EA SOUTHERN BOX 8

State of the Environment 2006

Environment Agency

The Environment Agency's assessment of the environment in South East England

We are the Environment Agency. It's our job to look after your environment and make it a better place – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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Cover photo by James Lepage

Environment Agency

we value your feedback...

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Environment Agency
South East England State of the Environment Report 2006

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- Excellent
- Good
- Average
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Please score the following questions on a scale of 1 to 5, with 5 being the best score (please circle)

Is the report easy to understand?	1	2	3	4	5
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What changes and improvement to the report would you like to see in future?

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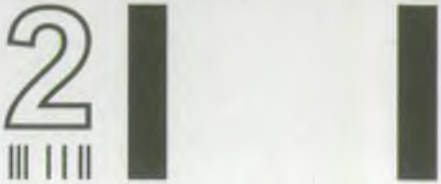


Foreword

The South East is home to over eight million people, the largest population of any UK region. Our environment covers a diverse range of landscapes from Chalk Downs and ancient woodland to densely populated towns and cities. It is an important asset, with over 700 Sites of Special Scientific Interest and one third of the region is designated as an Area of Outstanding Natural Beauty.

Our 1,250 kilometres of coastline include some of the cleanest bathing beaches in Europe, with stretches of outstanding beauty and sites of international importance. Most of the region's rivers are now the cleanest they have been since before the Industrial Revolution and are home to a vast range of wildlife as well as supporting many leisure activities.

The Environment Agency is one of many organisations who play a part in looking after and improving our environment. This report shows what we have all achieved together and what we all need to do in the future.

The good news is that since our last report we have seen an increase in the amount of waste recycled with less waste now going to landfill sites. Domestic water use has also reduced and more homes are now fitted with water meters. There are fewer water pollution incidents and water quality is better overall. Our most important wildlife sites are improving and otter populations have increased. However, the state of the environment in the South East is fragile. Our energy use is increasing, the amount of total waste we produce is growing and we have seen more cases of illegal waste dumping. The population is growing and new development brings increasing demands on the environment.

The environment must be at the heart of any proposed development for the South East. This will help provide a high quality of life for people in the South East, and help to preserve our rich and diverse natural environment.

We need to work together to achieve this. Our future environment and quality of life depend on the choices we make now as individuals and organisations. We hope you enjoy this report and would value your feedback.

Howard Davidson
Regional Director
Southern Region

Robert Runcie
Regional Director
Thames Region

photo by Wendy Dinkelberg

the challenges we face

New development

The South East is one of the UK's fastest growing regions, with 580,000 new homes planned for South East England by 2026. Major development will occur at Ashford, Aylesbury/Milton Keynes and within the Thames Gateway, but 70 per cent of new development will occur at locations outside of these areas. Some of the other locations, such as Basingstoke, Newbury, Andover, Eastleigh and Horsham pose significant challenges for the water environment in the face of a growing population with more houses. All new development should include both water and energy efficiency measures, to make best use of the resources we have and minimise impact on the environment.

Climate change

The climate is changing now. The effects of global warming will increasingly be felt by the people and environment of South East England, with hotter, drier summers, wetter, stormier winters and increasing sea levels. Climate change is the greatest threat to our region, changing our lifestyle and environment. Actions we take now as a region can help mitigate the effects on ourselves and future generations.

Water

Demand for water is forecast to increase across South East England, where significant housing growth is planned. The population of the South East is expected to grow by 800,000 between 2003 and 2021.

Much of this demand for water could be met through a more efficient use of water in new and existing houses and businesses, but there are uncertainties surrounding the methods and timescales for achieving such improvement. There will also be a need for new sources of water, including new reservoirs, to meet forecast demand for water over the next 25 years.

More houses across the South East will threaten the improvements in water quality gained over the past four decades, as volumes of sewage and urban runoff increase. New development must be accompanied by new and enhanced infrastructure, including sewers and sewage treatment works.

Flood risk

Over 310,000 properties are currently at risk of flooding across the South East. Our work improving defences will continue to protect thousands more every year. We are taking every opportunity to use these schemes to improve the wider environment, including wildlife and recreation resources. Demand for new development will add to pressures for building in floodplains and unsuitable developments could increase the risk of flooding.

Waste

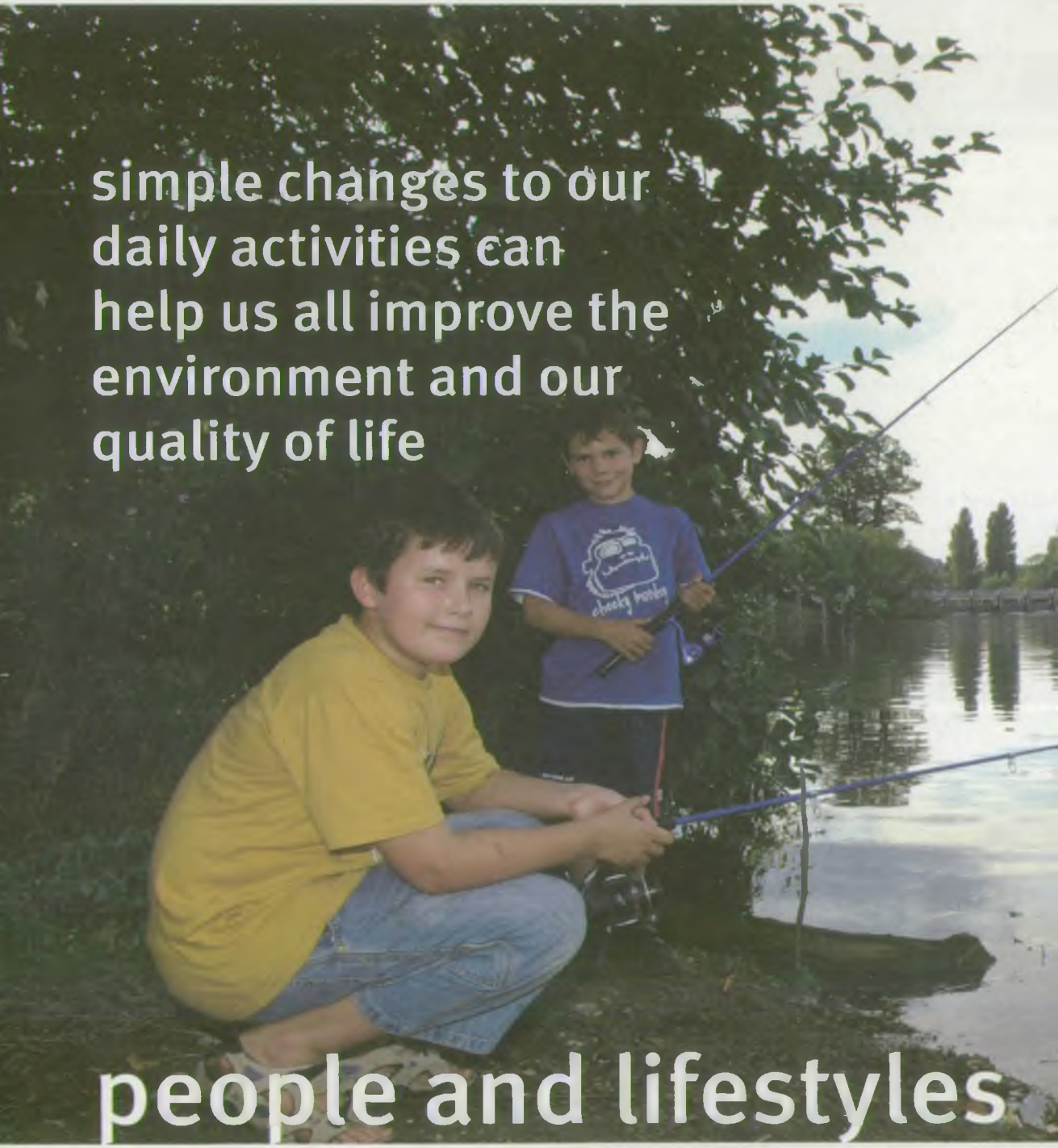
Despite recent increases in recycling, the amount of domestic waste we produce is at the highest level ever recorded. New development will generate significant amounts of waste during both construction and as people move into their new homes.

