

# Forecast ? - Changeable !

SOME EXAMPLES OF CLIMATE CHANGE IMPACTS AROUND THE NATIONAL TRUST







**FRONT COVER IMAGE:**

An uncertain future. Many Trust properties like West Wycombe Park are affected by storms affecting buildings and causing soil erosion, by a lower water table affecting tree health, lake level and wildlife, and by a longer growing and maintenance season. ©NTPL/Andrew Butler

Autumn is arriving later.  
©NTPL/Michael Caldwell

## INTRODUCTION

The Trust has a huge variety of interests. We manage cafes and restaurants, 320 holiday cottages, museums and art galleries, provide a base for 500,000 educational visits and 2,000 tenant farmers, access to countryside for an estimated 100 million visits per year, work for 40,000 volunteers, and employment and regeneration in rural areas. But above all we conserve places of natural beauty and of wildlife, cultural or historic interest for our members and the wider public to enjoy - over 700 miles of coastline, 250,000 ha of land, and over 300 mansions and gardens open to the public.

Managing all this is giving us a good insight into how the changing climate is already impacting on our environment and society, but also on what may be needed to adapt to that change. Also, we are learning as to how best to respond to the challenges and opportunities it presents. Better ongoing monitoring and flexibility are going to be necessary, because some elements of climate change are highly unpredictable.

This report shares some experiences so far across the Trust and outlines a suggested approach for the future. **One thing is already abundantly clear ..... there is compelling evidence that our climate has already changed significantly in recent decades and we need to cope with that, and adapt to it, as well as play our part in helping to minimise future threats to Trust interests.**

Peter Nixon, Director of Conservation, sees it like this:

*"It is clear that we are undergoing a period of rapid and accelerating climate change. This will increasingly affect all our properties. We have a duty to understand the impacts as best we can, to respond to them as effectively as possible, and to share knowledge with others.*

*We need to take account of climate change in all our decisions, especially in property management plans – to minimise detrimental impacts and take advantage of any opportunities offered. Conservation involves the careful management of change, and climate change is one of the biggest practical challenges we face."*

This is the Trust's first general climate change report. Those interested specifically in coastal change should refer to 'Shifting Shores.' Other reports will follow as our understanding of impacts, and necessary responses, develops.



## WHAT'S THE EVIDENCE OF RECENT CLIMATE CHANGE?

The UK's day to day weather is notoriously changeable, but what about the longer term trends of climate? The UK has some records going back centuries, plus much can be deduced for a longer period of our history from sources like tree rings.

While there has always been climate change **it is the pace of change which marks out the last few decades as something radically different.** We have seen big changes already in temperature and precipitation patterns - towards hotter drier summers and milder wetter winters. But we are also seeing an increased storminess and heavy rain.



### TEMPERATURE:

- The 1990s was the warmest decade in the UK since records began in the 1660s.
- 4 of the 5 warmest years on record have been in the last 10 years.
- England's record temperature - 101F [38.5 C] was in 2003.
- Mean temperatures in central England have risen by about 1 degree C since 1900 [the climatic equivalent of moving from southern England to mid France today.]
- The growing season has lengthened by about a month in central England since 1900, with the onset of Spring occurring around 2-3 weeks earlier than just 30 years ago.
- Frost occurrence has declined significantly over southern England in recent decades. The annual number of days with air frost for the "England South" region has decreased from an average of 51 in 1961-90 to 46 in 1971-2000.



### RAIN AND SNOW:

- Annual summer rainfall has fallen by around 20% since about 1900.
- Winter rainfall is greater. The 4 wettest winters in SW England since records began have all been in the last 10 years. A larger proportion of winter precipitation falls in heavy rain showers than 50 years ago.
- Many rivers reached their highest ever recorded levels in 2002.



### GALES AND STORMS:

- The UK has become twice as stormy over the last 50 years, with an increase in heavy rain showers.
- High pressures have increased on average by 3 mb and low pressures decreased by 3 mb since 1950. This results in much windier weather.



