Alila Villas Soori, Bali

Alila Villas Soori is a beachfront five-star resort located along the southwest coast of Bali, within the Tabanan Regency, one of the island’s most fertile and picturesque regions. The development site is not far from the island’s famous Tanah Lot Temple, which along with the beach is considered one of the most holy places in Balinese Hinduism. Respecting local culture has been a major consideration in the planning, design and construction of the development.

This property is located on a sloping site lying between rice terraces and black-sand beaches overlooking the Indian Ocean with the backdrop of volcanic mountain ranges. This medium size resort provides a boutique hotel with restaurant and destination spa facilities. It offers three-bedroom residential pool villas and one-bedroom beachfront or oceanfront pool villas for purchase. The hotel includes one-bedroom spa villas used exclusively for accommodation. It offers a full and comprehensive on site concierge service.

The resort’s location offers opportunities to explore the island’s people, culture and traditions. Due to limited infrastructure, this is best achieved by low impact cycling and trekking. The opportunity to explore local villages and markets and to taste local cuisine is encouraged by the hotel and local village elders. Other recreational activities such as golf and surfing are available.

One of the primary goals of the owner and developer was to ensure that the resort was planned, designed and constructed in an ecologically sensitive manner.

A further aim was to ensure that the operation of the resort would achieve ongoing industry best practice performance outcomes in social, environmental, and economic terms.

With these goals, aims and objectives in mind, the resort has been professionally managed and maintained by and under the brand of Alila Hotels and Resorts; a leading hotel management company based in Singapore.

Alila has an enviable reputation in promoting environmentally and culturally sensitive developments. They have committed to ecological assessments of their resorts using the internationally recognized EarthCheck Program.

Alila Villas Soori has been subject to the benchmarking and certification process of the EarthCheck Building Planning and Design Standard (BPDS).
Having satisfied all the requirements of the Standard, the development was certified following an accredited third-party Auditor review of its planning, design and construction management documentation and processes.

**Planning Approach**

Documentation shows that a planning and design approach, which prioritized cultural integrity and environmental protection, was very apparent.

Resort villas and public facilities are carefully integrated within the existing natural environment of the site and are designed to fit in as unassumingly as possible to preserve the natural quality of the destination.

A broad sustainability delivery, which increases the probability of the predicted ecological outcome has been achieved.

The involvement of a dedicated Environmental Sustainable Design (ESD) Consultant strengthened the integration of the design and management team.

**Policy**

When reviewing the project due consideration was given to the issues of location and actual resources in the Bali Construction Industry. Its scale and geographical access make it a difficult market to operate in with respect to skills base, equipment and material sourcing.

Despite these constraints encouragement in the selection of local contractors and subcontractors with sufficient experience to implement ‘green’ design and to include sustainable construction in subsequent contractual agreement was noted.

From the subsequent evidence submitted during the construction phase it shows that an experienced local contractor was employed and good site management practices were implemented.

**Siting**

An extensive and comprehensive Environmental Impact Assessment (EIA) using the Indonesian Governments AMDAL system was carried out by the developer.

AMDAL was developed by the Indonesian Ministry of Environment as a tool for encouraging public and private sector project sponsors to integrate environmental concerns into their development plans.

It provides a screening mechanism for cultural and environmental impacts, inter-agency commissions to review individual project documents, impact mitigation standards and costed mitigation and monitoring measures to be incorporated into new projects.

The developer used the tool to also understand and implement solutions to minimize the physical environmental impacts of the project. It offered an opportunity to pre-empt and prevent socio-cultural conflict that can emerge particularly during the construction stage. This was seen as crucial given the sensitivity of the sites location.

Following the review, revised siting of buildings reduced possible negative
impacts and helped in the creation of positive impacts on the natural environment through low building area land coverage.'

**SITE MANAGEMENT, AIR QUALITY PROTECTION & NOISE CONTROL (CONSTRUCTION & OPERATION)**

Reduction in the environmental impact of building activities on site through appropriate reactive management actions during construction was demonstrated through ongoing photographic evidence and management instructions.

Similar evidence exists for the reduction of air and noise pollution from construction processes.

