

**The Carbon Advisory Service Ltd.**

5 Westhill Court

Millfield Lane

London N6 6JJ

office + 44(0)208 347 0800

fax + 44(0)208 347 0801

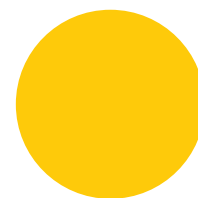
mobile UK + 44(0)7798 558 866

mobile US + 1 310 623 0369

email [dan@carbonadvisoryservice.com](mailto:dan@carbonadvisoryservice.com)

## **Six Senses Resorts and Spas Sustainability Proposal**

by The Carbon Advisory Service, May 2009



## Proposal Content

### Overall

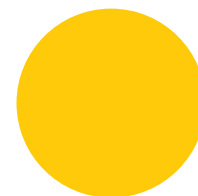
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## Overall

### 1. General

This proposal is for consultancy services relating to energy, water and waste for The Six Senses Group, as well as a client awareness strategy. It is offered as a draft for discussion.

Our proposals generally have five phases:

- i) Greenhouse Gas (GHG) Assessment
- ii) Concept Appraisal
- iii) Sketch Design
- iv) Scheme Design
- v) Detailed Design or Concept Guardian

For an explanation of the GHG Assessment, please refer to section 2. The other phases are summarised below, but the precise definitions for all but Concept Guardian are published by the Association of Consulting and Engineering, which we will forward to you separately.

**Concept Appraisal** This is a report containing analysis, thermal modelling and a review of technologies. The purpose is to make a clear recommendation to you about how to best proceed. Your decision will inform the design phase.

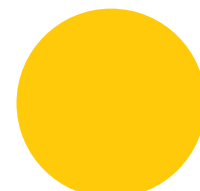
**Sketch Design** In this phase we prepare single-line schematics and diagrams sufficient to indicate the design intent and principles. Plant and equipment will be provisionally sized and laid out.

**Scheme Design** In this phase we prepare single-line layout drawings and co-ordinate with your architect to finalise key design decisions such as, location and size of plantrooms, services distribution zones, principal routes, and overall engineering strategies.

Depending upon the project, it is sometimes possible to combine sketch and scheme design into a single phase.

**Detailed Design** In this phase we prepare layout drawings, critical sections, co-ordinate with your architect, size pipes, and specify equipment and workmanship. The purpose of this phase is to allow tenders to be sought based on unambiguous requirements, but it also provides a high level of design detail and sufficient information to allow the architectural design to be finished. These drawings and specifications will also form the basis of the contract with your installers.

These drawings purposely stop short of being installation drawings. Installation drawings are the drawings used on site by the tradesmen. Under normal consultancy duties, installation drawings are prepared by the Contractor (although based on the Consultant's drawings) and show supports, brackets, final connection details and precise dimensions. Sometimes they are just re-badged Consultant's drawings, but this subtle difference stops the Contractor downing tools and claiming a delay every time a site condition is not exactly as expected.

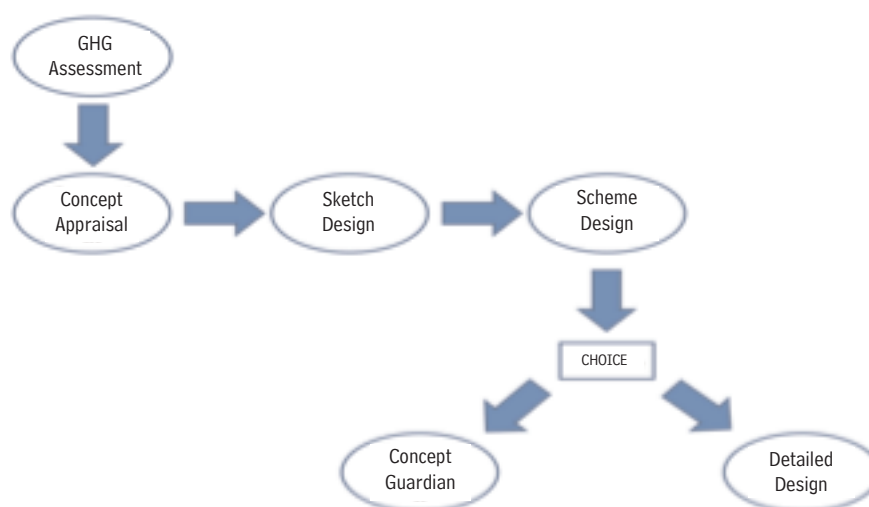


**Concept Guardian** If you prefer to appoint local consultants for your detailed design, then we recommend that you appoint us as Concept Guardian. This role is not described by the Association of Consulting and Engineering, but is quite common.