### THE SEA:

- Sea levels on average around the UK are about 10 cm higher than they were in 1900.
- Some areas, like Liverpool and North Shields, have recorded a rise of 25 cm since around 1900.
- Mean wave height [due to increased storminess] in the English Channel has increased by about 50 cm since 1962.
- UK Coastal waters have got warmer by an average of around 0.5 degrees C since 1900.

*Figures from UKCIP and Met Office.*



There is a growing occurrence of storm damage to Trust trees and woodlands. ©NTPL



Studland – climate change is contributing to increasing visitor numbers but the beach area is reducing. ©NTPL/Joe Cornish

## HOW CLIMATE CHANGE IS ALREADY AFFECTING THE TRUST

While individual weather events cannot be directly blamed on climate change – and the Boscastle flooding or a ‘mini tornado’ in the Lakes are good examples – there are various trends becoming apparent which are consistent with what the scientists and data tell us has been happening to our climate over recent years. These stories and examples from around the Trust illustrate some of the impacts, but more stories are continually emerging.

### VISITING ON THE UP:

In general we are seeing a trend of increasing visitor numbers at our free access and at pay-for-entry properties; although there is a lot of day to day variation depending on the weather. But a longer visiting season, with spring coming earlier and the onset of winter delayed, means some pay-for-entry properties opening longer to meet demand and take advantage of earlier flowering times and later autumn colour etc.

Looking at 75 of the busiest pay-for-entry properties reveals an average increase of about 30% in annual visitor numbers over the 10 years to 2003/4. While this is also due to increased membership, better marketing and maybe in some cases extra facilities, at least some of the increase is likely to be due to a trend towards warmer weather. Many properties see their annual figures increase in a good summer, **so the trend towards hotter summers is pretty well bound to increase overall visiting demand.** 2004 was a damp summer. Visitors to parks and gardens were typically down on 2003 and there was an average drop of 2.5% to our top 100 pay-for-entry properties.

Some coastal properties, like Studland Beach in Dorset are already under considerable pressure in summer as visitor numbers continue to rise, despite avoiding any direct marketing. On the plus side, extra visitors generally means more income for conservation work, but **there are increased management costs in terms of staffing and maintenance.**

Area Manager for Dorset, David Jenkins, explains some of the complexities: *“Studland is fast becoming a year round attraction, but the real pressures are felt in summer. We now need a permanent staff of 2 beach wardens, plus at the height of the season we have 10 seasonal*

*wardens and 6 car park attendants to cope with the parking problems. Services like litter collection cost us £18,000 in bags and disposal and some £45,000 if you include staff time. Toilet cleaning is costing us approximately £26,000 a year. The irony is that the beach is eroding through coastal processes and sea level rise with sand moving northward, so there’s less beach to accommodate the crowds. Our car parks and infrastructure are also threatened, and we are now actively planning for the future.”*

### SNOW FALLS

**In upland areas like the Lake District more walkers can get to the fells in milder winters because there are fewer occasions when access roads are impassable through snow and ice.**

Tourism is now a more year-round source of income to some local businesses, due to better roads, more leisure time and income etc. This means more visitors in the area in winter months.

Jim Loxham, Trust Property Manager at Coniston, has noticed significant change over the last 40 years, through his interest in mountaineering.

*“There’s no doubt that we just don’t get those regular long periods of sub-zero temperatures which transformed the Lake District mountains, or days at a time when minor roads were impassable due to ice and snow. There’s also far less snow and ice on the high peaks now. In the 1960s, 70s and 80s you could more or less guarantee snow above 2000 ft from mid December to March for winter mountaineering. The snow-line is now higher because of a rise in the freezing level and in average winter temperature. My understanding is that studies have shown that Snowdonia is experiencing the same change.”*



There is significantly less snow lying on Lake District fells than 20 - 30 years ago.

