Introduction

Public awareness to the issues relating to the World's environment, the threat of climate change and need to find more sustainable sources of energy has increased over the past decade.

The challenge that now exists is to ensure that all people throughout the world are able to satisfy their basic needs, while making sure that future generations can enjoy the same quality of life.

National Approach

The UK has committed to reducing the levels of carbon emission the UK produces and in turn the responsibility for achieving these targets is shared between national Government, local politicians, businesses and individuals across the country.

The Department for the Environment, Farming and Rural Affairs (Defra) are proposing to introduce a revised set of indicators to support the Government's commitment to sustainable development, which may be taken forward to influence environmental strategies at a local level.

Following an initial round of consultation, the indicators receiving most support, were:

- Waste
- Renewable Energy
- Greenhouse gas emissions
- Household waste per person
- Household energy use
- Emissions of air pollutants
- Local environment quality
- Employment
- River quality
- CO_2 emissions by end user

Further information is available here.

A greener, cleaner Island

The concept of 'Eco Island' embraces the desire for the Isle of Wight to become a place that values the resources available and engages its residents to take a collective responsibility for their impact on the environment.

The concept has been incorporated into the Isle of Wight's Sustainable Community Strategy which runs until 2020, and which looks to improve the social, economic and environmental sustainability of the Island.

In its support of the Eco Island ambition the council is:

- Supporting carbon reduction measures in existing housing and its own buildings
- Establishing the Island as a major centre for tidal energy
- Supporting skills development so that local people can take advantage of the green economy
- Working with academic institutions to develop appropriate low carbon solutions
- Working with other authorities in the Solent region to provide an industrial base and support structure for the renewable energy industry.

ecoisland
The hub of a sustainable future

Local community groups are also heavily involved in delivering Eco Island and one, the Eco Island Partnership Community Interest Company has been set up specifically for this purpose.

Carbon Dioxide and other emissions

The significance of Carbon dioxide emissions are their impact on the earth's atmosphere, acting as a 'greenhouse gas' and contributing to the rise in global warming and climate change.

Global Warming – refers to the rising temperature of the earth's atmosphere and oceans. The Earth's surface has warmed by more than 0.75^{o}C around 1900, with much of this warming having occurred in the past 50 years.

Climate change – is used to describe a significant and lasting change in the weather patterns experienced, typically decades or longer, and is often associated with the human specific impacts that have contributes to Global Warming and contributing to climate change.

The climate in Britain is changing with more unpredictable weather patterns but which may also provide for hotter, drier summers and warmer wetter winters, impacting on all aspects of the environment in a region.

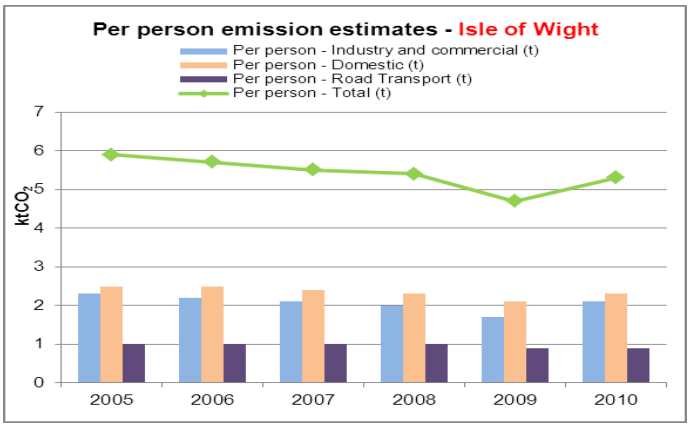
Rising sea levels may also increase the risk for flooding, threatening our coastal towns and the potential for flash flooding. Current predictions suggest a rise of approximately one metre in the next 100 years.

The increased levels of carbon dioxide that are now being seen, can be attributed to the burning of carbon based materials such as coal which in turn are used to generate electricity, and oil refined to produce a range of petro-carbon chemicals including those used to run cars, lorries and aircraft.

Referring to the following graph, the island's carbon emissions per person were reported to have decreased from 6.0 tonnes CO2 (tCO2) in 2005, to 5.6 tonnes CO2 in 2007.