Under such an appointment we would make sure that the detailed design consultants and installers remain faithful to the agreed concept and do not revert to business-as-usual or an easier, less effective, scheme.

Experience tells us that without vigilance, the concept is at risk through detailed design, procurement, installation and commissioning. The appointment of Concept Guardian is best made after the completion of Sketch or Scheme Design.

*Design Process – allows choice for detailed design phase (below).*



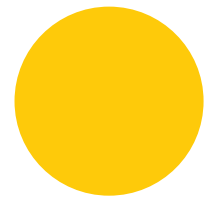
## 2. Six Senses Carbon Assessment

Now that Six Senses has committed to a Carbon-Neutral Future, the logical next step is to establish how much carbon is emitted and from where. There are agreed protocols for doing this; The Carbon Advisory Service uses 'The Greenhouse Gas Protocol' developed by the World Business Council for Sustainable Development and the World Resources Institute. This provides a logical and auditable process to account for all Greenhouse Gas (GHG) emissions from all of your business activities.

The process is designed to appeal to business decision-makers with a format similar to cost accounting, and the analogy is a good one. You wouldn't set about reducing business costs without knowing where you spend the most money – so why would you with GHGs? Once you have your GHG balance sheet you can start setting priorities for achieving reductions.

We estimate that your biggest source of GHG of emissions arises from energy used in your buildings, followed by construction, transport and finally materials/waste. The priorities are set by the hierarchy – both in terms of the auditing stage and subsequent mediation measures.

We understand that you have already undertaken assessments, in which case we propose to review the assessments that you have done, generate a group-wide summary, and comment on their completeness and suitability. For this service we propose a fee of £5,000.



Should it be necessary for us to undertake new assessments, we propose the following fee structure:

- First or only resort assessment, £3,600
- Subsequent resort assessments, £1,800 each
- Core business, £5,400

For the whole Group with 14 resorts this equates to £32,400.

### 3. Group-Wide Sustainability Strategy

Having established the GHG emissions and sources, this stage is to prepare a plan for taking Six Senses to its Carbon Neutral goal. The strategy will include policies and guidance on:

- Site-wide energy masterplans
- Building design, especially energy-in-use and embodied energy
- Construction
- Procurement policies, especially with regard to waste and sustainable sources
- Site operation
- Guest engagement
- Refurbishment
- Life-cycle planning

We propose a fee of £40,000 for the strategy, excluding on-going guest engagement (e.g. websites, etc.)

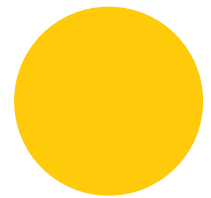
### 4. Soneva Kiri

This project is already well advanced, so options are now reduced, however we would recommend the following scope of services:

- i. Investigate reason for high cooling loads for displacement (low level supply) air-conditioning systems and recommend corrective action (£5,000)
- ii. Investigate the merits and feasibility of a bamboo biomass CHP plant (£9,000)
- iii. Estimate the benefit of simple demand-side reductions, such as LED lamps, master light switches, refrigerant gas leak monitoring, etc. (£4,000)
- iv. Consider feasibility and implications of rainwater harvesting (£3,000)
- v. Consider feasibility and implications of integrating a biogas digester and / or reed bed sewage filtration (£3,000)

Because this project is due to be completed within the next few months, we have purposely avoided options which are very disruptive to the current scheme, such as site-wide cooling options (e.g. evaporative cooling).