Landfill remains the most common method of waste disposal, but existing landfill space is running out. The amount of waste we create must be reduced and alternatives to landfill used. Waste should be recognised as a resource, with more local markets for recycling. Future economic growth must occur without increasing waste.







simple changes to our daily activities can help us all improve the environment and our quality of life

people and lifestyles

people and lifestyles

The South East has the largest population and one of the most successful economies of all the UK regions. But our environmental footprint – a measure of our environmental impact based on resources we use and waste and pollution we produce – is also the highest of all regions. The way we live has consequences for the environment. Whether it is the water or energy we use at home and at work, the transport decisions we make, or the waste we throw away. We need to make adjustments to our lifestyles to reduce our environmental footprint. By making simple changes to our daily activities and the products that we buy we can significantly improve the area around us. This will help the environment and improve our own quality of life by improving air, water and land quality and protecting wildlife and habitats.

The South East is also one of the fastest growing regions. Over the next 20 years, hundreds of thousands of new homes will be built in major growth areas such as Ashford, the Thames Gateway, South Hampshire and Aylesbury/Milton Keynes. The South East has several locations likely to be granted New Growth Point status. This development creates pressures on the environment that we need to plan for. Together we need to make sure there are long-term plans to reduce flood risk as well as adequate water supply, sewage treatment and waste-handling sites for new and existing developments.

It is vital for the continued success of the region and our quality of life that we work together and keep the environment at the heart of policy development and decision-making for the South East.

People and lifestyle trends in the South East

- **Population:** The South East has the largest population of any government region with over 8 million people. This is projected to increase by over 800,000, or 10 per cent, between 2003 and 2021.
- **Water resources:** Metered and unmetered household per capita consumption of water increased on average by 9 per cent between the early 1990s to 2003/04. But there are signs that average consumption is now decreasing. Figures for the last three years show consumption is down by about 2 per cent each year with the biggest drop seen in metered households. Reduced water demand during recent droughts helped ease the pressures on water resources. The South East is one of the driest regions and droughts are likely to happen more often. It is essential that we carry on using water wisely, whether we are in a drought or not. Average water consumption in the South East is now around 161 litres per person per day. This is still too high and we need to aim for 120 litres per person per day.

  There has been an 8 per cent increase in the number of households receiving metered water supply since 2004/05 (see Figure 1). This includes new metering as a result of changes in the occupancy of homes. Water companies plan to increase metering more significantly in the future. The Environment Agency want to see full metering in place across the South East by 2015.