**ENERGY & WATER**

**ENERGY EFFICIENCY & CONSERVATION (OPERATIONAL)**

The use of a 'whole of systems' perspective for designing systems for reducing energy consumption at the resort formed part of the resort's reduced energy consumption vision and is reflected in the actual building design documents provided.

**ENERGY CONSUMPTION (CONSTRUCTION)**

A key focus at the design stage was to ensure that adequate planning and decisions were taken to control and reduce energy consumption. Details outlining overall energy consumption during construction of the resorts buildings and infrastructure were provided.

Designs also reflected a desire to reduce energy usage during actual construction.

**POTABLE WATER USAGE (OPERATIONAL)**

The overall efficiency of potable water usage promoting reductions without compromising the long term operation of the resort is reflected in the developments vision and actual documentation.

**POTABLE WATER CONSUMPTION (CONSTRUCTION)**

Minimal consumption of potable water for construction activities was a primary target. This was reflected in the building and infrastructure design and construction practice recommendations.

**SOLID WASTE PRODUCTION (OPERATIONAL)**

Reductions in the amount of solid waste generated and disposed of by the resort is to be achieved through implementation of a comprehensive on-site 'Waste Management Plan' which includes recycling and monitoring.

**SOLID WASTE PRODUCTION (CONSTRUCTION)**

Reduction of the amount of solid waste generated during the construction is to be achieved through the design and process management. This area has proved problematic but management responses during the construction phase were positive.

**RESOURCE CONSERVATION**

**LONG TERM MEASURES**

Reduced consumption of natural resources and the impact on ecosystem biodiversity has been documented in the design responses.

Reduction in the environmental impact of building activities on site through appropriate reactive management actions during construction was demonstrated through ongoing photographic evidence and management instructions.

Similar evidence exists for the reduction of air and noise pollution from construction processes.

**WASTE WATER MANAGEMENT (OPERATIONAL)**

Mitigation design measures for the waste water system provides for onsite treatment using non chemical means and planned disposal arrangements as noted in the EIA.

**WASTE WATER MANAGEMENT (CONSTRUCTION)**

Reductions to be achieved through design of building wet systems and processes as well as a strategy for use of waste water for recycling purposes.

**SOCIAL AND ECONOMIC COMMITMENT (CONSTRUCTION AND LONG TERM OPERATIONAL NEEDS)**

Positive, productive and sustainable contributions to the local community are planned. This is evident in the eventual operations staffing requirements and in the short term construction employment opportunities.

**TRADITIONAL RESPECT**

The resorts development planning and design concepts and actual construction management (and the benefits in responding to them) have been influenced by local restraints and needs. Whilst contemporary in nature, the resorts planning and design philosophy respects local architectural character.

The design and construction blueprints have been guided by environmental impact studies prior to implementation, complementing the spirit of environmental stewardship.
Siting Considerations

The design has been careful to ensure minimal disruption to the rice paddy fields within and around the resort.

Sustainability goals and vision integrated into the design brief which linked conservation, community and commerce in one integrated ecological cycle aimed at achieving sustainable commercial success, businesses putting conservation and community as a key priority.

An environmental brief for the project which includes a well structured and comprehensive Environmental Impact Assessment (EIA). The EIA provided an impact assessment checklist, guidance and positive responses to issues which lead to improved design outcomes.

The provision of this document was carried out during the feasibility stage and is a statutory requirement in Indonesia.

A commitment was made that following the adoption and implementation of the EarthCheck Building Planning and Design Standard (BPDS) and after completion of the resort’s construction, the EarthCheck Company Standard would be used for monitoring and assessment of the hotel’s operational efficiency, particularly with regard to its environmental and social performance.

Measures taken include:

An interdisciplinary and eventually co-ordinated approach involving all design, construction and operational professionals.

A cost plan to include budget for sustainable strategies and measures as non-negotiable elements;

A contractual agreement with the Builder to include the EarthCheck Building Planning and Design Standard.

Operational statements for post-construction assessment, operational control and continual improvement of environmental and social performance.