For all of the above, we propose a fee of £24,000



## 5. Saigon, Vietnam

150 keys, \$50m build cost

We propose to explore a full range of site-wide supply and demand strategies, including:

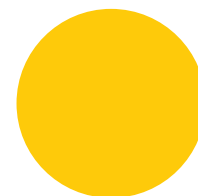
- Biochar
- Site-wide evaporative cooling
- Water thermal stores and structurally embedded coils. This will involve complex thermal modelling
- Night-time sky radiant cooling
- Bamboo CHP/tri-generation
- Chilled beams with drip trays
- Solar desiccant dehumidification
- Solar-thermal hot water
- Photo-voltaics
- Concentrated Solar Power
- Demand-side energy reductions
- Embodied energy
- Rain water harvesting
- Biogas and / or reed bed sewage water treatment

### Feasibility Report with Recommendations

The above options will be appraised in a detailed report with all necessary thermal modelling. The report will recommend a comprehensive selection of technologies for an integrated, site-wide, energy, water and waste strategy. For this service we propose a fee of £40,000.

### Detailed design: £neg

We propose to negotiate the detailed design fee once the final options are chosen. As a guide, our fee is likely to be around 1.5 percent of the total project build cost. However, we would calculate our fees on the basis of estimated hours and not on a percentage. Our fees will be lower where suppliers provide turnkey packages, as may be the case, for instance, with a solar farm.



**Concept Guardian** As an alternative to providing a detailed design, we can provide a Concept Guardian role for the building services and energy strategy, allowing you to appoint local consultants under our direction. Under this appointment, our scope of services would be as follows:

- Advise the Architect on envelop design, including thermal modelling and embodied energy calculations
- Produce energy, water and waste sketch design supported by calculations and thermal modelling
- Assist with the appointment of local building services consultants, including the “Request for Proposal” documents, appointment terms and interviews
- Act as your client representative to the Consultants
- Advise on performance against fee drawdown schedules
- Quality-check designs
- Monitor design progress
- Ensure design concept is maintained through design, construction and commissioning phases

We propose negotiating our fee after completion of the feasibility phase; however as a guide we propose a fee of 0.3 percent of total project build cost. Based on a \$50m build cost and an exchange rate of 1.5 USD to 1.0 GBP, our fee would be £100,000.

The percentage figure is only a guide as we calculate our fees from an estimation of the time we believe we will spend.

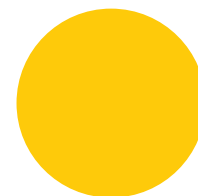
## **6. Phu Quoc, Vietnam**

150 keys

Proposal as for Saigon.

## **7. Salt Cay, Turks and Caisos**

Proposal as for Saigon, plus detailed wind analysis to check requirement for wind turbines and look for alternatives, such as wave, solar and micro-generation.



## 8. 88 St. James Street, London, UK

We propose a design process in accordance with the RIBA (Royal Institute of British Architects) Plan of Works, incorporating planning advice relating to energy efficiency, feasibility report, sketch design, scheme design, tender documents, contract documents, and construction phase consultancy duties, all in accordance with the ACE (Association of Consultancy and Engineering) standard scope and duties.

Technologies we would consider that are relevant to a central London development are:

- Ground-coupled heat pump heating and cooling
- Evaporative cooling
- Distributed micro mechanical ventilation with heat reclaim and “free” cooling
- Demand fresh air ventilation (based on air quality sensing)
- Low energy lighting
- Rainwater harvesting
- Grey water recycling
- Waste recycling strategy
- Sustainable construction specification

The analysis will include some detailed thermal modelling.

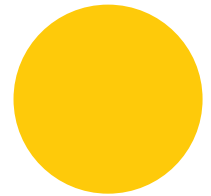
For this scope of service, we propose a fee of 1.5 percent of total project build cost.

As an alternative to full duties described above, we would offer abridged duties in which we take the energy, water and waste scheme from inception, through planning, to the end of scheme design. After which we would offer the role of Concept Guardian. The Concept Guardian role would include:

- Embodied energy calculations and life-cycle analysis
- Assist with the appointment of building services consultants, including the “Request for Proposal” documents, appointment terms and interviews
- Act as your client representative to the Consultants
- Advise on performance against fee drawdown schedules
- Quality-check designs
- Monitor design progress
- Ensure design concept is maintained through design, construction and commissioning phases

For this abridged scope of work we propose a fee of 0.3 percent of total project build cost.





