surface level to allow for the resspreading of topsoil and for green and tee construction layers. Respread soil may be prone to storm water erosion. Turfing can stabilize the area better than seeding, though sand-bagging, erosion-control fences, temporary ditches and other methods may be needed to stem soil erosion. In extreme cases, entire green complexes have been known to be washed out by storm damage.

From a sustainability perspective, stepping back to consider the macro scale landscape change is just as important as green or bunker design detail.

#### ON THE GROUND:

*Hamilton Island Golf Club, The Whitsundays, Australia*  
*Designed by: Thomson Perrett Golf Course Architects*

Located within the Great Barrier Reef National Park, a World Heritage Zone, Hamilton Island Golf Club showcases the use of local materials and environmentally sensitive construction. In places the coral reef surrounding Dent Island is 100 metres wide and access to the island was restricted to a few hours per day at high tide. The limited topsoil stripped from the site was used to cap the golf course. A temporary plant was also established on site to crush local stone into differing classes of material for use on the cart paths, road bases, back filling of trenches etc.



# Drainage and Irrigation

*During construction this is an area for logistical planning – scheduling works to minimise disturbance and increase efficiency.*

Drainage construction should be carefully sequenced to minimize repeated disturbance of shaped and finished areas. Trenching, pipe-laying and backfilling activities should be programmed to take place in each area as it becomes available, normally after the placement of topsoil but before final cultivations, rather than as a continuous operation over the entire site. In addition, the use of tracked vehicles or vehicles with low ground pressure tyres helps to minimize soil disturbance and compaction.

The relatively flat nature of the extensive playing areas of a golf course means that drainage gradients are often very shallow. Gradients of no greater than 1:200 are common. This places a premium on the accuracy of levelling to avoid costly and damaging re-excavation and re-laying. Laser-guided excavation and trenching equipment is therefore strongly recommended.

Irrigation efficiency, and therefore water conservation, may be similarly affected by poor construction standards – for example, if leakages occur. The pipes, valves and sprinklers will normally be installed after topsoil re-spread and before seeding, so the main irrigation construction concerns relate to potential compaction of topsoil. As the golf course irrigation system will be used to ensure that seeds stay moist prior to germination, the programme for irrigation installation must be planned to be ready for the best time to seed the course.

## ON THE GROUND:

*Granite Links, Massachusetts, United States  
Designed by: Sanford Golf Design*

The aesthetic and infrastructure enhancement of the Boston cityscape, made possible by the highway relocation and tunnel project, also allowed the beneficial reuse of a large landfill as an open space and for the Quarry Hills Recreation Complex. After thirteen years and 900,000 truck loads of fill material, the 27-hole Granite Links Golf Course, athletic fields, rock climbing sites, hiking trails and other amenities provide a recreational facility to be enjoyed by residents and visitors for years to come.

*Adapted from An Environmental Approach to Golf Course Development. © American Society of Golf Course Architects. Download the full publication at [www.asgca.org](http://www.asgca.org)*



# Grow-in

*Sites can be vulnerable to degradation until they are vegetated. Effective grow in depends on sufficient resources being timed to coincide with construction sign off.*

The primary purpose of cultivation is to create optimum seed-bed conditions. That is, to enable seed to be evenly distributed, allow all seeds to come into contact with soil and its moisture, and to make the soil friable enough to allow tender embryo roots to penetrate the soil. Environmental issues at the cultivation stage are typically not significant; although there may be some danger of wind erosion and dust nuisance where cultivation operations are carried out in very dry conditions.

Certification or seed testing is extremely important to sustainability, and strongly recommended. The use of pre-seeding fertilizer, pre-emergent herbicide and selective herbicides is normal in establishing turfgrass swards. At the time of the seeding operation, calm, dry, but not too hot conditions are required.

Whilst seeding is always the preferred method of grass establishment, there are times when turf has to be used. Under these circumstances, the turf should be custom grown on a matching root zone or, alternatively, washed turf should be used. Pins or pegs can be used to hold turf in position on steep banks, such as for bunker construction.

Think ahead to anticipate potential problems arising from the erosion of exposed growing medium, and put in place contingency measures.

