Sustainability Summary

Irie Fields Golf Course, Belle Mont Farm, Kittitian Hill, St Kitts & Nevis

Produced by: Golf Environment Organization

Date: December 2015
Delivering a genuinely holistic sustainable tourism project which brings together community and culture, along with mindful conservation of natural resources.
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Cover photo credit: Robert S. Fagan
Executive Summary

Kittitian Hill enrolled as a pioneer project in the GEO Developments programme in June 2011. Irie Fields golf course, forms part of a larger resort development including a hotel and a range of residential properties located on a 400 ha site. Sustainability is fundamental to the developer’s approach – expressed in the overall vision which seeks to bring together community, culture, and mindful conservation of natural resources.

Kittitian Hill is identified as the core project in a wider development zone on the island (the Whitegate Development Area) which in turn forms an integral part of the sustainable development policy of the Government of St Kitts and Nevis (GOSKN), as set out in the National Physical Development Plan. This includes as one of its key goals “low impact tourism strategies that minimise environmental and socio-cultural impacts and take advantage of the unique qualities of the island”.

The project delivers this national goal on all points and demonstrates how sustainable golf development can contribute responsibly and effectively to the growth and diversity of a national economy like St Kitts & Nevis.
**Project Description**

Kittitian Hill resort is located on the north-west coastline of St Kitts, on the lower slopes of Mount Liamuiga. The principal elements of the development include an 18-hole golf course with clubhouse, farm, resort village, spa, hotel guest-houses and villas.

Opportunities to develop and promote education, both formal and informal, frame a recurring theme, addressing entrepreneurship in the widest sense, and including specific work skills required within the island economy, which dovetail closely with the project ethos including organic farming, art and culture, and environmental stewardship. The landscape approach for the site places the golf course within a wider setting which will be genuinely multi-purpose, dominated by fruit trees and other edible crops to be farmed by organic means.

**Developer Philosophy**

Belmont Resorts Limited, the developer of Kittitian Hill, believes that the long-term sustainable development of a region is the responsibility of its people. New business models must be created, based on a win-win approach to development, where commercial success is combined with regeneration of social and cultural fabric.

*Human capital is regarded as the most important resource at the heart of our approach, with every aspect of the proposals tied-in wherever possible to the development of an enhanced sense of identity, self-sufficiency, and quality of life.*

*Belmont Resorts Ltd.*
Community benefits are at the heart of the project. The decision to use a direct employment approach to construction has played a central part in this success....Wherever possible the workforce has been recruited from St Kitts itself – the proportion of local employment on golf course construction is greater than 95%.

Mike Wood, Verifier - Irie Fields Golf Course, St Kitts
**Key Achievements**

The key achievements delivered cover a number of themes, ranging from wider cross-cutting benefits to more detailed but equally important gains.

**Community** benefits are at the heart of the project. The decision to use a direct employment approach to construction has played a central part in this success. The golf course construction was implemented without an externally-appointed Main Contractor. Instead, the developer has appointed key personnel at project management level, who on his behalf have then directly employed the labour force necessary for the relevant tasks. Wherever possible the workforce has been recruited from St Kitts itself – the proportion of local employment on golf course construction is greater than 95%.

This approach has in turn also allowed a much more direct control of the **Supply Chains** used in golf course construction, and is also applied to the products to be used at the operational stage. “On-Island” sourcing has been made first priority, backed-up also by extensive use of bulk in-situ materials and recycled materials including rock, gravel and sand. More than 97% of all bulk golf course construction materials were sourced from St Kitts.

Contributing to both **Supply Chain** and **Nature** the “Edible Landscapes” policy is an innovative, imaginative, and pioneering initiative which has enabled true multi-purpose use of the non-golfing parts of the site, including significant areas totalling over 25 ha which would be occupied by non-productive out-of-play rough in a more conventional project.

**Water** consumption on the golf course has been minimised by a design which results in a very modest irrigated area, (18.7 ha) combined with best practice measures for irrigation efficiency.

In addition to limiting the footprint of irrigated amenity turfgrass, the sensitive routing and detailed design of the course, incorporating many refinements at the construction stage, also restricted the total earthworks volume, with consequent major **Energy** savings.