### 1. General

This proposal is for consultancy services relating to energy, water and waste for Six Senses, Soneva Fushi. It is offered as a draft for discussion.

The proposed design process has four phases:

- i) Concept Appraisal
- ii) Sketch Design
- iii) Scheme Design
- iv) Detailed Design or Concept Guardian

Each phase is summarised below, but the precise definitions for all but Concept Guardian are published by the Association of Consulting and Engineering, which we will forward to you separately.

#### Concept Appraisal

This is a report containing analysis, thermal modelling and a review of technologies. The purpose is to make a clear recommendation to you about how to best proceed. Your decision will inform the design phase.

#### Sketch Design

In this phase we prepare single-line schematics and diagrams sufficient to indicate the design intent and principles. Plant and equipment will be provisionally sized and laid out.

#### Scheme Design

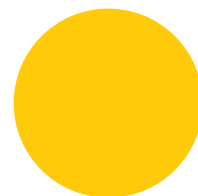
In this phase we prepare single-line layout drawings and co-ordinate with your architect to finalise key design decisions such as, location and size of plantrooms, services distribution zones, principal routes, and overall engineering strategies.

Depending upon the project, it is sometimes possible to combine sketch and scheme design into a single phase.

#### Detailed Design

In this phase we prepare layout drawings, critical sections, co-ordinate with your architect, size pipes, and specify equipment and workmanship. The purpose of this phase is to allow tenders to be sought based on unambiguous requirements, but it also provides a high level of design detail and sufficient information to allow the architectural design to be finished. These drawings and specifications will also form part of the Contract between you and your installers, so that there is a clear understanding of their contractual commitments and warranties.

These drawings purposely stop short of being installation drawings. Installation drawings are the drawings used on site by the tradesmen. Under normal consultancy duties, installation drawings are prepared by the Contractor (although based on the Consultant's drawings) and show supports, brackets, final connection details and precise dimensions. Sometimes they are just re-badged Consultant's drawings, but this subtle difference stops the Contractor downing tools and claiming a delay every time a site condition is not exactly as expected.



## Concept Guardian

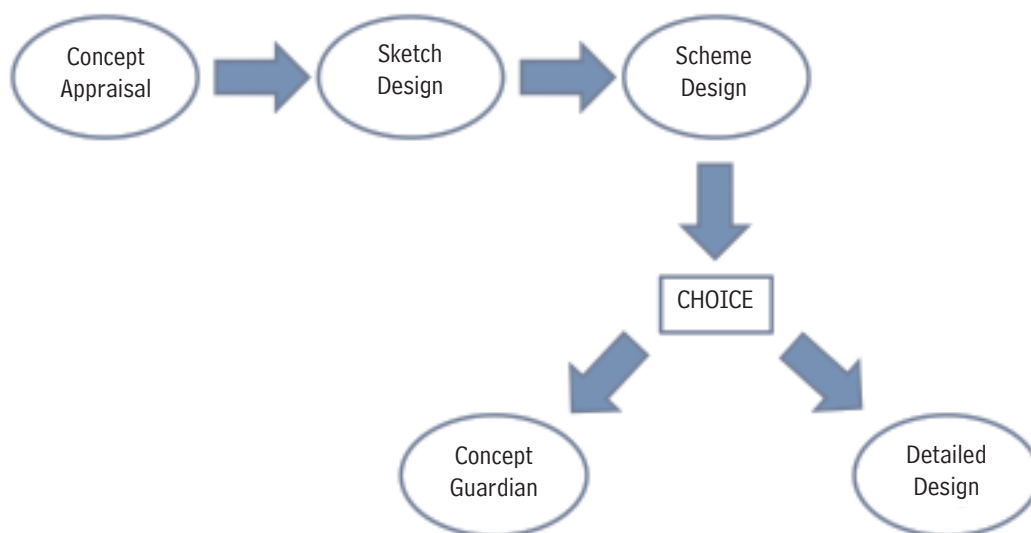
If you prefer to appoint local consultants for your detailed design, then we recommend that you appoint us as Concept Guardian. This role is not described by the Association of Consulting and Engineering, but is quite common.