©NTPL/Joe Cornish

## RAINWATER PENETRATION INTO BUILDINGS: DRIVEN RAIN

One of the increasing trends of climate change seems to be very heavy rainstorms, and **the Trust's historic buildings are struggling to cope with the volume and power of heavy downpours.** Adapting roofs and rainwater goods can be costly, as well as very difficult to accommodate on Listed Buildings where the integrity of the building needs to be maintained. Even some newer buildings struggle to cope with what we are now seeing in rainfall

Roger Cayzer, Regional Building Manager for East of England gives Blickling as an example:

*"In recent years the external wall of the Long Gallery has suffered increasingly from moss and lichen growth. Driving rain occurs perhaps half a dozen times a year, washing off this organic matter which then blocks gutters and downpipes, causing severe damp problems as the water penetrates the walls. Thus in effect the building now has a technical defect which was not present when constructed, and this has necessitated changes to our maintenance regime."*

Hughenden, Sudbury Hall, Tyntesfield, Melford and Coughton Court are other properties that have recently suffered with very heavy rainstorms. Area Manager for Warwickshire, Mark Armstrong, reports:

*"Coughton suffered localised water penetration during a very heavy rainstorm in August 2004. Despite regular maintenance and clearing of gutters, they just couldn't cope with the power of the downpour and overflowed. The Court has fine collections of furniture and art. Potentially much of this was at risk."*

## THE NEVER-ENDING GROWING SEASON

We have seen dramatic changes in the speed with which some plants grow and in the longer, warmer growing season. This has very important implications for the Trust. **Many of our most significant gardens include important collections of tree, shrub and flower species that may find it difficult in modern climatic conditions,** whilst plants which favour a milder climate can thrive. In some cases much loved plants may have a limited future. Another big impact has

been the increased time and cost of mowing grass in amenity areas for longer periods of the year.

Property Manager at Trelissick, Chris Curtis, and Head Gardener Barry Champion have witnessed significant change in recent years.

*"We are now seeing well over 100 species in flower here at the turn of the year, and many summer flowering plants will bloom in winter alongside early flowering spring plants"* reports Barry. *"Pests and plant disease also seem to be on the increase."*

Chris identifies some of the pros and cons of climate change at Trelissick.

*"Whereas we used to open for the season in April we are now open all year so that visitors can enjoy early spring flowering. That's good for business, but we now have to cut the lawns virtually all year round in this mild Cornish climate which is time-consuming and costly. And rain now seems to come in intense bursts, so we are having to provide more hard-surfaced paths because the old loose gravel paths were regularly getting washed out."*

## WOODLAND TALES

The Trust owns and manages nearly 25,000 ha of woodland, making us the largest private woodland owner in the UK. The majority is native broadleaved, and around a third is 'ancient semi-natural', which because of its link back to the ancient wildwood is the most important for wildlife. The Trust also has more ancient trees than any other owner in Northern Europe.

Ray Hawes, Head of Forestry, notes:

*"Increasingly stormy weather and hotter, drier summers are two key elements of climate change. **The oldest and biggest native trees are the most valuable but are most affected by extreme weather conditions, particularly storms.** Not only are we seeing widespread storms like those in 1987 and 1990 across the south east, but also more of the intense localised events such as the mini tornado which hit part of the Lake District in January 2005. As well as damaging old trees, many healthy middle aged and young trees were blown down."*



Tyntesfield is another property where there has been water penetration. [SPAB/Peter Robins]



Ashridge tree damage Storms are taking their toll in Trust woods and parklands. ©NTPL/Rob Judges





The Scotch Argus – one of the species not thriving in a generally warming climate.  
©NT//Matthew Oates



Algal blooms on the lake at The Vyne.  
©NTPL/Mike Calnan

*“Changes in rainfall patterns and higher summer temperatures are also affecting tree health and their susceptibility to pests and disease. The hot, dry summer of 1976 caused the death of many beech trees; both immediately and for some years afterwards, as stressed trees succumbed to fungal attack. We don’t yet know what the full range of impacts might be on our native oaks, but it is possible that they may become less structurally sound, dropping branches more frequently, and timber quality may also suffer as a result of stress during and after extreme weather. Wetter winters may also reduce tree health as water-logging can cause root death and this will then make them more vulnerable to summer droughts.”*