The commitment to turf establishment and management policies places Irie Fields Golf Course amongst the first in the world to pioneer the use of organic products in a location using warm-season grasses, and delivers major **Pollution** prevention benefits.
The whole project team for Irie Fields has been driven from day one to ensure the successful delivery of the ambitious goals they set. The close relationship between them and the island acts as a shining example of community engagement in the golf development world.

Sam Thomas. Manager - Golf Developments, Golf Environment Organization
Planning + Design Stage

Overview
At Kittitian Hill, the project team took an ambitious and carefully planned approach to the golf design on the steeply sloping site. The challenging topography presented numerous challenges to the team and the sensitive routing meant minimal earthworks requirements and the key retention of the dominant ‘ghauts’ landscape features so intrinsic to the overall site character.

The planning and design work was verified in June 2014. Below is a concise summary of the sustainability vision and goals set by Kittitian Hill:

Vision:
To deliver a genuinely holistic sustainable tourism project which brings together community and culture, along with mindful conservation of natural resources.

Goals:
- **Nature:** Create productive landscapes which provide authentic produce and enhance biodiversity
- **Water:** Minimize water consumption on the course
- **Energy:** Develop and implement a comprehensive energy strategy for the resort construction and operation
- **Supply Chains:** Incorporate socially and environmentally responsible procurement policies as a core strand of the project
- **Pollution:** Develop the first fully organically maintained “warm season” golf course
- **Community:** Help build an enhanced sense of identity, self-sufficiency, and quality of life for the people of St Kitts
Activities

The following text describes in summary the work that went into creating Irie Fields’ design across the sustainability spectrum. It demonstrates the breadth and depth of commitment and consideration given to such areas at an early stage in the project’s life.

Nature

The existing site constituted abandoned sugar cane plantation land with some fragmented areas of subsistence farming. The primary features of natural interest were the ravines (ghauts) which are havens for remnant trees and shrubs, providing habitat for wildlife including numerous species of birds, and also monkeys and mongoose. The design for the course included from its earliest iterations the retention of the two primary ravines as the key component of the final landscape structure, and their protection has been effectively realized to date. This basic framework has been substantially enhanced by the proposals for new planting, centered on the concept of “edible landscaping”, introducing numerous species of fruit trees, shrubs, and other crops, both within larger dedicated areas of farming land, and interspersed within the out-of-play areas on the golf course and the landscape matrix of the properties.

Water

The island’s rainfall is distributed in typically very heavy seasonal storms, which when combined with the characteristic volcanic topography and geology, lead to a shortage of accessible surface and groundwater reserves. Given that the golf course draws its irrigation supply from groundwater via boreholes, and that this situation will continue at least into the medium term, the crucial factor was that the design would minimise ongoing consumption. Potential losses through evapotranspiration, run-off, percolation in the typically porous soils used on the golf surfaces, will also be a significant factor.
Energy
The objective of the energy strategy is generation of 100% of energy consumed by the resort from renewable sources within five years of opening. Four phases are described covering periods beginning at the time of opening, describing transitioning from predominantly diesel-powered electricity generators supplemented by solar water heating, to sources including bio-diesel, solar PV, wind energy, biomass energy, and geothermal power.

Supply Chain
The utilization of predominantly locally-sourced materials is undoubtedly one of the highlights of the project’s sustainability success, and is closely linked to the developer’s decision to adopt a direct, hands-on approach to management of the construction process. In turn, this approach was made possible by the decisions taken at the planning and design stage, which emphasized a philosophy where authentic and site-specific solutions were favored wherever possible.

Pollution
The goal to become the first organically maintained course with warm season grasses remains an aspiration, but a realistic one given the degree of commitment which has been reiterated, and the detailed targets outlined. Organic certification by one of the established bodies of the farm/farmed, and by extension the golf course, has been proposed as potentially the most pragmatic route.

Community
The branding and promotional material for Kittitian Hill has a very strong emphasis on people. A key aim of the project is to create a new model for resort development with community and culture at its heart, closely integrated with government policy to regenerate the island economy. The creation of a more “inclusive” atmosphere at the golf course, as distinct from a traditional club, is seen as a key aim to promote and develop wider community relationships. A symbolic statement of intent in this respect is the re-imagining of the clubhouse as a multiple purpose “activity center”.