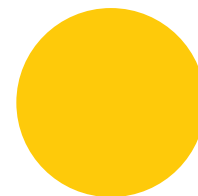
Under such an appointment we would make sure that the detailed design consultants and installers remain faithful to the agreed concept and do not revert to business-as-usual or an easier, less effective, scheme.

Experience tells us that without vigilance, the concept is at risk through detailed design, procurement, installation and commissioning.

The appointment of Concept Guardian is best made after the completion of Sketch or Scheme Design.

*Design Process – allows choice for detailed design phase (below).*





## 2. Soneva Fushi Carbon-Neutral Strategy

This particular resort is the first of the existing resorts to be made Carbon Neutral. Currently a number of options have been proposed, from simple demand-side reductions to large scale site-wide supply strategies. It is important to choose those options that best complement each other to achieve a fully integrated, coherent, overall site-wide solution.

We propose the following scope of service, the first two items are outside the design process described in section 1.

Phase: *Seawater*

- i. Assist with the re-design of the deep seawater pipeline, including the sizing and selection of chillers and pumps, design, specifications, Tender and Contract documents, answering Contractors' queries, reviewing Contractors' submittals, witnessing commissioning, and final project sign-off

Phase: *DHW*

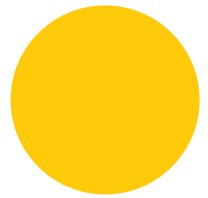
- ii. Site-wide Domestic Hot Water system design with extended circulation loops, use of waste heat, phased implementation and automatic balancing method

Phase: *Concept Appraisal*

- iii. Integrating the biochar system into the overall energy, waste and agricultural strategy
- iv. Integrating a biogas digester and/or reed bed filtration into the overall energy, waste and agricultural strategy
- v. Appraising the merits of supply-side options, such as concentrated solar power, PV and biomass CHP
- vi. Sizing the bamboo farm
- vii. Rainwater and grey water harvesting
- viii. Appraising the benefits of demand-side efficiencies, such as the use of LED replacements for tungsten lamps
- ix. Recommending an optimised and integrated overall site-wide energy, water and waste strategy
- x. Demonstrating Carbon Neutrality
- xi. Building thermal modelling

Phase: *Detailed Design*

- xii. Preparing detailed designs, Tender and Contract documents, answering Contractors' queries, reviewing Contractors' submittals, witnessing commissioning, and final project sign-off

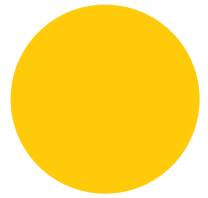


We propose the following fee breakdown:

- Deep seawater design, including absorption chillers, etc. (item i): £25,000
- Domestic Hot Water design (item ii): £20,000
- Concept appraisal, reports and recommendations (items iii to xi): £20,000
- Detailed design of site-wide strategy (item ix): £neg

We propose to negotiate this once the final options are chosen. As a guide, our fee is likely to be around six percent of the Contract value. However, we would calculate our fees on the basis of estimated hours and not on a percentage. Our fees will be lower where suppliers provide turnkey packages, as may be the case, for instance, with a solar farm. Put alternatively, we will charge fees only for the systems that we are designing.

Alternatively, see Concept Guardian on the following page.



### Concept Guardian

As an alternative to providing a detailed design for the site-wide strategy, we can provide a Concept Guardian role for the building services and energy strategy, allowing you to appoint local consultants under our direction. Under this appointment, our scope of services would be as follows:

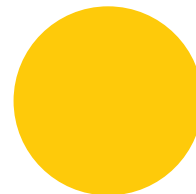
- Produce a sketch design supported by calculations and thermal modelling
- Assist with the appointment of local building services consultants, including the “Request for Proposal” documents, appointment terms and interviews
- Act as your client representative to the Consultants
- Advise on performance against fee drawdown schedules
- Quality-check designs
- Monitor design progress
- Ensure design concept is maintained through design, construction and commissioning phases

We propose negotiating our fee after completion of the feasibility phase; however as a guide we propose a fee of 0.3 percent of total project build cost excluding site visits.