### WILDLIFE: MEET THE ALIENS

**Amongst early casualties as the climate warms will be those montane [upland] species that require cold conditions. Other species from further south in the UK or in Europe may replace them, providing there is suitable space and time for them to become established. This is far from certain.**

Matthew Oates, Nature Conservation Adviser, is a Trust specialist on butterflies.

*“Butterflies are hyper-sensitive to weather and are excellent barometers of climatic change. Scientists are currently analysing the databases on British butterfly distribution and population size that were set up in the ’70s. Whereas status and distribution of species have always varied it is clear that radical changes are now occurring, with several species moving rapidly north, increased immigration, flight seasons commonly occurring 2 weeks earlier, and extra broods emerging. It’s by no means all good news, especially for our rarer species which are threatened by adverse changes in micro-climate level which may reduce breeding success. Northern and upland specialists, like Scotch Argus and Northern Brown Argus, are vanishing from large areas, especially at lower altitudes, and the undercliff on the Isle of Wight may now be eroding too rapidly for the Glanville Fritillary, which is largely dependent on the soft rock system in Trust ownership there. Watch this space!”*

### TURNING UP THE HEAT

An increasing issue of public health is exposure to additional UV which has been linked to increased skin cancer levels. Although this is connected to a different global issue – thinning of the ozone layer – it is also true that hotter summers with less cloud cover will add to the risk of sunburn, and potentially more cancers. It is up to our visitors what they expose themselves to, although the Trust can choose to provide safety information, but we do have a much clearer responsibility to our staff.

Mark Daniels, Head of Health & Safety, is aware that this is a growing risk. **“Many Trust countryside and garden staff and volunteers work outdoors, so there is an increasing health and safety issue to address in a warmer climate.** We can look at options such as ensuring hats and sunblock are available, and many properties already supply this to staff, but we might also need to think about improving awareness amongst staff and encouraging flexibility in working patterns to avoid periods of greatest risk.”

Equally of concern are some of the conditions which kitchen staff have to contend with in hot periods at Trust cafes and restaurants. Other H&S areas which need careful monitoring include incidence of ticks and Lyme Disease, increased fire risk, dehydration risk for staff and visitors, and risk of fatalities from unauthorised swimming in lakes etc.

### WATER, WATER ... BUT NOT EVERYWHERE

Whilst some Trust properties like Berrington, Springhill or Blickling have been baling out after being deluged, others have the opposite problem – a shortage of water during summer droughts. In some parts of England, like the Chilterns, low flow of rivers has been a serious issue for some years. Over-abstraction of groundwater is an important element in lower river levels, that compounds the impact of rapid run-off of winter rainfall and poor recharge with decreasing summer rainfall. Unless the coming winter is unusually wet there is a real risk of water shortage in the Summer of 2006.

The Trust has over 300 private water supplies, many of which are reliant on shallow surface sources that can dry up even in short

periods of drought. Rob Jarman, Head of Environmental Practices advises **“we shall have to be very much more aware of the value of water resources and their vulnerability to over-use as well as to contamination.** Many rural areas still depend on private water supplies where there is no mains option. In all areas, water saving measures are already essential. We can no longer think of England as a water rich area – even in the Lake District some places have run out of water in recent dry summers.”