The introduction of Eco Island helped to further reduce these levels to 4.9 tonnes CO2 per person by 2009, but in 2010 (5.3 tCO2) levels rose close to the level recorded in 2008 (5.4 tCO2).

Much of this increase was due to emissions associated with the increased gas use in the Domestic and Industry and Commerce sectors, suggesting that this outcome was due in part to the exceptionally cold winter experienced that year.



Source: Department for Energy and Climate Change (DECC)

Council Carbon emissions – A new Carbon Management Plan was introduced to cover the period 2010-15 together with the appointment of an Energy & Carbon Manager to lead the implementation of carbon reduction projects. The Plan demonstrates how the Council will reduce carbon emissions from its buildings and operations assisting with fulfilling its commitment to the Nottingham Declaration on Climate Change which the authority signed up to in 2007. During 2010-11, the council's carbon emissions fell to 19,722 tCO_2, representing a fall of 5% during the first year, and in 2011-12 the emissions fell to 16,208 tCO_2, representing a 21% reduction from the baseline year. This is ahead of the target of 6% annual reductions..

The Highways Maintenance PFI Team developed carbon and water tools which required bidders to quantify the carbon and water footprints of their activities over the full 25 year period of the contract. These may have been the first of their kind for a highways contract and the results were factored into the assessment of the bids.
The carbon and water emissions will be written into the contract of the winning bidder, so they are expected to be delivered.

There are various ways in which each of us can help to further reduce the levels of Carbon Dioxide that are emitted into our atmosphere. Most basic to these is your choice for transport when choosing how to get around the Island, either for work or for pleasure:

Car Share – A simple way to reduce the emissions cars produce while retaining the flexibility and independence our cars provide getting us to and from work is to consider sharing a car with a colleague or someone who is travelling to the same destination.
Public Transport – There are a variety of options for using public transport to and from and across the Island depending on the destination point needing to be made. Use of a bus helps to cut down on the levels of traffic our roads need to cope with, while reducing the levels of emission into the atmosphere.
Walking and Cycling – Walking and cycling both offer some health benefits whilst being the kindest alternatives for our environment. They also offer opportunities to explore areas of the Island's natural environment not accessible by other forms of transport.

Household energy use

Improving the energy efficiency of our homes reduces our dependency on fossil fuels and thereby reduces the environmental impact from the greenhouse gases produced. It also brings benefits in the form of reducing household bills incurred to pay for the gas and electricity used.

Again there is some positive news in respect of the levels of energy consumption for domestic properties on the Island, with the overall totals having fallen from 1,239.5 gigawatt/hours (GWh) in 2005 to 1066.4 GWh by 2009. The majority of this reduction appears to have been found in the domestic use of gas and electricity.

Total final energy consumption for the Island's domestic sector. (GWh)

Isle of Wight	Coal	Manufactured fuels	Petroleum products	Natural Gas	Electricity	Total
2005	5.0	9.3	57.8	853.0	314.4	1,239.5
2006	5.8	6.9	60.8	838.7	299.2	1,211.4
2007	7.7	6.1	53.8	816.9	289.2	1,173.7
2008	8.7	5.8	57.1	778.6	287.5	1,137.8
2009	7.9	6.5	57.3	707.9	286.8	1,066.4

Source: DECC

Chale Low Carbon Community - The Island currently hosts one of the Phase 1 Low Carbon Communities Challenge projects, where energy efficiency improvements and renewable energy systems on houses have been seen to dramatically reduce fuel bills for residents who had been suffering from fuel poverty.

Some simple changes to our individual lifestyles can help to further reduce the levels of energy that we consume in our homes:

- Turning off any electrical equipment that isn't being used, including lights.
- Use low energy light bulbs (eg, LED *(light emitting diode)*) where possible.
- Use a shower rather than take baths.
- Only boil enough water for your needs.
- Filling the dishwasher and washing machine to capacity.
- Getting the loft and cavity walls insulated.

In addition, and where there is the ability to meet the financial commitment required, there are other options available for individual households to invest in, in order to further reduce their 'carbon footprint'.