The percentage figure is only a guide as we calculate our fees from an estimation of the time we believe we will spend.

### 3. Terms and Conditions

- i. All fees are exclusive of VAT at 15% (non-UK projects do not charge VAT)
- ii. All fees are exclusive of accommodation costs, sustenance and travel expenses
- iii. Fees are due within 30 days of invoice



## Client Awareness

### 1. Promoting Sustainable Living

**Introduction** In accordance with The Six Senses Group's objectives of achieving low carbon sustainable systems throughout their business, the Carbon Advisory Service (CAS) proposes a customer awareness initiative to promote lifestyles guided by sound social and environmental principles and practices. CAS can provide the platform from which this strategy can be implemented in the form of ongoing communication and direct customer engagement.

**Working Structure** As previously discussed CAS would partner The Six Senses Group to provide this service to The Six Senses Group's customers. The primary aspects of this service would include development of branding and communication around this initiative and providing insightful information and advice to those customers interested.

From this point clients may become interested in engaging in the full Private Lifestyle Carbon Emissions Reduction Service. Due to the uncertainty of the levels of interest of such a service; it is suggested that this be a co-branded partnership between the two organisations. In that way few upfront costs are incurred by each organisation, but the platform is set to develop as people begin to show interest.

In these cases the client would receive a reduced quote and The Six Senses Group, being an 'introducer', would be compensated on an agreed percentage of the invoice.

CAS could also offer a dedicated white label service, but this would have a budget implications as we would have to hire in people so as to set up this service. These budget implications would have to be further discussed if this option was chosen.

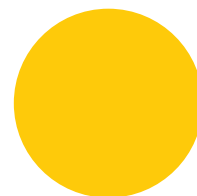
**Marketing** In terms of marketing material CAS would be actively involved in assisting The Six Senses Group to develop informative and intriguing literature which can be used in brochures and for web based purposes.

In terms of the website, bi-directional link is recommended, with approved information on each of the organisation's sites about this initiative and the services provided.

**Services Provided to The Six Senses Group Customers** Once engaged with CAS the customer would be offered a full carbon assessment of their home and lifestyle, including a full report on their carbon footprint and advice on how to address this. CAS would also offer carbon reductions and energy efficiency advice, as well as suggestions of various offset projects for the remaining unavoidable emissions. This process is carried out in a number of phases of which all are optional.

These services can be transferred into a business environment too, whether it is a small home based set-up or a large corporation. Below is a description of products and services covered in the personal lifestyle solution.

It is recommended that The Six Senses Group staff are encouraged to become familiar with these processes, this would involve training for all staff on energy efficiency and carbon reduction processes. It is also recommended that the management staff have carbon emissions assessments done on their lifestyle to provide solutions for emissions reductions on a personal level.



## 2. Personal Products & Services

The information below can be given to customers of The Six Senses Group.

### Climate Change Impact Assessment and Reduction

The assessment of your carbon footprint is the first essential step that you can take towards reduction.

It is a simple procedure which clearly defines how much carbon dioxide you are responsible for.

We will analyse your energy usage and travel habits from readily available utility bills, travel itineraries and other records. We will work directly with your support staff to make this a simple process.

This assessment of the carbon impact of your everyday activities uses well recognised scientific methodologies.

You will receive a full assessment of your carbon footprint. This will provide a benchmark against which to measure future reductions.

We will then suggest achievable carbon reduction strategies taking into account your core lifestyle habits.

We will also deliver and implement solutions based on the latest developments in energy efficiency, eco building and low carbon transport.

Some unavoidable emissions will remain, this is called your core footprint. We can help you balance these against the highest standard in carbon-mitigation projects in renewable energy and forestry. These have the added advantage of safeguarding biodiversity and of benefiting communities in developing countries. Renewable energy projects have the further advantage of lessening our dependence on the fossil fuel economy.