Percentage of households with water meters 2005/06

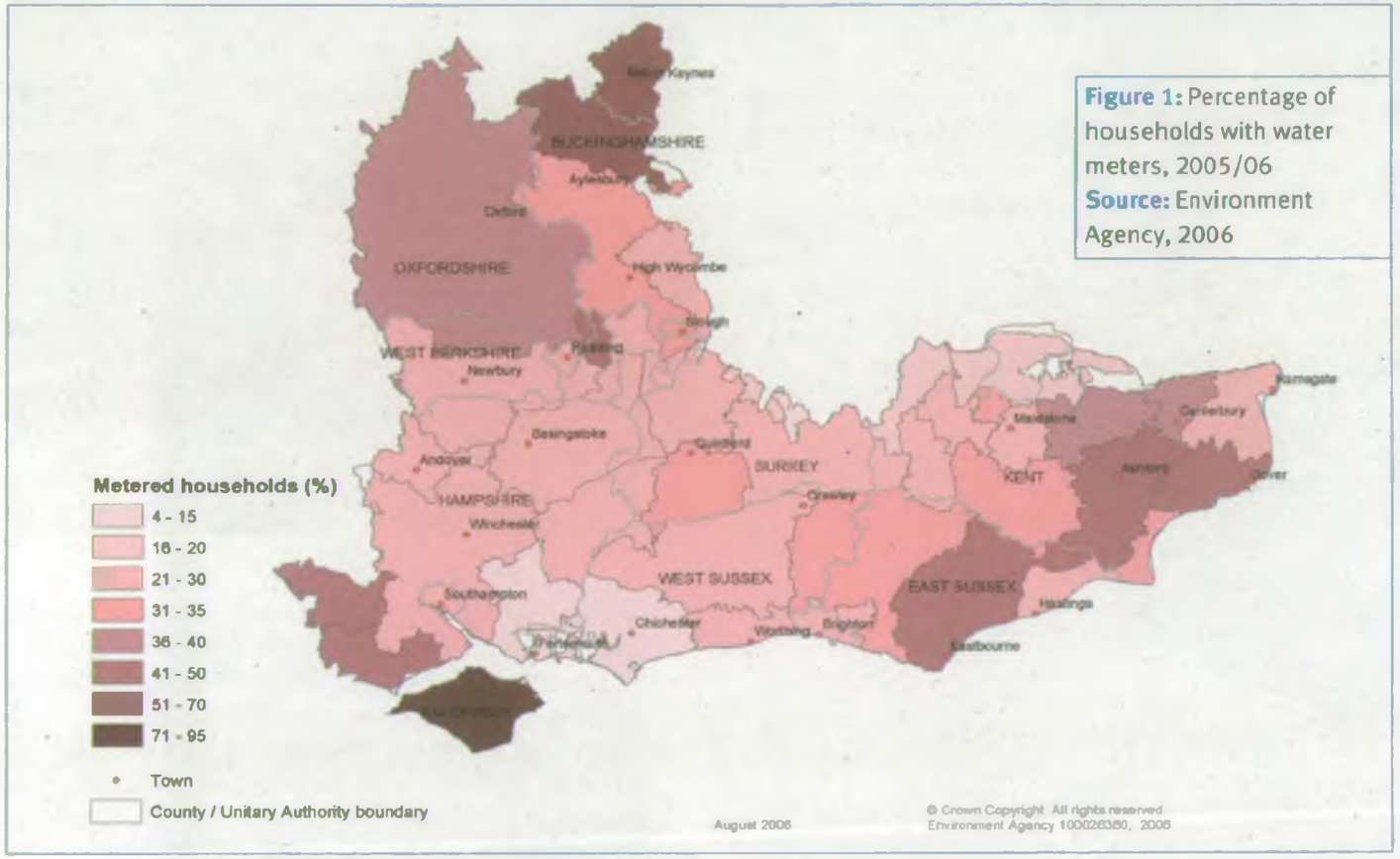


Figure 1: Percentage of households with water meters, 2005/06
Source: Environment Agency, 2006

Waste arisings trends 2000/01 to 2004/05

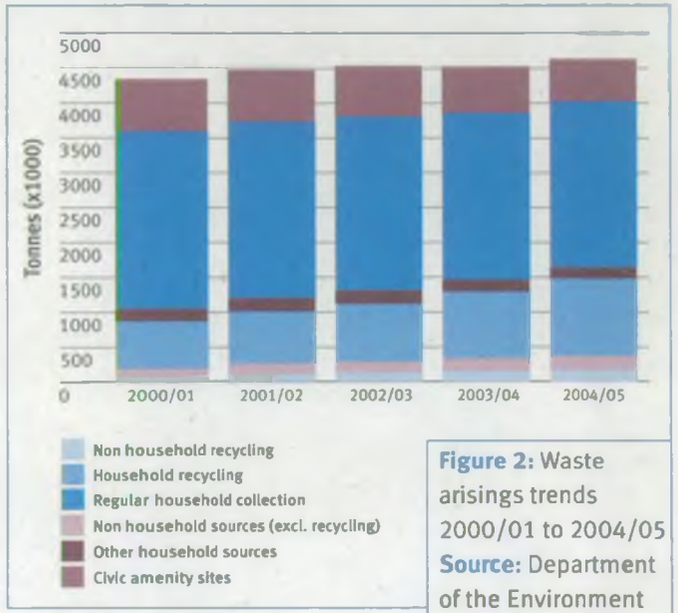


Figure 2: Waste arisings trends 2000/01 to 2004/05
Source: Department of the Environment Fisheries and Rural Affairs, 2005

Waste disposal trends 2004/05

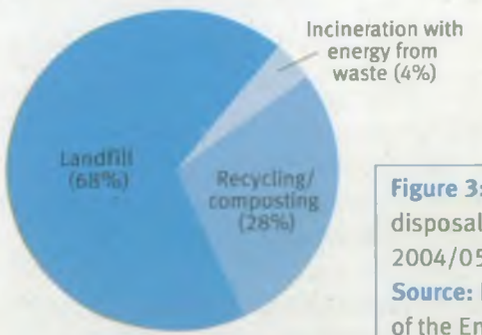


Figure 3: Waste disposal trends 2004/05
Source: Department of the Environment Fisheries and Rural Affairs, 2005

- **Waste:** Recycling of waste is increasing in the South East. Quantities of household recycling increased by 64 per cent and non-household recycling by 122 per cent between 2000 and 2005. Recycled household waste as a proportion of total municipal waste produced is also increasing, from nearly 16 per cent to 24 per cent, over the same five year period.

  Fly-tipping is the illegal dumping of waste and can vary in scale significantly from a bin bag of rubbish to large items such as mattresses, garden refuse, tyres, clinical waste, white goods and vehicle parts. A new web-based system for recording fly-tipping incidents, 'Flycapture', went live in April 2004. In 2005/06 there were just over 122,000 cases across the South East, a 49 per cent increase on those recorded in the previous year. This overall increase hides some variability at a local scale and some smaller areas have shown a drop in incidents over this period. .