Outcomes:

Major sustainability outcomes have resulted from the sensitive planning and design approach adopted for the development of the resort. These include the following:

The site has a very low building and infrastructure coverage area, resulting in very high degrees of permeability, providing extensive opportunities for bio diversity replenishment and organic material collection;

The low building area to site ratio provides the design opportunity to achieve siting gains such as high degrees of privacy and minimal disturbance of native vegetation;

The site has designated areas for biodiversity protection accounting for a large area of the total site. This includes both areas of landscaping and areas retained in their natural state.

The resort accommodation buildings are aligned to achieve added value views and access to the passive climate intervention (i.e. tree shade and prevailing sea breezes). This provides scenic sea views, good micro-climatic orientation and built environment efficiency;

The area around the buildings is designed to enhance the environmental qualities of the external space;

Landscaping for microclimate control and zonal planting for efficient maintenance;

Selection and reintroduction of native species (particularly on the beach), thereby helping to maintain the existing gene pool.

Standards & Regulatory Compliance

It is to be noted that BPDS is a framework for assessing the planning, design and construction management strategies proposed for a development.

At Alila Soori, it has been possible to assess the development during the construction phase and identify areas that have benefited from an integrated approach. In particular the following:

In developing the resort, all local laws and regulations needed to be followed. The noted EIA discuss all these relevant laws and regulations. This is a pre-requisite of BPDS;

The site has benefited during the construction phase from the use of the regulatory approved EIA. This is a legal document under Indonesian Law and the development is legally bound by it regarding implementation of its recommendation;

The EIA provides a checklist of possible negative and positive impacts. It is also require to outline monitoring programmes which have to be followed during the construction stage as well as operational stage, (i.e. when the resort begins to operate);

Active site management took place during construction. Evidence of strategies particularly regarding material storage, tree and vegetation protection was provided.

Energy Efficiency & Conservation

The resort’s method of power generation and energy uses have benefited from being subjected to an energy audit.

Measures Taken Include:

Appropriate design for the tropical climate particularly orientation;

Limiting the use of air conditioning through the creation of comfortable and naturally ventilated areas outdoor;

Appropriate openings and glazing ratios to wall areas and deep roof overhangs and shading to windows to reduce heat from sunlight;

Daylight to minimize use of artificial lighting to all habitable rooms and covered areas with appropriate light colour schemes to walls to reflect heat;

Reduce conducted heat by using materials with low thermal transmittance value.
The use of high-roofed areas;
Training programmes to increase staff and guest awareness of energy conservation;
Active measures are still used at the resort, however the design of the heating, ventilation and air conditioning system (HVAC) is based on integration of performance efficiencies in the building’s envelopes;
The major facilities HVAC system allows flexibility of operation. A mixed mode control system is to be used to allow selection of either natural ventilation with ceiling fan assistance or air-conditioning. Air cooled split type AC units have also been selected for their energy efficiency;
The use of heat recovery from generators for water heating and sizing to accommodate demand cycles for fuel efficiency;
Efficient lighting systems, such as low mercury fittings with photo sensors to carefully positioned external lights, are to be specified;
Clustered circulatory pumps are to be used to maintain water temperature and reduce heat loss;
Swimming pool energy demand reduction strategy has been implemented with the use of an autosalt chlorinator system to minimize use of chlorine, associated pumping and filtration;
The predicted CO2 reduction is estimated to save 4.3 tonnes of CO2 per guest night every year. With an estimated 20,000 guests per year visiting the resort, this will achieve a significant reduction in greenhouse gases produced.

Protection of Air, Earth & Water

Potable Water
It is proposed that there will be no island ground water abstraction for resort construction or operational use. Potable water supply will be by the following methods:
Demand reductions for water to be achieved through the use of water efficient appliances in bathrooms, laundry and kitchen;
A hydro pneumatic distribution system with booster pumps to enable uniform water pressure throughout the island has been designed;
Gardening water will not be connected to the domestic water system and drip irrigation will be used to reduce water consumption by 50%. Irrigation of natural vegetation and landscaped areas will also involve the use of recycled water.

Storm Water
Rainwater harvesting will be from roof areas and stored in rainwater tanks.