## ON THE GROUND:

*The Links at Fancourt, George, South Africa  
Designed by: Gary Player Golf Course Design*

The Links at Fancourt saw the transformation of a completely flat former airport and waste site into a tour venue using only on-site, local, or recycled materials. A low turf-grass footprint is complemented by large-scale functional wetland and wet grassland ecosystems, protected by the site's all-organic pesticide programme.





# Planning for Management

*The long term sustainability of a golf development is determined by consistent and continual improvement in management.*

The sustainability agenda represents a huge opportunity for successful long-term golf facility management and should be embraced for the way it can drive business performance, golf course profile and profit. Developing a sustainability-based management plan allows golf course management staff to layout their plans for water, energy, landscape and ecosystem, environmental quality, products and supply chains, and people and communities.

Inherent in environmental management are a great many no- and low-cost ways of generating meaningful efficiencies. For example, a golf course in Florida in the United States irrigates between midnight and 6am. This timing coincides with both the lowest wind speeds in the area, the least evaporation, and off-period utility pricing, thus saving the facility an estimated US\$6,000 per year in electrical costs.

Every acre of turf that can be less intensively managed represents tens of thousands of

dollars saved. Observing the game may indicate where maintained turf is currently located but may not be required — such areas can be returned to their natural state. At one golf course in the United States, for example, 11 acres of landscaped areas have been modified to low-input designs with native and drought-tolerant plant material. In addition, many new areas of rough grassland have been introduced, further reducing the overall irrigation coverage.

During drier times of year, zones might be programmed to reduce irrigation. A course in Virginia in the United States prolongs its water supply during dry periods by reducing irrigation by 50 per cent or more. They've found that keeping fairways and roughs somewhat dry under normal conditions allows the vegetation to adapt better to drought.

Even simple policy decisions, linked to light-touch staff and customer communications, can lead to significant reductions in maintenance budgets. Communicating a





## The GEO OnCourse™ programme helps course and club decision makers work together practically to integrate sustainability across the entire facility – leading to the GEO Certified™ industry ecolabel.

golf course's sustainability efforts helps customers appreciate the environmentally friendly design and construction of a site and sets its current maintenance programme in context, allowing them to be part of the solution. A course in Nebraska in the United States developed a golf course pocket guide in cooperation with the Natural Resource Conservation Service to educate golfers on the sustainability efforts at the course.

Tournaments can be greener too. The 2010 Ryder Cup left a significantly lighter environmental footprint thanks to a pioneering green drive. Coordinated activity among sponsors, contractors and suppliers contributed to a carbon footprint reduction of 31 per cent and an 87 per cent re-use and recycling of waste.

The GEO OnCourse™ programme provides a comprehensive and yet streamlined step-by-step guidance and best practice checklists for sustainable golf facility management. Through this programme any golf course can

demonstrate its sustainability and give staff the confidence and credibility to promote its sustainability efforts by achieving GEO Certified™ status. The certification further differentiates the course and provides another unique selling point for the club, locally to globally.

Environmental and social performance is a continuum, not a destination, and common issues can bring facility decision makers together around positive shared goals. It is important to realize that every achievement drives a positive profile for the facility and the professionals that manage it.

Existing golf courses should sign up for the GEO OnCourse™ programme, which provides details on how the principles described in this document can be carried over into daily operations once clubs are up and running. The programme provides numerous ways in which existing golf clubs can improve procedures and processes in ways that are both cost effective and environmentally sensitive.

### ON THE GROUND:

*Prince's Golf Club, Kent, England*

*Remodelled by: European Golf Design (Gary Johnston)*

This remodelling of a classic links layout, originally by Sir Guy Campbell and John Morrison, provided an opportunity to encourage further conservation and enhancement of important dune grassland habitat. In conjunction with the national conservation body, Natural England, Prince's Golf Club has worked hard to increase species diversity in the out of play areas, using sheep to graze and thin out the sward.

During the remodelling, additional measures adopted included translocating dune grasses to reinstate disturbed areas. Bunker sand was saved to be reused as top-dressing material.