Average monthly fly-tipping events 2005/06 map

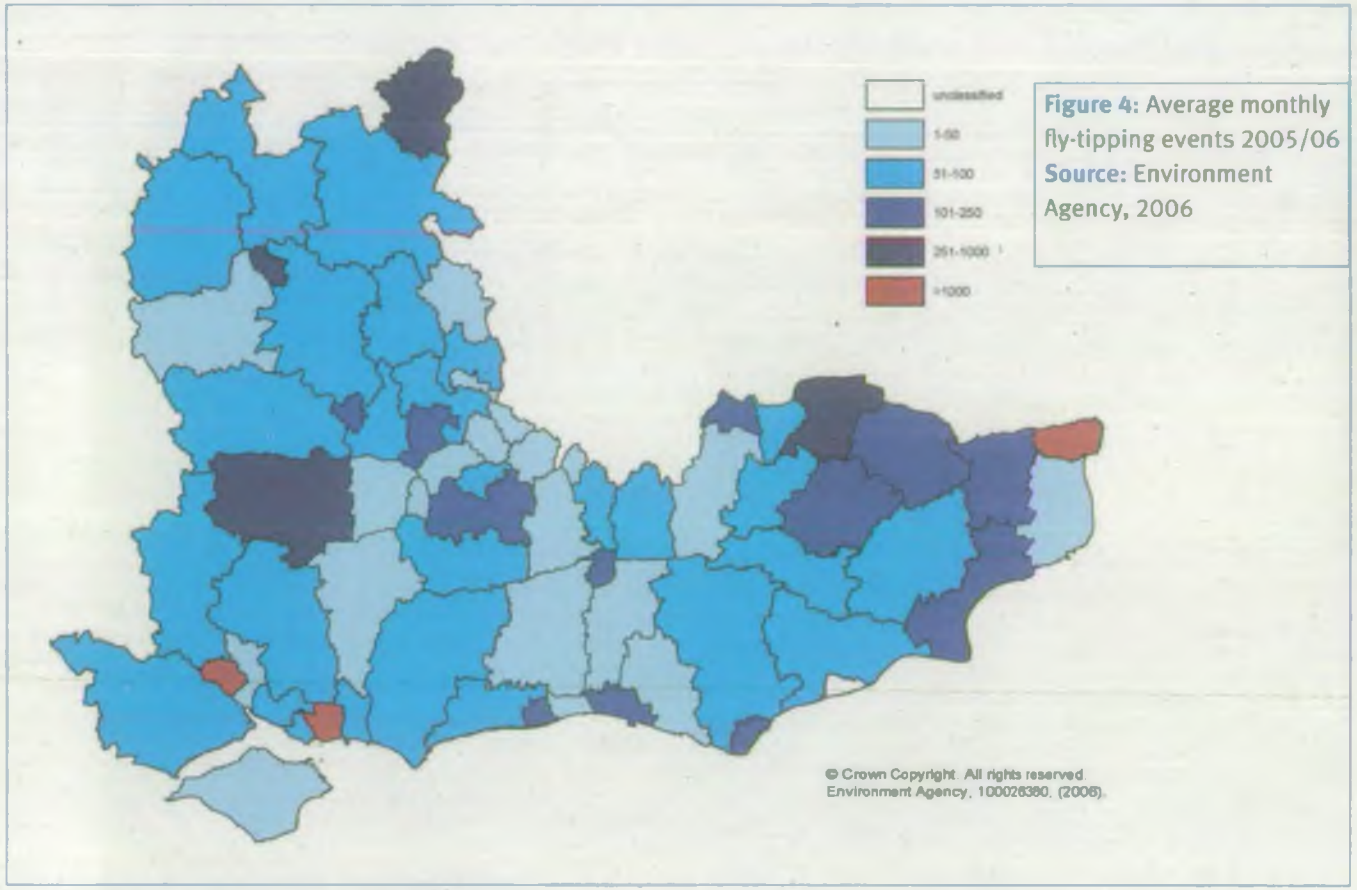


Figure 4: Average monthly fly-tipping events 2005/06
Source: Environment Agency, 2006

- **Leisure and tourism:** A clean healthy environment, rich in wildlife, is one of the biggest contributors to our quality of life in the South East. Our parks and open spaces, clean air and clean rivers are an important part of the attraction and continued success of the region. The quality of the environment makes a major contribution to the economy, attracting both tourists and investment and is very important to the health of the people who live here.

The region includes the New Forest National Park and another proposed for the South Downs. The River Thames is the largest river in the region and supports a whole range of industries including tourism, recreation, water companies, power generation, food, fisheries and agriculture. Visits to the River Thames upstream of London generates £119 million income and supports 18,400 jobs related to the tourist industry.

- **Energy:** The South East region is the second highest domestic electricity consumer in England and uses 7.4 per cent more than the English average. The region is the eighth lowest industrial and commercial electricity consumer at 13.5 per cent below the average, reflecting the lack of heavy industry in the region.
- **Road traffic:** The South East has the most road traffic of any region in England. Over the last decade we have seen a 20 per cent increase in total traffic flows by road. Over 86 billion kilometres are travelled by road in the South East every year, which is the same distance to the moon and back again 225,000 times. Heavy road traffic adds substantially to local air pollution, particularly nitrogen oxides, and contributes to climate change through carbon dioxide emissions. We need to encourage other forms of transport to reduce the impacts of road traffic.

Together we are:

- Encouraging new and existing development to include measures to reduce energy and water use
- Reducing waste, increasing re-use and recycling and other waste management options that divert waste away from landfills
- Ensuring that water resources availability and river water quality are properly considered in the South East Plan
- Helping to reduce environmentally-damaging water demand through licensing and management of water abstraction

Together we can:

- Turn off taps between use to reduce water use
- Fit water-saving devices in toilet cisterns
- Fix water leaks and dripping taps promptly
- Have a water meter installed
- Turn off lights when leaving a room
- Use energy-saving light bulbs
- Turn electrical items off fully when not in use
- When replacing white goods, buy energy and water efficient models
- Reduce, reuse, recycle
- Leave the car at home and try walking or cycling for short journeys
- Use public transport wherever possible
- Share a car to work
- Persuade family and friends to do all of the above

For further data and information please use the following link to the South East State of the Environment website:
http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e

photo by David Eastley

air quality

Air quality in the South East has improved during the last decade. Levels of pollutants such as sulphur dioxide and nitrogen dioxide in rural and urban areas have reduced since the 1990s. The pollutants from regulated processes, such as benzene and lead, have reduced significantly over the last 10 years. However, levels of particulate matter and carbon dioxide from transport have remained steady. Emissions from road traffic and industrial sources contribute to poor air quality and this impacts on our health and on our environment. Odours from farm manures and slurries can have an adverse localised effect on communities.

We monitor emissions from regulated sources, such as industrial sites, to ensure they continue to meet European Union or UK air quality limits. For other sources such as traffic, monitoring can be used to identify air pollution hot-spots. Local authorities use these data for developing air quality management plans. We all need a greater understanding of air quality issues and improved monitoring techniques to achieve continued improvements. And we need to work with farmers and landowners to reduce the adverse effects of localised odours.

Air quality trends in the South East

Table 1

	Environment and health impact (worst-case scenarios)	Overall trend	2005 Compliance with nationally set regulations called 'Air Quality Strategy Objectives'
Sulphur dioxide	May cause breathing difficulties, can be toxic to plants and can cause acid rain – acid rain can damage trees and other plants, and it can also affect the soil	Reduction since the 1990s	Complied with objectives
Nitrogen dioxide	May be toxic to plants and can cause breathing difficulties	Gradual reduction since 1990s	Complied with objectives
Particulate matter (PM10)	Tiny particles may penetrate deep into the lungs, worsening respiratory problems	Slight decline since 1990s – an increase from 2000-2003 is now levelling off	Complied with objectives

- Improvements in air quality in the South East over the last decade are a result of tighter emission standards, improved technology and cleaner fuels.
- Local air pollution hot-spots are still a problem and 90 Air Quality Management Areas have been declared across our region.
- Urban areas are particularly affected by poor air quality caused by particulate matter and nitrogen dioxide from road traffic. Poor air quality in summer is mainly caused by ground level ozone, largely as a result of emissions from transport and industry. This is especially the case in rural areas, because in urban areas ozone is broken down by the other pollutants.
- Over the last four years there has been a steady reduction in air pollution incidents from 28 to 19 incidents.
- Emissions to air from processes regulated in the South East remain low compared to total UK regulated emissions and other sources in the UK, as there are less industrial sites and more high value and non-polluting manufacturing industries in the South East. At least half of all emissions to air of 1,3-butadiene, benzene, carbon monoxide and nitrogen dioxide are from transport. Trends in emissions for selected air pollutants are shown in Figure 5. These include regulated industrial processes, both nationally and in the South East, and other unregulated UK sources. The South East share of the UK's regulated industrial processes is clearly very small so these emissions are also shown separately in Figure 6 to illustrate recent trends.