These include:

- Solar Panels
- Wind turbines
- Wood/bio fuel heating
- Ground source heat pumps

Green Deal – included as a part of the Energy Act 2011, this is intended to help reduce carbon emissions and revolutionise the energy efficiency of British properties.

Produced by IWC, Business Effectiveness Unit
September 2012

The deal will start in January 2013 and is intended to enable households, businesses and community groups at a local level to improve the energy efficiency of their properties without having to find the upfront capital investment. Alongside the Green Deal there will be an Energy Company Obligation (ECO) to support energy efficiency improvements for vulnerable and low-income households, and 'hard-to-treat' properties, for example, those with solid walls.

In the short term, the national Warm Front scheme will still be available. Intended for people on certain income-related benefits, a package of heating and insulation measures are available up to a limit of £3,500, or £6,000 for homes not connected to mains gas.

Also coming soon are Smart meters. These represent a step forward in the way households can monitor their use of gas and electricity through a display in the home, helping to cut energy waste and save money. At the same time usage can be provided direct to suppliers, reducing the need for the home to be accessed and a meter to be read, leading to more accurate billing.

footprint trust
energy saving trust
money saving expert – free solar panels

Future housing development

Approximately 50% of the UK's carbon dioxide emissions are linked back to buildings, of which over 27% originate from residential housing.
(Source: Energy Saving Trust)

The Government has set targets for new build housing to be zero carbon from 2016, which will require developers and design teams to become more innovative in their approach and techniques applied with the properties to be built. The Council will also have a role in its approach to planning regulation and monitoring the construction of developments.

Waitrose – The new Waitrose store at East Cowes has installed a biomass-fired tri-generation plant which provides power, heating and cooling to the store. It will reduce carbon emissions by over 1,000 tonnes per year and, through providing heat to neighbouring buildings, will become the first carbon negative store in the UK.

Cowes Enterprise College – The new, low-energy building due to open in September 2012, will be heated by a 130kW biomass boiler.

Renewable energy alternatives

The need to find alternative methods for creating energy for the UK, are two-fold. There are the ecological benefits gained through sustainable energy sources that reduce the release of greenhouse gases (mainly carbon dioxide and methane) into our atmosphere and the potential diversification of energy sources. This will in turn reduce the dependency on imported fuels, which may help to reduce the fluctuation in energy prices that we all experience.

Onshore/Offshore Wind Turbines – The former often brings with it controversy and criticism, while the latter is proving to be an area that is experiencing continued expansion around the UK's coastline. The use of wind to provide power has been applied in this country for decades and remains an energy source that is 'clean' and accessible.

Tidal Energy – As an Island, we have a ready supply of power from the tidal flows that surround us. Tidal energy has the advantage of being predictable and providing a near constant supply.

Solent Ocean Energy Centre – The Council is leading the development of the Solent Ocean Energy Centre (SOEC) as a prototype Marine Energy Park, which provides the capacity for testing, development and deployment of Marine Current Energy Converters (MCECs) close to support infrastructure and energy demand.

It will provide facilities for all development stages and will help to commercialise the industry and create a manufacturing sector within the Solent sub-region. A detailed development programme has been worked up for the testing facilities, based on the current and emerging requirements of the tidal energy industry, which has been closely consulted.

Biomass – The term refers to the use of materials that were of recent biological origin, either plant or animal to produce bioenergy. Biomass is commonly used to produce heat but can also make steam to drive a turbine. Units can range from household scale through to large electricity generating stations.

Pan Meadows - The Council's stringent sustainability criteria for the Pan Meadows development has seen the installation of a biomass district heating system serving all new properties and with the potential to supply renewable heat to adjacent buildings.

Solar Farms – These comprise large areas covered with multiple panels that optimise the capture of light.

Geothermal – The principal employed for this form of energy production is to tap into the heat that is held in the earth below us. There are a range of approaches to achieving this from a domestic arrangement in a way that is similar to the transfer of energy used in a refrigerator, (heat pump), through to more sophisticated arrangements that involve bore holes and the transfer of heat at levels much deeper into the earth's core such as at Southampton which contributes to the city's heat network.