# Field Manual – Construction

*This is an overview of the comprehensive GEO Legacy™ Construction Checklists that can be found at: [golfenvironment.org/legacy/guidance/field-manual/planning](http://golfenvironment.org/legacy/guidance/field-manual/planning).*



## Landscape and ecosystems

- ☐ Draw upon ecological, landscape and hydrological surveys of the site to ensure the construction team is aware of sensitive areas
- ☐ Adopt a sensitive, gradual and flexible approach to clearance, seeking to minimize the extent of disturbed area and limit the clearance of natural vegetation, incorporating these areas as golfing hazards where possible. Work outwards in phases from golf hole centrelines
- ☐ Establish voluntary cordons sanitaires and 'no impact zones' across the site to protect the highest value landscape and ecological features
- ☐ Translocate suitable species/ individual specimens and/or areas of valuable vegetation to other parts of site
- ☐ Refine vegetation cover in order to maximize the landscape ecology of the site. Retain and create corridors between habitats
- ☐ Seek new small scale opportunities for previously unidentified or unplanned habitat niches including localized soakaways, swales, reedbeds and vegetation headlands
- ☐ Scrape areas to create vegetated but seasonally flooding depressions and wet, marshy grasslands



## Water

- ☐ Seek further opportunities to minimize the amount of irrigated amenity grassland. These often become most apparent during late construction and grow in
- ☐ Refine irrigation and drainage plans – seeking opportunities to harvest runoff, and ensuring irrigation is targeted to the final grassing plan
- ☐ Ensure ecological design is faithfully and accurately delivered during pond, wetland and water course construction
- ☐ Seek opportunities to replace or integrate piped drainage with swales, ditches and seasonal and permanent attenuation ponds and soakaways
- ☐ Protect existing water bodies and water courses using physical barriers and fences, bio-filters and no-spray zones



## Energy and resources

- ☐ Explore opportunities to introduce cleaner, renewable fuels for haulage and on site machinery – for example, second generation biofuels
- ☐ Select the latest generation of temporary power generators, and look to second generation biofuels and LPG powered options
- ☐ Use low sulphur diesel oil in all vehicle and equipment engines, and incorporate the latest specifications of particulate filters and catalytic converters
- ☐ Look for transportation alternatives for all materials being brought to site – for example, rail and boat/barge
- ☐ Carefully plan construction logistics to reduce fuel consumption – particularly in the phasing of on-site operations and through a focus on getting things right first time round
- ☐ Minimize overall fuel and energy use by minimizing the amount of physical landscape change and seeking late stage opportunities to integrate existing landform



## Products and supply chains

- ☐ Select an appropriate greens construction method and specification, bearing in mind the need to ensure that long-term maintenance requirements can be met
- ☐ Using agronomic advice, seek to use a peat substitute (e.g. coir) for organic component of rootzone. Ideally, source or produce a local compost based product
- ☐ Minimize the importation of bulky construction materials by using on site resources, including recycled aggregates, crushed rock and quarried sands, gravels and soils and timber
- ☐ Make it a policy to use as many products with recycled content as possible, such as irrigation and drainage pipework made from recycled plastics; geotextile membranes derived from recycled plastics; coir matting and rolls; wood-chip derived from pallets and other waste wood; recycled and reprocessed glass sands; recycled brick, slate, tiles, paving, cobbles and other finishing materials for buildings and landscapes
- ☐ Use non-toxic variants of paint, solvent and other potentially hazardous materials wherever possible
- ☐ Source plants, shrubs and flowers locally to ensure best adaptability to climate



## Environmental quality

- ☐ Handle soil when conditions are suitable and soil is dry and friable, use plant expressly designed for the purpose
- ☐ Vary the depth of strip to reflect local soil conditions, stripping only true topsoil and maintaining integrity of subsoil
- ☐ Minimize the length of topsoil storage periods, and stockpile in the right way – that is not in overly large mounds
- ☐ Use erosion control fences, temporary ditches and other measures to reduce soil loss, avoiding cultivation operations in very dry/windy conditions
- ☐ Plan haul routes to make use of permanent roadways where feasible. Avoid fairways, wet areas and environmentally sensitive areas
- ☐ Minimize the quantity of steep slopes that are vulnerable to erosion, ensuring all critical pollution prevention measures are designed into maintenance facilities
- ☐ Protect air by carefully planning construction logistics to reduce noise levels, and utilizing the most modern machinery, with the best fuel efficiency and lowest noise operating levels