Percentages of regulated and unregulated emissions compared with 1998 total UK emissions for 1998-2003

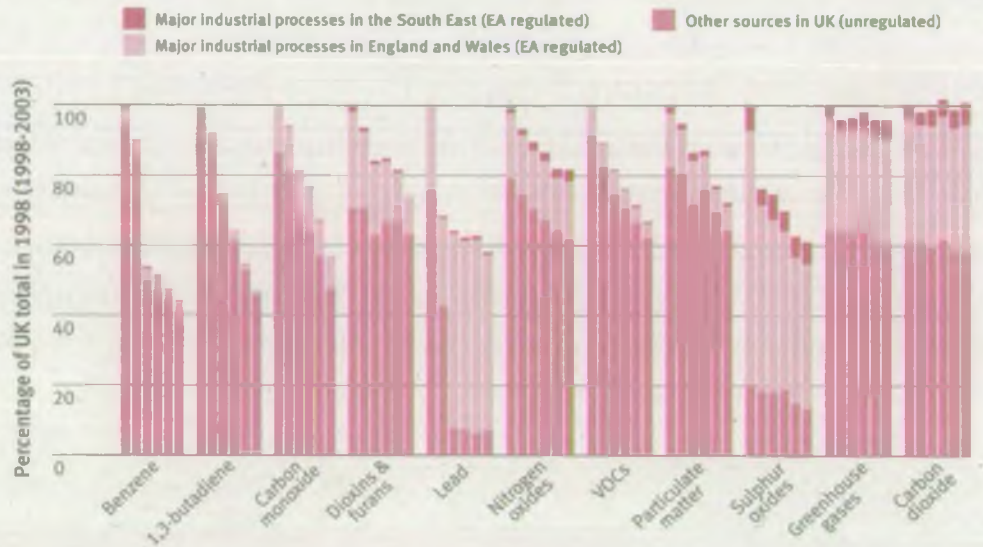


Figure 5: Percentages of regulated and unregulated emissions compared with 1998 total UK emissions for 1998-2003
Source: Environment Agency, 2006; National Atmospheric Emissions Inventory, 2003

Percentages of South East regulated emissions compared with 1998 total UK emissions for 1998-2003

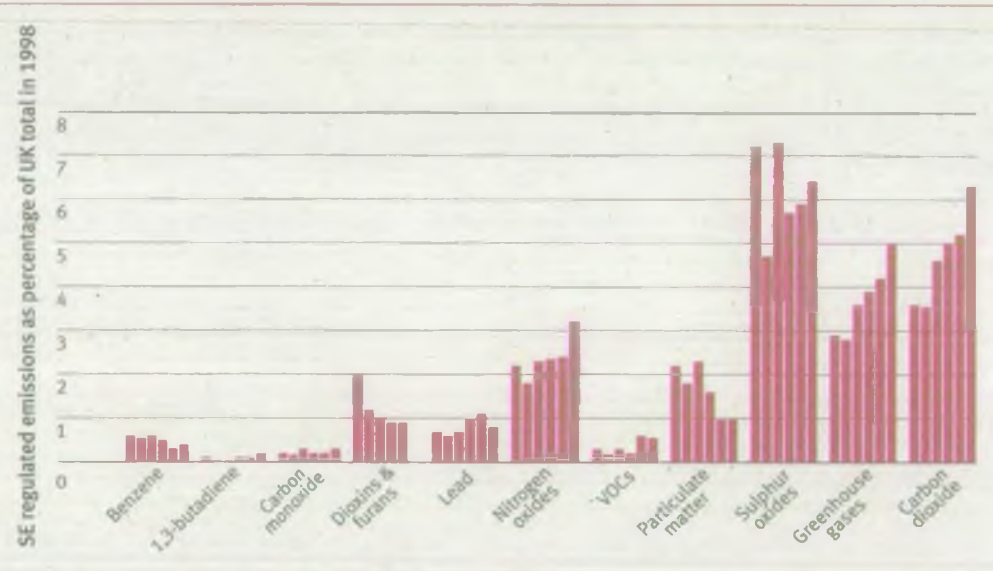


Figure 6: Percentages of South East regulated emissions compared with 1998 total UK emissions for 1998-2003
Source: Environment Agency, 2006; National Atmospheric Emissions Inventory, 2003

- For regulated industries in the South East, emissions of some pollutants are decreasing whilst others are increasing. Figure 7 shows the relative changes over a five year period from 2000. Negative values represent decreases, whilst positive values represent increases. Major industries such as power, steel and cement are responsible for these sources. Whilst permits are set for each site, levels of emissions are affected by numerous factors including fuels used, changes to operating capacity and the EU Emissions Trading Scheme and so total emissions are unlikely to show continuous improvement.

Levels of substance in emissions from regulated industries in the South East as percentage changes for 2005 compared with those in 2000

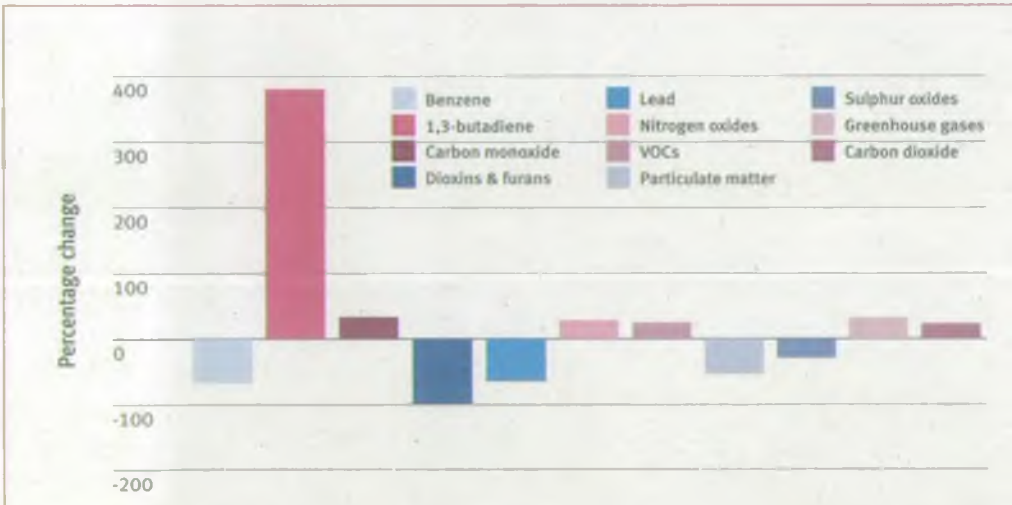


Figure 7: Levels of substances in emissions from regulated industries in the South East as percentage changes for 2005 compared with those in 2000
Source: Environment Agency, 2005