Another trend becoming apparent is **the increasing occurrence of algal blooms on ornamental lakes.** Although the input of nutrients is a critical factor, this is also related to warming of lakes’ surface layers. Examples include The Vyne, Winkworth and Sheffield Park Garden. Sue Medway, Property Manager at Sheffield Park, comments: *“Our shallow ‘mirror’ lakes are spring fed, and during prolonged dry, hot summers we are seeing these springs dry up, which means we are more likely to see algal blooms as an annual occurrence. It’s unsightly, and can spoil some of the water lilies. We are working with others to reduce the amount of nutrients being introduced within the catchment. We have to be careful not to upset the important balance of wildlife and plants these waters support.”*

## PAST IMPERFECT

Even our past is vulnerable to current and predicted changes in climate. Archaeological monuments are at particular risk along the coast, where it is thought that over 500 may be damaged or lost through erosion and rising sea levels over the next century. The potential loss is greatest on the Isle of Wight, where a number of significant discoveries, including a Bronze Age axe hoard and the skeleton of an Iron Age girl, have been made following cliff falls. With some 120 sites at risk on the island, resources are needed to ensure finds are recorded before being lost forever. Elsewhere, more short, sharp rainfall events may cause of erosion on monuments. The greatest cause of damage to the Iron Age coastal promontory fort at Dinas Dinelle (Wales) is not sea-level rise but rainfall, which is rapidly eroding the land below the fort. Run-off on other earthwork sites may also be exacerbated by an increase in visitor

numbers in winter months.

Warmer winters are also taking a toll. At Chedworth Roman Villa (Gloucestershire), the change from winter freeze and spring thaw cycles to more regular freeze/thaw events is causing more of the stonework to fracture. The significant Roman hypocaust system is now at greater risk. Milder conditions also means vegetation does not die back over winter, making sites harder to record and increasing root damage.

Rob Woodside, Territory Archaeologist, notes **“We’re only at the beginning of understanding the implications of climate change for archaeology, but we will be affected by both direct impacts and how we adapt to those changes.** Coastal erosion is our greatest area of risk, but new tree planting, biomass crop cultivation, and flood defences can all have consequences for archaeological remains, so we must ensure we have surveys in place to properly mitigate impacts.”

## THE INSIDE STORY

The Trust owns wonderful collections in many properties, including furniture, paintings, ceramics, tapestries and other fabrics. The impacts of climate change are a real source of concern for our conservators. Historic Properties Director, Sarah Staniforth, describes the range of impacts we are already having to respond to:

*“An increased number of torrential downpours are overwhelming the capacity of rain water goods and drainage, and **water is increasingly entering our historic interiors through roofs, walls and from basement flooding. This can damage vulnerable decorative paint surfaces and wallpaper, and creates damp conditions resulting in mould growth and increased levels of insect infestations.** The range of some insect species is changing and their activity is increasing as there are fewer winter frosts to kill off species that live some of their life cycle out of doors. Infestations with Webbing Clothes Moth and Carpet Beetle are becoming more common.”*



There is a growing need to consider summer working conditions for Trust staff who are based outdoors. ©NTPL/Andrew Butler



This bureau from Melford Hall was damaged by water ingress





Flooding at Blickling ©NTPL



Hotter, drier summers increase the likelihood of moorland fires.  
Quantock Hills AONB

## FIRE, FLOOD AND PESTILENCE!

**Fire is a further threat in longer drier summers, putting the Trust's many thatched buildings at a higher risk, and also risking damage to heathland and moorland vegetation** in areas like the Quantocks or the Peak District. High Peak has suffered very serious fires in dry summers like 1976 and 2003. Fighting fires is extremely costly, not to mention highly dangerous, and can have knock-on effects on flora, fauna, water and air quality. Our peatlands are particularly fragile, with deep erosion channels being caused by heavy rainstorms after hot dry periods have dessicated the peat.

A fire in 2003 resulted in £600,000 worth of damage to the historic Fleece Inn at Bretforton. While climate change cannot be directly blamed for that fire, it illustrates there is a real and growing risk. Dry conditions meant that intense heat from the pub's fireplace caused the thatched roof to ignite.