Construction Stage

Overview
For the Kittitian Hill project, the approach to construction was to have a tight and dedicated team of contractors delivering the build. This approach meant the team was well briefed to deliver the goals the project had set itself in the planning + design stage. The vision and commitment shown in the earlier stages was continued on through into construction. Careful land management, chemical free weed and pest control and continual soil erosion controls meant the construction team exceeded the goals set and delivered under the tight time pressures of a development project.

Evidence
The observations are based on evidence gathered from three discrete sources:

- Documentation provided in response to a specific requests ahead of the final verification site visit
- The construction contract documents package, consisting of drawings, specifications and bills of quantities
- Interviews and site inspections with the golf course architect, golf course superintendent, construction supervisor, and others, in June 2014, and in subsequent telecoms.
Activities

The following text describes in summary the work that went into constructing Irie Fields across the sustainability spectrum. It demonstrates the work and commitment put into the build from all members of the construction workforce.

Nature

The construction team developed a full protection plan and demonstrated a thorough understanding throughout construction of the sensitive vegetation and habitats within the ghauts areas. Originally a mono-culture of sugar cane fields the conversion into the mosaic of turfgrass, native habitats and edible landscape is anticipated to have boosted biodiversity levels. The University of West Indies has been approached to lead a benchmarking and future monitoring exercise of the ecology of the site taking into account where available baseline datasets of typical island sugar cane fields to map future biodiversity trends.

Water

All practical means were taken to reduce water consumption during construction. The main storage reservoir profile includes shallow littoral ledges, and the margins have been reinstated with native wetland species. Due primarily to the geological conditions, there are no natural standing water bodies on St Kitts: the pond therefore represents a unique habitat on the island. Potential for increased mosquito populations on the site have been addressed by the introduction of the fish species Tilapia as a biological control agent for the insect larvae.

Energy

The strategy of reducing energy demand at design stage was successfully implemented through construction with additional refinements to make further efficiency savings. For example the overall earthworks volume and movement distances was restricted by maximising the areas which were “built from site” at the construction stage. The earthworks design utilised the topographic shaping to conduct
run-off to catch basins, reducing the length of piped drainage required and carefully planned Haul–routes were sited to avoid all sensitive habitat areas and generally coincided with the final alignment of the final cart-path network.

Supply Chain
The approach adopted for the construction process has been instrumental in maximising use of local products, suppliers, and recycled materials. It has also been central in achieving the genuinely authentic and distinctive aesthetic of the final product. 97% of all bulk golf course construction materials were sourced directly from site or elsewhere on St Kitts. The abundant in-situ supply of local volcanic rock (Andesite), and its ability to be graded on site using basic machinery and local labour, was exploited in particular in the designs for rock walls, and drainage details including trenches, soakaways and catch basins. The Cart paths have been designed using traditional detailing allowing the use of local soil to be maximised in construction and deposits of volcanic sand from site were used directly as a fine growing medium and/or topsoil ameliorant and have been stockpiled also as a future topdressing material for fairways.

Pollution
The absence of chemicals on the construction site for turf establishment and weed control significantly reduced those associated pollution risks during construction. Establishment methods combined sprigged and seeded areas. Measures observed on site included hand weeding by local labour, and application of organic herbicide. The desired species composition and playing quality of native grass roughs was largely achieved by mowing of the existing in-situ swards.

Community
The construction stage of the project has made a key contribution to achieving community benefits, based on the decision to retain direct control of project management and procurement of labour and materials. With over 95% of the workforce during the construction stage recruited locally, employment by the project has already made a significant impact on the St Kitts economy. Training in golf course construction and associated technical skills (e.g. equipment operation and maintenance, irrigation system installation) was a core element in the construction process.
We are delighted to be able to recognise the outstanding commitment and contribution from the development team at Irie Fields. With a constant focus on sustainability throughout planning, design and construction, it’s fantastic to see how they have turned the initial vision for an ecologically rich, resource efficient and community integrated golf course into reality”.

Jonathan Smith, CEO of Golf Environment Organization
golf's ecolabel for new projects and renovations

photo credit: belmont resorts ltd