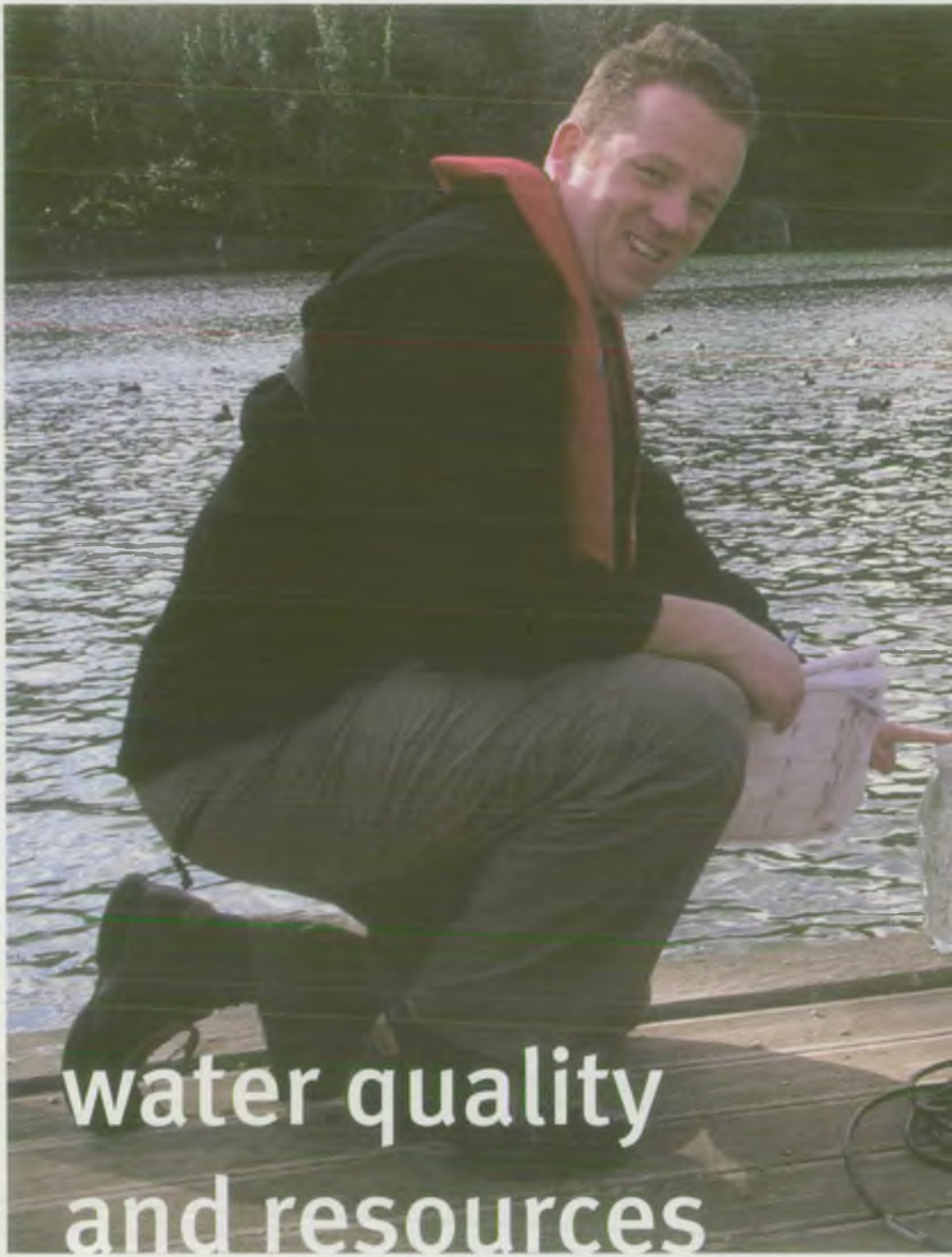
Together we are:

- Continuing to ensure that emissions from regulated sources in the South East comply with set EU and UK standards ✓
- Devising methods to improve air quality monitoring techniques through work led by local authorities ✓
- Carrying out the Regional Transport Strategy as part of Regional Planning Guidance. This aims to shift the huge reliance on cars for our transport in the region, in the longer term ✓
- Using Air Quality Management Areas and their improvement plans to tackle local air quality hot-spots ✓
- Taking part in the Kent and Medway Air Quality Partnership, Sussex Air Quality Steering Group, and the Air Quality Strategy Review and assessment process led by local authorities ✓

Together we can:

- Use our cars less or share, use public transport, walk or cycle ✓
- Drive a car with low emissions rather than one that uses a lot of fuel and heavily pollutes the air ✓

For further data and information please use the following link to the South East State of the Environment website:
http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e



water quality and resources


water is vital for
all life – together we
need to make sure
that it is of a sufficient
quality for our health,
environment
and economy

water quality and resources

Water is a finite resource and is vital to all life. An adequate supply of good quality surface and ground water is fundamental to public health as well as the environment. Water also plays an essential role in many industrial and agricultural processes and in recreational activities such as swimming, fishing and boating. Water resources must be managed effectively to ensure the security of both water supply and quality.

Rivers and coast

- The chemical and biological quality of rivers in the South East has improved since 1990 (see Figure 8). This improvement is due to both effective regulation and significant investment by water companies. However, the rate of improvement has slowed in recent years.
- River flows have been close to historic lows following two unusually dry winters. The Environment Agency has worked closely with water companies who have imposed restrictions on water use throughout Sussex, Kent, Isle of Wight and the Thames basin. These are necessary in order to manage water effectively and reduce the risk of damage to the environment.
- Compliance with River Quality Objectives (RQO) in the South East is now at 88 per cent, although in recent years the rate of improvement has levelled. The impact of drought in the South East may lead to a reduction in compliance in 2006. The national RQO target is 91 per cent.
- Bathing water quality in the South East has improved significantly with no beaches consistently failing since 1999 and no failures at all in 2005. Improvement is mainly due to significant investment by water companies.
- The phosphate levels in rivers in the South East have reduced since 1990 when monitoring began. This is a result of water companies installing phosphate stripping equipment at some sewage treatment works. Nitrate levels are partly due to naturally occurring conditions and have remained constant up to 2005.
- Over the last four years there has been a 45 per cent reduction in water pollution incidents.