In terms of **flood risk**, having carried out a Coastal Risk Assessment which identified those properties most at risk of erosion and flooding from the sea, we are now mapping those Trust properties which are at risk from inland river flooding. As we have seen, wetter winters are expected with an increase in the number of very heavy rainstorms. Extraordinary rainfall events, like the one which affected Boscastle in 2004, or North Yorkshire in June 2005, are likely to become more common.

**Over the last 5 years the Trust has been forced to make over 200 separate insurance claims for flood damage**, and we don't claim for other many other minor flooding incidents which cause little damage, so the real total of flooding occurrences is much higher. Wallington, Gibside, Springhill, Blickling, Bodiam, Berrington Hall and Ightham Mote are all properties which have experienced bad flooding, causing damage to conservation interests.

Property Manager at Blickling Phil Scott notes:

*"We had a particularly bad flood in 2001 when the local stream burst its banks and flooded the basement rooms. We aren't looking forward to a repeat but it could so easily happen. The flooding exacerbated the damp problems we were also suffering with in different parts of the house. It's been a very expensive headache."*

Regarding **pests**, well it's not quite a plague of locusts yet, but there's no doubt that pests and diseases are already changing with the warming climate. This is particularly noticeable in our gardens. Mike Calnan, Head of Gardens & Parks:

*"The 'Gardening in the Global Greenhouse' research project revealed that **an increase in existing pests and disease and an influx of new ones from abroad is a likely consequence of climate change.** Already *Camellia* petal blight and *Ramorum* blight have arrived from Japan and America respectively, and are established in parts of the South West and elsewhere. Warmer, moister conditions will favour the growth and spread of these pests and diseases, threatening our important plant collections."*



## WHAT ABOUT THE CLIMATE IN THE FUTURE?

We simply don't know exactly what the UK's climate will do very long-term, because it depends on the future level of carbon dioxide and other gas emissions in the atmosphere, and also because some impacts are highly unpredictable in a complex climatic system. The experts believe there is no likelihood of the Gulf Stream closing down within the next two decades, but it is a possibility longer term. So while we look set for a warmer - and stormier - climate for the at least the next 20 to 30 years, very long-term 'who knows'!

On the best projections now available from the International Climate Change Panel and UK Climate Impacts Programme, these are some of the anticipated changes over 75 years:



### TEMPERATURE:

- Globally temperatures could rise anywhere between 1.5 and 5.8 degrees C by 2080 – between twice and eight times the rise we have already seen since 1900.
- Each degree of warming causes a lengthening of the growing season in the UK by between 1.5 in the north and 3 weeks in the south.
- In the UK, an average temperature rise of 2 – 3.5 degrees C is anticipated by 2080; though some areas could warm by nearly 6 degrees C.
- More heatwaves in summer are predicted – perhaps what we would now call an exceptional summer, like 1995, occurring 2 years out of 3 by 2080.



### RAIN AND SNOW:

- Winters will become wetter [20 – 35% wetter by 2080] and summers may become drier [35 – 50% drier by 2080].
- Snowfalls will become increasingly rare – maybe up to 90% less snow by 2080.
- Heavier rainfall events will become more frequent; though this cannot be quantified.
- Up to 50% reduction in soil moisture content in South and East by 2080.



### THE SEA:

[this is heavily dependent on the speed of melting of Polar ice caps].

- Extreme sea levels could occur between 10 and 20 times more frequently by the 2080s.
- Relative sea level will continue to rise around most of the UK, perhaps by as much as 86 cm in south east England.
- Sea temperatures are expected to continue to rise over the next couple of decades, though more slowly than the land temperature rises.
- The ranges shown here reflect the fact that we don't know future levels of carbon emissions which then determine climate.



**St Michael's Mount. Further Sea level rise is inevitable.**

©NT/Alan Watson



Many Trust properties have changed the opening season to fit flowering times.  
©NTPL/Nick Meers

## HOW THE TRUST IS RESPONDING TO THE CHALLENGES AND OPPORTUNITIES

Having recognised that many properties are already seeing evidence of a changing climate, and with an expectation that – at least for the next 20 to 30 years – we can expect a trend towards hotter drier summers, milder wetter winters, more storms with heavy rainfall, and higher sea levels, how can the Trust respond?