Waste Water
There is to be no direct sewerage discharge into the ground so as to prevent any groundwater contamination. Treatment of waste water is dealt with by a Waste Management Plan.

Solid Waste
The plan also integrates the collection, treatment and disposal of all solid waste generated at the resort. It proposes a hierarchical approach based on internationally recognised practices involving reduction, reuse, recycling, recovery, and residual management.

The principles of the plan established for the resort during construction and operation is as follows:
Waste management principles written into construction and operational requirements;
Solid waste collections every day with segregation of waste into the appropriate physical equipment installed. The equipment will include a bottle crusher, a compactor and a high temperature incinerator;

Measures to be introduced:
These include office practices, staff training, guest awareness, education, signage, bulk and refillable purchasing policies;
Domestic waste including kitchen and guest food waste to be composted or incinerated;
Leaf waste and mulch from gardening activities to be composted for use as bio fertiliser;
Waste generated from maintenance activities to be treated in strict accordance of the nature and type of waste (i.e. cleaning rags to be incinerated);
Planned maintenance of equipment, furniture, buildings and infrastructure.

Passive Measures include:
The use of high-roofed areas;
LANDSCAPING
A crucial element of the resort’s development is the landscaping proposals. The documentation clearly shows the importance given to this area. Sustainability measures include the following:

A comprehensive and very detailed landscaping strategy and implementation plan. This included protection guidelines regarding clearing, temporary structures and building location and beach regeneration;

No exotic plants to be introduced and a replanting programme for native species to be implemented;

Mosquito eradication measures to be introduced on a regular basis with non chemical means of pest control to be used where possible.

CHEMICALS
Biodegradable chemicals are specified for cleaning and laundry operations;

RESOURCE CONSERVATION & MEASUREMENT
Underpinning all the proposals regarding protection is an Environmental Management Plan (EMP).

Implemented during construction and used ongoing as a major tool for addressing the operation of the resort, the EMA is integral to long term monitoring of the following areas:

Energy generation;
Water generation;
Solid waste generation and disposal;
Waste water generation and disposal;
Infrastructure development, including Coastal development;
Staff and guest activities;
Terrestrial fauna and flora.

PRIMARY OBJECTIVES FACILITATE
Achieving high standards of environmental conservation and protection;

Obtaining ecological certification for the resort by an internationally recognized standard of environmental management;

Maximising utilization of environmentally sound products and materials in development of the resort and its operation;

Assisting nearby villages to manage environmental issues such as beach erosion and solid waste management;

Increasing environmental awareness with nearby villages, resort staff, tour operators, service promoters, and the guests to create an environmental consciousness amongst all the parties; and

Contributing to national efforts for conservation of biodiversity, integrated coastal zone management, solid and sewage waste management and sustainable tourism development.

These have been reflected in the following:

DESIGN & CONSTRUCTION PROCESS
The design and construction process used at Alila Soori is influenced by location particularly regarding the poor access infrastructure. Both have had to reflect the reality of the Bali economy, manufacturing industry and practices of its Construction Industry.

It is recognized that there are embodied energy and emission costs being borne by the practices employed however offsets are from the wide social and economic benefits derived from development. (Some of these are noted later under social and economic commitments).

MITIGATION EFFORTS
Regarding the actual resort site, the measures to mitigate or lessen the impacts of building works on its environment and surrounds are as follows:

Actual construction involves an experienced local builder;

Materials are sourced locally wherever possible if quantities allow;

Minimal site clearance has taken place during construction;

Temporary structures placed in areas of minimal plant growth reducing clearing or damage of existing vegetation;

Material storage plan implemented;

A waste management plan implemented with non compostable waste is to be disposed of by using the waste disposal units.

Hazardous waste to be transported to an off resort disposal site;

Sewage treatment plant was the first activity constructed;

SOCIAL & ECONOMIC COMMITMENT
The planning, design and management team, and their decisions regarding respecting local traditions and customs, was an important consideration throughout the development process.