Chemical quality of rivers in the South East

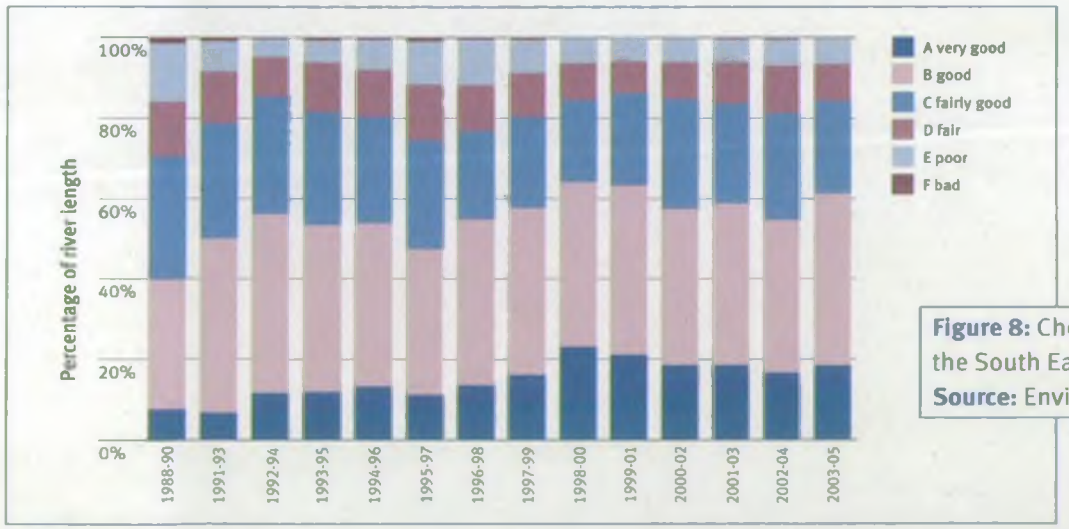


Figure 8: Chemical quality of rivers in the South East
Source: Environment Agency, 2005

Water pollution incidents

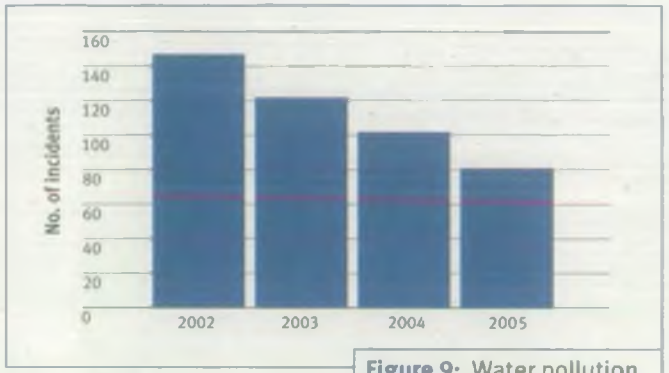


Figure 9: Water pollution incidents
Source: Environment Agency, 2005

Water supply origins in the South East

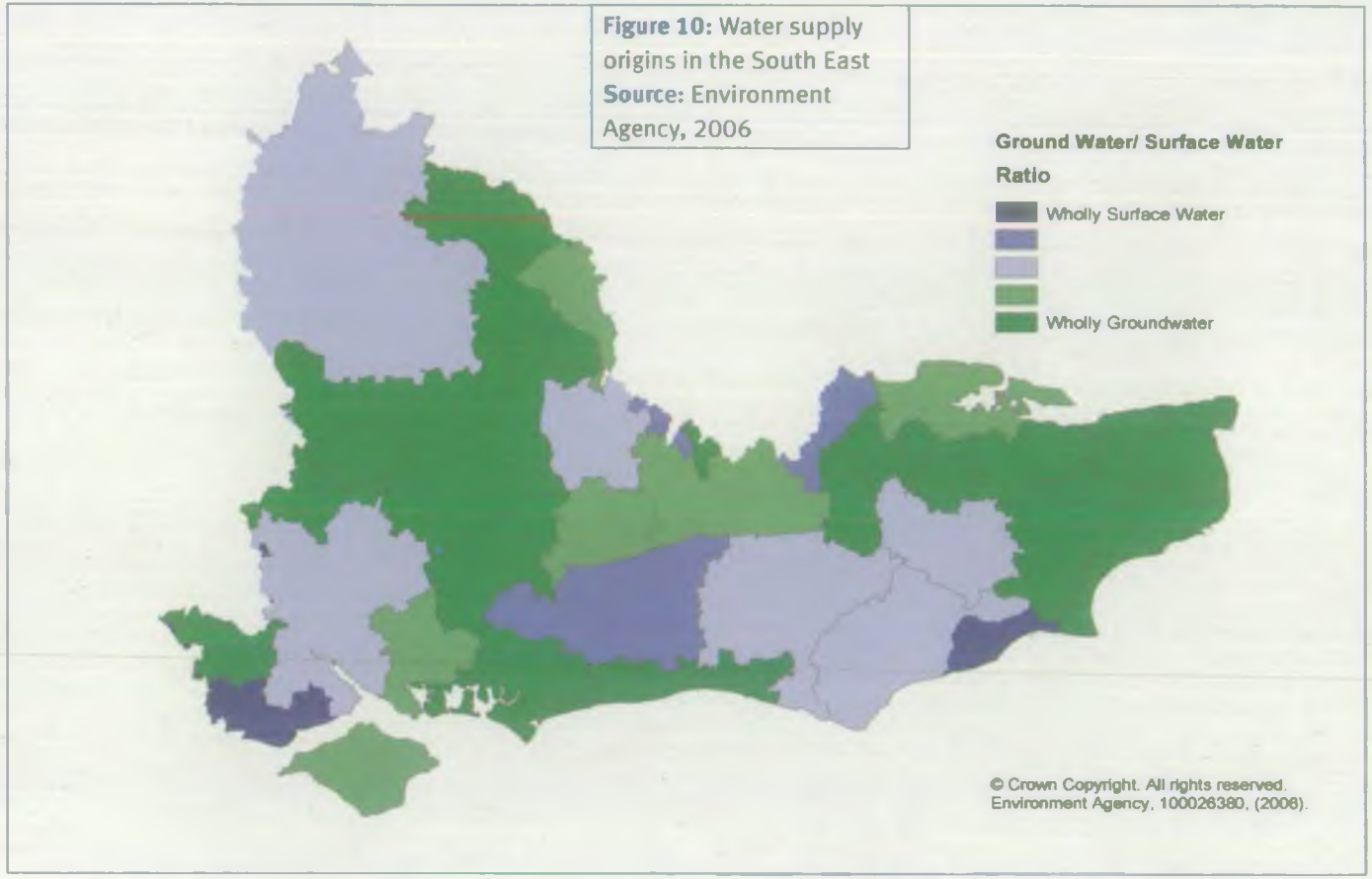


Figure 10: Water supply origins in the South East
Source: Environment Agency, 2006