The Trust's Council has agreed a Statement of Intent and some guiding **Principles**. These can be summarised as:

- **The Trust accepts that climate change is real and its causes need urgent action.**
- **We are committed to reducing our own emissions from all our activities; like energy use, land management etc.**
- **The impacts of climate change need to be understood and integrated into decision making.**
- **We recognise that we have to adapt to climate change and will seek to optimise the opportunities and minimise the risks arising.**
- **It will not always be possible to preserve our properties and contents entirely unchanged. Unless critical interests require intervention we should seek to work with the grain of natural processes.**
- **We should be innovative in our approach to adaptation, but should also be opportunistic and economical with resources.**
- **Climate change cannot be accurately predicted so we need to be both vigilant and adaptable.**
- **We will be proactive in raising awareness of causes and effects of climate change with members, visitors and the public; and inform people of Trust responses to it.**

### CCIG:

To carry forward climate change work the Projects & Acquisitions Group authorised the establishment of a cross-Directorate working group. The Climate Change Impacts Group [CCIG] will be:

- Raising awareness with internal and external audiences about the Trust's approach and principles. This will be based on an agreed Communications Plan.

- Establishing some short policy statements for each sector of interest within the Trust [see below].
- Providing more detailed guidance for Property Managers and other staff on practical measures they can take to make the most of opportunities and minimise risks.
- Ensuring consideration of climate change impacts is factored in to all significant decision-making, e.g. possible acquisitions, projects, maintenance regimes.
- Identifying priority properties where there may be a more urgent impact risk which may require intervention.
- Sharing best practice within the Trust and with various external partners.

**More information on CCIG is available on the Intranet at:**  
[http://intranet/intranet/i-con-feature/i-lup-feature/i-lup-climate\\_change.htm](http://intranet/intranet/i-con-feature/i-lup-feature/i-lup-climate_change.htm)

CCIG has identified the following **sectors** or main areas of interest within the Trust where it is seeking to establish policy in relation to climate change and provide some practical guidance to property managers:

- Agriculture & Forestry
- Buildings & Structures
- Coast and River Basins
- Collections
- Customer Services
- Estate Services/Infrastructure
- Open Countryside
- Parks & Gardens



## PRESENTED BY CLIMATE CHANGE

Some consistent themes have emerged:

- The need to recognise that we can't always conserve things exactly as we might once have. This goes for species, habitats, coasts, gardens or buildings.
- We will have to make decisions about property management and projects which are 'climate-resilient' and allow flexibility in changing conditions.
- There are opportunities to exploit as well as problems to deal with.
- We need to inform our visitors and Trust members about how we are responding to new circumstances and why management sometimes needs to change.

### REDUCING OUR 'GREENHOUSE GAS' EMISSIONS:

We have an adopted Energy Policy, and council have committed the Trust to reducing our emissions of greenhouse gases, like carbon and methane. In practice this means some hard choices will have to be made about the volume and nature of visiting at some properties, the energy efficiency of our properties and the management of soils and land [e.g. peat moors] where there is potential for significant carbon emissions. There are also many opportunities to generate clean energy on Trust land; such as small-scale hydro, wind and woodfuel schemes.

### CONCLUSION:

**The Trust is only at the start of understanding the full range of impacts on its hugely varied interests. Feedback of further evidence of impacts at properties is very welcome. Being aware of the real and potential impacts, and planning for climate change as far as we can will save us time and money in the long term.**

**Right: We need to encourage more car free visiting, to reduce greenhouse gas emissions.**

©NTPL/Chris King





**Lawn in drought.**  
©NT /Mike Calnan



**Flooding at Bodiam Castle.**  
The café is not designed to have a moat! ©NTPL



**Exotic species may become more commonplace.**  
©NTPL/Andrea Jones

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