# Field Manual – Construction



## Environmental quality

- ☐ Introducing cleaner, renewable and less greenhouse gas emitting fuels into the supply for haulage and on site machinery – for example, second generation biofuels
- ☐ Screen the site to stop dust spreading or place fine mesh screening close to the dust source. Adopt a policy of no, or minimal, on-site burning. Chip and mulch cleared vegetation into material for re-use as mulches, landscape coverings, path materials and growing media
- ☐ Protect water through the use of silt fences and sediment traps, minimizing the amount of exposed ground and stockpiles, and seed over or cover
- ☐ Phase construction to minimize the amount of surface area at any one point in time that is un-vegetated, helping to prevent erosion and siltation particularly in monsoon and other intense rainfall areas, and on sloping and fine soiled sites
- ☐ Ensure spillage response strategies and materials are in place and seeking alternatives to herbicide based vegetation clearance, such as weed burners
- ☐ Ensure all critical pollution prevention measures are designed into the temporary (or permanent) maintenance facility
- ☐ Strict application of buffer zones and no spray/treatment areas around watercourses, wetlands, reed-beds, ditches, marshy grasslands etc
- ☐ Avoid pumping any water containing silt into other water bodies, and prevent water from entering excavation areas by using cut-off ditches
- ☐ Wheel and plant washing facilities should be secure and wash water should be contained for treatment, disposal and/or re-use
- ☐ Site storage tanks for fuels, oils, and chemicals on impervious bases within a containment or embankment
- ☐ Cover car parks, paths and other surfaces in permeable materials to allow slow, diffuse percolation of rainwater and surface runoff, reducing the concentrations of particulates and heavy metals, rubbers and plastics into water courses



## People and communities

- ☐ Communicate that you have utilized all the locally sourced resources you can – from people to products – an important aspect of the local social and economic multipliers of the project
- ☐ Create vacancies for education and training during construction, partnering with local schools, colleges and universities to provide vocational insight into diverse technical skills
- ☐ Hold an official open day, when members of the local community can come onto site and view the construction operations
- ☐ Work up your traffic plan with input from local people. Strive to find a programme of machinery and materials delivery that minimizes the impact on local people
- ☐ Phase deliveries and avoid specified times. Creating customized delivery routes into the site will all assist in reducing noise, dust and other anti-social aspects of construction
- ☐ Prefer local contractors – bear in mind that every dollar spent in the local community has a better chance of recycling back to your business!
- ☐ Undertake construction-focused economic impact analysis so that you can communicate the short term and immediate financial value of the development to local people

# Building a Winning Team

*The best golf projects are based on teamwork. Building strong professional working relationships between all individuals and organizations involved, with everyone working toward a common vision and goal, will maximize the project's potential.*

Implementing sustainability works best with a fully integrated project team from conception and planning, through design, construction, and management. The developer should involve a wider range of professional expertise than is often currently practised, including the employment of sustainable development specialists.

Crucially, all professionals must be engaged early enough in the process to ensure that their inputs, insights and solutions are maximized. An experienced project manager working on a sustainability-focused project should harness the innovative inputs of the following team roles:

## ***Sustainability adviser***

Unique to sustainable development, the appointment of an experienced sustainability adviser can provide early-stage, strategic and practical insight into the opportunities and constraints of the development site and give constructive input to team discussions on the sustainability of master plans, conceptualized layouts and detailed design proposals. This role also helps ensure that a balance of hard and soft technological solutions is integrated efficiently

The value of putting a project on a firm sustainability foundation from the start — aligning the development concept with government policy and local community aspirations — can't be overemphasized. The work of the sustainability adviser can also be

leveraged through communications, helping to effectively manage contentious issues and mapping a comprehensive, cohesive and proactive sustainability blueprint. This small initial investment can pay big dividends down the road.