### Low Carbon Building Solutions

Using the latest developments in technology, we will advise on comprehensive low carbon building solutions for new-builds and renovation projects.

This is achieved by optimizing the design and exploiting the individual characteristics of each building in its unique location and with its particular circumstances.

Our experts will integrate ideas from architects, designers and engineers to deliver the most appropriate renewable energy solutions, including passive-solar, solar-thermal, heat pumps, combined heat and power, evaporative cooling, photovoltaics and solar-powered air conditioning.

### Low Carbon Transport Solutions

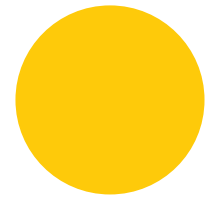
Globally, transport makes up 14 per cent of world CO<sub>2</sub> emissions.

We can help you choose the most fuel efficient engine in its class which will substantially reduce your CO<sub>2</sub> emissions and potentially save 25 per cent on fuel costs.

We can arrange the conversion of your diesel car to run on pure plant oil (PPO). This can potentially reduce your CO<sub>2</sub> impact by 40 per cent without effecting performance. Similarly, we can arrange for the conversion of your marine engine to reduce emissions from your yacht.

We can guide you through the choice of alternatives to petrol and diesel vehicles, ranging from electric to hybrid technologies. We will advise you on emerging hydrogen and fuel cell developments as they come on stream.

We can advise you on current, global vehicle emission standards and related taxation.



## **Procurement & Fit Out Solutions**

We can advise you on state-of-the-art video conferencing so that you only need attend those meetings that require that personal touch.

Electrical appliances in the home and office produce large amounts of energy. There is particular concern about those left on standby.

We offer advice on a range of the latest developments such as motion sensor technology and advise on the best low-rated appliances and energy sources.

The heat produced by such appliances can be calculated into your home or office heating or cooling systems.

These improvements and energy savings can be achieved with no loss of performance or function.

There is increasing concern about embedded carbon in building materials and our experts will advise and help you source the most sustainable products.

We are able to provide detailed information on eco products such as natural insulation and solvent-free paints and adhesives.

## **Organic Food**

The production and transportation of food is generally a significant source of CO<sub>2</sub> in the environment.

Therefore the thoughtful sourcing of food can have a significant impact on reducing your carbon footprint. Locally produced organic food is the healthiest option as well as being the best option to reduce food miles.

We can source organic food from accredited suppliers or growers and arrange for it to be delivered directly to your home.

The fact that produce grown by sustainable methods in developing countries may have a lower carbon impact than food grown nearer home in heated greenhouses will be taken into account.

## **Garden & Landscape**

Your concern about your carbon footprint means you are aware of the unacceptable stresses on the natural world.

This awareness means you may be thinking of growing your own organic produce or developing your immediate environment/garden in a sustainable way. This will have the added advantage of enhancing family life.

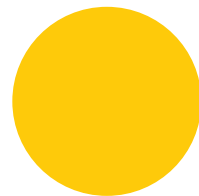
We will provide landscape expertise to assist you in creating features such as fabulous vegetable garden, a natural swimming pool, wildlife habitats and green roofs.

We are also able to supply grey water systems and rainwater storage for irrigation as well as advising on the sinking of boreholes to lessen the need to use mains water.

This engagement with the land and the natural world will enhance your knowledge and may be the most enjoyable aspect of reducing your carbon emissions.

We aim to convert your carbon footprint into a muddy footprint!





### 3. Advisory Services

#### Carbon Advice

The CAS team combines many years of experience in the evolving issues of global warming and the study of mitigation at all levels from personal, industrial and government policy. With this in mind CAS is in a good position to offer an advisory service to The Six Senses Group to assist with minimizing their carbon emissions and achieving an environmentally sustainable medium.

At your request CAS would be held on a retainer by The Six Senses Group for half a day per month. However it is suggested that this be reviewed after six months, as a day might work out to be a more effective use of time.

The cost of this would be determined by CAS' daily rate of £1,800. The monthly fee in this instance would be £900.