MEASURES TAKEN
The design of the project has attempted to reflect the local environment with regard to the scale, materials and texture of the buildings;

Local consultancy firms have been commissioned;

A local civil, building and labor contractor is undertaking the major construction works;

The majority of construction employees have been sourced from the local labour pool;

The pre-opening management team has been working in very close proximity of the resort, a measure seen as a means to reduce environmental impacts related to personnel transportation;

Reference must be made to the ancient and culturally significant ‘SUBAK’ system for irrigation of all the paddy fields in Tabanan. This water management (irrigation) system for paddy fields is not simply providing water. In Bali, water is used to construct a complex and pulsed artificial ecosystem that is linked to the cultural and religious practices of the community.
Water allocation and distribution is often controlled by a priest. In respect to this system the resort has retained the existing paddy field within its site boundary and further access has been created for the farmer to tend the field;

A major clean up of the beach was undertaken;

An ongoing programme to maintain the cleared and improved beach quality was implemented with the local village;

Permanent access was established for pilgrims to access the beach during religious festivals;

The resort is looking to start educational programs for local youth related to hospitality;

Educational staff programmes to include Cross Culture Training.

There are awareness programmes to inspire and assist communities to ‘clean up, fix up and conserve their local environment’ through carrying out initiatives ranging from waste removal and tree planting to water and energy conservation;

Employees are trained and employed with specific roles regarding environmental protection, conservation and improvements.

Economic Initiatives

The Alila Soori Resort acts as a provider of much needed community support to the local villagers through employment opportunities. Initiatives are aimed at addressing the low employment and incomes levels of the local village:

The planning, design and construction phases generated an estimated 180 temporary employment positions;

The operational resort will have 180 fulltime employees and is aiming for a local staff percentage of 80%. Of interest is the linkage of economic development to local Hindu culture;

Local village programmes to support local crafts and craftsmen are to be initiated;

A purchasing strategy of buying 100% of all foodstuffs, goods and services from local companies where possible;

The resort benefited from the integration of an ‘Ecological Vision’ which reflected environmental, cultural and economic sustainability;

The resultant brief’s goals, aims aligned with the principles of BPDS providing an opportunity to undertake an internationally recognised independent third party benchmarking and certification assessment.

Overview

The Developer has responded to the demand for tourism to be managed in a sustainable manner and that developments are measured in terms of their impacts and eventual performance. Without the ensuing data, critical planning and design, decisions can not be made with any certainty of success.

By confronting the norms of resort delivery and opening their planning and design to the scrutiny of the internationally recognized EarthCheck Building Planning and Design Standard indicated a willingness to reduce if not mitigate entirely the impacts of development.

The Promoter and the Developer have therefore challenged ‘business as usual’ process norms by recognizing that sustainable agendas require considerable inputs to a development.

The Development has achieved a high rating assessment due in part to the Developer implementing an innovative delivery strategy and by their long term commitment to the Development. This has confirmed the need for long term involvement with a resort development and the associated management processes.

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Developing appropriate environmental aspects required the integration of environmental considerations and protective measures into design and development planning.

Sharing environmental issues required constant training and education on best environmental practices. Community Support required specific environmental and sociological efforts;

Daily management of the environment required the development of an Environment Management System and implementation of consistent environmental measures.

Regular audits by an accredited expert were required to ensure monitoring of both system and environmental practices/performance.

Summary

The willingness to put forward a sustainable agenda of their own making has sought to recognise the relationships with clients, regulators, the public and suppliers.

This agenda has resulted in a more effective and sustainable development process. The approach taken has resulted in a ‘sustainable’ response to the growing leisure/active tourism based lifestyle grows in developing coastal regions.

Discussions with Alila have indicated a continuing role for assessment. This is a result of recognizing that many sustainable inputs and their impacts take place over time and may come about by adjustment to aspects of the development. The phenomenon will most likely be seen in the critical social and economic areas.

The power of a specifically developed ‘ecological performance’ document is seen throughout the resorts planning and design development ensuring compliance throughout the development in terms of delivery and quality. The enshrining of the document and the commitment of a dedicated consultant aided users and maintained an important link between the Developer, consultants, the building team, purchasers and other stakeholders.