## ***Market and financial adviser***

Development partners are acutely aware that it is not a good time to invest in resource-hungry golf developments with poor public relations. For these reasons, it is important to let social and environmental issues inform the project's business model. A good market and financial adviser will be able to work alongside a sustainability adviser to factor in and quantify the monetary value of resource efficiencies and a high-quality product.





### *Masterplanner*

A sound understanding of the area's cultural and natural capital is the best starting point for all aspects of site planning from spatial planning to physical mapping and zoning of development areas. This role is about getting the very best out of the site, physically matching the development to the land, and conceptualizing a product that has a strong and unique aesthetic and cultural connection to its surroundings.

The masterplanner creates a framework for the development and sets the tone in which engineering solutions can be kept to a minimum to maximize sustainability. A focus on function and form can help to lighten the overall footprint of the development and create a harmonious, environmentally integrated product.

### *Architect*

New architectural design philosophies can reduce the immediate and long-term environmental footprint of buildings. An architect focused on sustainability will employ green building principles to create healthy indoor spaces that are also highly energy and water efficient.

A high-quality clubhouse that functions effectively to meet customer needs, that integrates the principles of passive design and is backed by the latest technological advances will be a long-term asset to any development. This harmony of function, form and technology will future-proof your buildings and reduce your bottom line.

The profitability gains from eco-friendly buildings can be significant. Research cited by the US Green Building Council highlights the value of green buildings. They consume far fewer resources throughout their lifetime, specifically, 25-50 per cent less energy; 30-40 per cent less carbon dioxide emissions, 40 per cent less water use, and 70 per cent less solid waste. Further, green buildings, on average, have a 7.5 per cent higher market value than regular buildings.

The best outcomes occur by design,  
not by accident, and no one person  
has all the answers.



### *Golf architect*

Some of the most valuable environmental enhancements in golf occur where golfing drama is combined with ecosystem regeneration and positive landscape change. The key to achieving the best possible environmental outcomes — maximizing the environmental quality of the course — is in allowing the design to be guided and influenced by the specific site, integrating golf into the landscape rather than imposing the game upon it. The most memorable and inspiring golf is authentically presented within an ecologically viable and stunning landscape.

A golf architect focused on sustainability principles will connect great golf design to a thoughtful vision for a functioning environment. Win-win golf courses emerge when the designer's creativity is in tune with the site's natural and cultural attributes.

### *Irrigation engineer*

An irrigation engineer focused on sustainability will seek to minimize hard engineering solutions, such as pumping and purification systems, and instead favour natural solutions such as gravity-fed irrigation and wetlands for water purification. Indeed soil percolation, detention and natural treatment provide valuable ecological services at little cost and can be used as landscape features for the development. In arid regions, especially, golf development should minimize demand and maximize recycled self-sufficiency.

### *Agronomist*

The input of a qualified and experienced agronomist is extremely important. Not just in ensuring a high-quality playing surface throughout the longest possible playing season, but also in ensuring long-term maintenance budgets are financially sustainable.

The agronomist focused on sustainability will place particular emphasis on determining the best grasses for the largest expanses of maintained turf — namely fairways and semi-roughs. Attention to detail on tees, greens and surrounds are also important, but in most cases overall resource inputs are lower, due to a smaller total hectareage.

The agronomist should liaise closely with the golf architect on issues of grassing plans, and also with irrigation engineers on predictions for total irrigated area, water consumption and water type (for example greywater or fresh). The architect, irrigation engineer, and agronomist should work together to minimize the grassing plan, use the most suitable species and water most efficiently to minimize water resource use.

### *Construction manager*

Potential environmental risks, such as erosion, siltation, chemical runoff, dust, soil damage and wildlife disturbance are particularly pertinent during the construction period. The construction manager needs to be fully bought into the sustainability vision and detail a complete Constructions Method Statement that describes how impacts throughout the construction period will be minimized.

### *Public relations and marketing specialist*

With increasing interest from mainstream media, travel and lifestyle publications, and print and broadcast golf media, sustainability achievements can fuel low-cost, high-return publicity. A PR and marketing expert can ensure the sustainable development team's work gets recognized. A sustainability emphasis can generate good press at all levels, including internationally. This role can also head off negative publicity by proactively communicating the development team's environmental track record and engaging the local community and planning authorities.