Energy from waste – This can be achieved in a variety of ways, from the more straightforward process of burning biomass such as wood waste and other materials with the resultant heat/gas used to warm homes or create electricity, to the capture and burning of methane gas released from decomposing waste on a landfill site.

Another method is to use waste such as sewage sludge and waste food and allow microorganisms to break the materials down to produce biogas (a mix of methane and carbon dioxide). This gas can be used to create energy.

The need to reduce, reuse and recycle

A further way in which we can all help to maintain our environment is to re-use and recycle wherever possible

Locally, the Island has limited scope for landfill and needs to reduce the levels of household and business waste it sends to this facility.

New waste collection arrangements were introduced from January 2012 intended to enable all households across the Island to deal with their waste responsibly by recycling as much as possible.

	% of household waste sent for reuse, recycling & composting	% of municipal waste recycled	Tonnes of household waste	Tonnes of municipal waste
Apr-12	45.34	64.63	5499.03	5867.21
May-12	42.70	64.82	5840.36	6191.88
Jun-12	50.73	57.26	5687.56	5996.88
Jul-12	47.45	54.77	5816.46	6142.04

Source: Isle of Wight Council

Recent figures for waste collection demonstrate that the levels of waste being collected had risen between June and July, which may in part be due to the annual increase in numbers of people resident on the Island during the summer season, associated with tourists and holiday makers.

While there had been a degree of fluctuation seen in the levels of waste being recycled over the same period these results are significantly better than those recorded in the same period last year (2011).

Despite the various methods we might all employ to manage waste efficiently and sustainably, the best way of dealing with waste is to ***simply create less*** and in that way reduce the amount of material that needs to be reprocessed or disposed of.

The use of recycled materials in the manufacturing process uses substantially less energy, and helps to conserve depleting natural resources while protecting the environment by reducing the need for further mining and other destruction of natural habitat.

- **Recycling is good**, but still uses energy to turn something back into a useful product.
- **Re-using is better**, because it means that something old is being used rather than something new, with pars from such items often being used again without the use of energy to change its physical nature..
- **Reducing is best**. By using less the amount of raw material and energy needed is automatically reduced, together with the pollution that is produced.

Food Waste – As a country, we throw away 7.2 million tonnes of food and drink from our homes every year, and more than half of this food and drink could have been eaten.

Not only does this have a financial consequence for households, it has a serious environmental impact too! Wasting this food costs the average household £480 a year, rising to £680 for a family with children, the equivalent of around £50 a month.

http://england.lovefoodhatewaste.com/

Courtauld Commitment – 'a responsibility deal aimed at improving resource efficiency and reducing carbon and wider environmental impact of the grocery retail sector'

The most recent 'commitment' aims to achieve more sustainable use of resources over the entire lifecycle of products, throughout the whole supply chain. Amongst its targets are:

- A reduction in weight and increased recycling rates and increased recycling content for all grocery packaging, as appropriate
- To reduce UK household food and drink waste by 4%.

Bulky Household items
Reusing waste
Useful links

Footprint Calculator

The ecological footprint can be thought of as an indicator of:
'how much land and sea is needed to provide the energy, food and materials we use in our everyday lives, and how much land is required to absorb our waste'.

This can be extended to include the levels of electricity and gas we use, the number of miles we drive and the sources for food and other goods that we choose to buy.

In 2003 the ecological footprints for the average Isle of Wight resident was found to be 5.10 global hectares (gha) per person. While this compares favourably to the UK figure of 5.45 gha per person, since 1999 the island's average footprint increased by 10%, from 4.63 gha per person.

As with the UK, the island's ecological footprint exceeds the average sustainable 'earthshare' of 1.8 gha per person. This means that were everyone on the planet to 'consume' as much as the average Isle of Wight resident, over two and a half planets would be needed to sustainably support global resource consumption.

Referring to the following website, challenge how you live your life by calculating your ecological footprint, where lower is better (less environmental impact and higher is worse (with a greater environmental impact)!

Footprint calculator