### *Course and club managers*

It is increasingly common to bring the course superintendent or greenkeeper into the development during the design and construction phases. This can help considerably with continuity of handover into grow in, and ensure that maintenance teams have an understanding about how soils and drainage were altered during development. More and more course managers have environmental knowledge and experience and this can be harnessed to ensure outcomes from development can be realistically sustained and even enhanced through ongoing course and club operations.

# About the Guidance

*The GEO Legacy™ Guidance targets two main categories of user: developers, whose chief concern is the realization of the project, and regulatory bodies and their consultees, whose primary interests are strategic land-use policy and the functioning of the development control system.*



This guidance was produced in an effort to support all those people who directly and indirectly work in and influence the development and renovation of golf facilities.

This is a broad international, national and local audience, comprising core golf development team professionals, but also including government officials, environmental NGO staff, local community representatives and academics.

For this reason, and given the uniqueness of every golf project, the guidance does not seek to provide a formula or template, but rather tries to provide a framework for effective sustainability based decision making. Principles and best practices that, if embraced comprehensively, can result in better outcomes in more projects.

The guidance has been produced with the input of a diverse body of writers and consultees. A wide range of perspective and expertise has been folded together through the editorial process, to present what we hope will be a roadmap that all stakeholders can endorse and follow.

Three core principles have been central to the work:

**Credibility** – in step with cutting edge sustainability thinking

**Comprehensiveness** – embodying all key social and environmental issues related to golf development

**Practicality** – providing a logical, structured lead-in to delivering valuable real-world outcomes.

The guidance does not cover the operational phase, that is, golf course management and maintenance, which is well-researched and documented in other guidance, criteria, tools, resources and programs, including the GEO OnCourse™ programme for sustainable golf facility management.



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# Partners and supporters

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## ***The R&A***

The R&A engages in and supports activities that benefit the game of golf. Each year, it distributes roughly £5 million to deserving causes from grassroots initiatives, through coaching and regional championships, to professional tours all over the world. The R&A is dedicated to providing front-line support and guidance to assist golf courses in developing a positive relationship with the environment.

## ***European Tour***

The European Tour is committed to celebrating the game of golf, from the origins of the professional game building a proud history of achievement, sportsmanship and integrity to showcase our diverse global talent and rich landscapes. The Tour's innovative approach embraces the world, combining championships of tradition with new tournaments in the cities and countries of the future.

## ***European Institute of Golf Course Architects***

Representing Europe's most qualified golf course designers, the EIGCA believes environmental stewardship is a cornerstone of the profession, and a well designed golf course is one that achieves the best fit between quality of the golf course and the natural, economic and social characteristics of its environment.

## ***European Golf Course Owners Association***

Embracing the latest environmental thinking and technical solutions, and transparently communicating performance, enables EGCOA members to promote golf's stewardship of the environment. The association aims to actively encourage and support practical environmental stewardship on golf courses across Europe.

## ***Jacobsen***

Jacobsen's mission is to be the premier supplier of high-quality turf equipment, utility vehicles, golf cars and tractors while also working to be environmentally conscious. From prestigious championship golf courses to the World Cup, for more than a century, the most important turf in the world has been manicured by Jacobsen – the only turf equipment manufacturer to be accredited with ISO 14001 certification.

## ***Japanese Society of Golf Course Architects***

For nearly twenty years the Japanese Society of Golf Course Architects has represented and supported a group of highly qualified professionals. Providing education and sharing best practices and knowledge, contributing to a strong commitment to good design that takes into account the ideas put forth in this guidance.

## ***American Society of Golf Course Architects***

The ASGCA supports members with education and shared knowledge, including promotion of environmentally responsible golf course design. ASGCA members work to construct courses that are in concert with nature; accommodating players and native wildlife and vegetation and playing a positive role in preserving the environment.

## ***Society of Australian Golf Course Architects***

SAGCA encourages and supports the highest standard of design and construction among members, including a commitment and understanding of sustainability which is important in the world today. SAGCA members believe golf courses can and should have a very positive impact, protecting and enhancing the environment.





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