Groundwater

- Groundwater provides over 70 per cent of public drinking water supply in the South East. This is the highest proportion of any region in England. Groundwater is also often the only source of private water supply in rural areas and is crucial for maintaining flow in many of the region's wetlands and rivers, particularly during the summer. Groundwater directly supports a great deal of the region's commercial activity and indirectly supports wildlife and leisure activities.
- Groundwater is stored within rocks known as aquifers. Many of the region's aquifers are fractured and occur close to ground surface, without protective layers such as clay. This means that any contamination from activities at the ground surface can easily enter groundwater and can be transported rapidly over large distances. Once polluted, groundwater is very difficult or impossible to clean up. Costs can run into millions of pounds for a major pollution incident.
- Several decades ago groundwater for public water supply was subject to little treatment other than basic chlorination. Tighter drinking water standards, changing business constraints, an increase in demand leading to the use of poorer quality water, and an increase in groundwater pollution have all led to an increase in the proportion of groundwater that is now treated to combat problems with quality prior to supply.
- In 2005, around 59 per cent of groundwater in the South East was treated due to quality problems prior to supply as drinking water - 902 million litres per day.

Groundwater abstraction rates

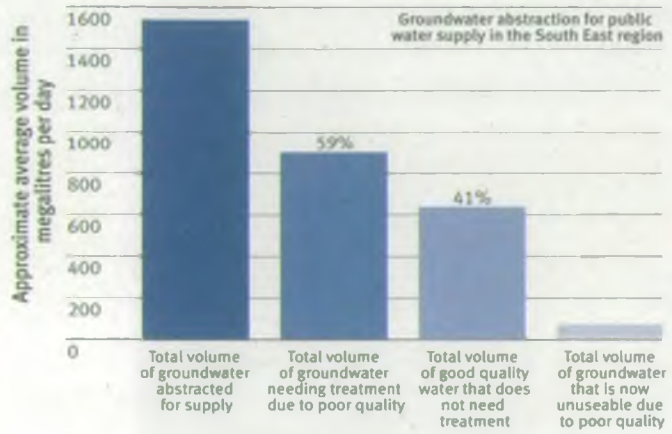


Figure 11: Groundwater abstraction rates. 59 per cent of all groundwater abstracted for public water supply requires prior treatment. At some sites treatment is required for more than one quality issue
Source: Environment Agency, 2006; Folkestone and Dover Water Services, 2006; Portsmouth Water, 2006; Mid Kent Water, 2006; South East Water, 2006; Southern Water Services, 2006; Sutton and East Surrey Water, 2006; Thames Water, 2006; Three Valleys Water, 2006

Groundwater treatment rates

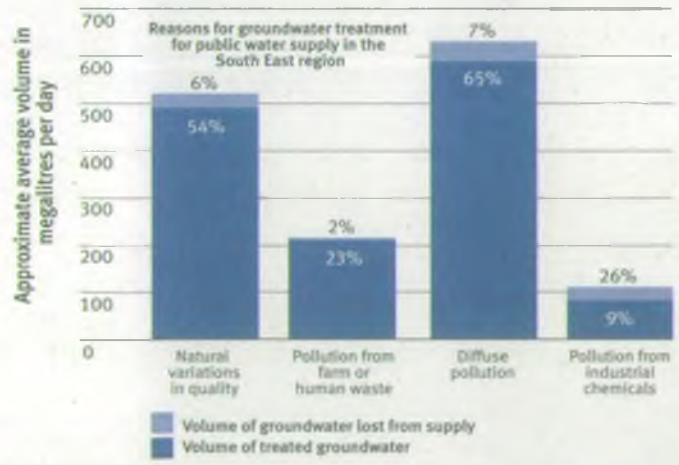


Figure 12: Groundwater treatment rates. Natural variations in quality include problems due to iron, manganese, turbidity, pH, taste and odour. Pollution from farm or human waste includes problems with cryptosporidium and bacteria. Diffuse pollution includes pesticide, nitrate and ammonia species contamination. Pollution from industrial chemicals includes contamination from solvents and hydrocarbons. Closure volumes are given as the percentage of all sites with that particular quality issue
Source: Environment Agency, 2006; Folkestone and Dover Water Services, 2006; Portsmouth Water, 2006; Mid Kent Water, 2006; South East Water, 2006; Southern Water Services, 2006; Sutton and East Surrey Water, 2006; Thames Water, 2006; Three Valleys Water, 2006

- Current and future development and associated infrastructure can be a risk to groundwater. The main activities that can have an adverse impact include agricultural activity, industrial and chemical works, petrol and diesel storage at filling stations, oil storage at rural homes, sewage disposal and waste disposal sites. We all need to minimise these risks.
- If it becomes uneconomic or impractical for water companies to continue to treat groundwater, sites may close. Closed sites represent a total volume of lost drinking water of 73 million litres per day. Treatment is required to combat industrial chemical contamination, diffuse pollutants, naturally occurring chemical variations and microbiological contaminants from farm and human waste (see Figure 12).
- The current drought, resulting from two successive dry winters, means that groundwater levels are lower than the long-term average across most of the South East. The overall volume available for drinking water supply and the environment is therefore low and it is all the more important that we protect groundwater from contamination. The region is preparing for the potential impacts of a third dry winter.

Together we are:

- Continuing to monitor ground and river water to assess trends ✓
- Reducing water pollution incidents, through the joint efforts of the Environment Agency, water companies, businesses and farmers ✓
- Preparing for the Water Framework Directive so that groundwater quality and monitoring regimes comply with the new requirements ✓
- Supporting water companies to achieve compliance with discharge standards ✓
- Avoiding adverse impacts on the water environment from new housing growth through work involving the Environment Agency, water companies, Government departments and local planning authorities ✓

Together we can:

- Prevent pollution by finding out and following best practice for all potentially polluting activities ✓
- Get advice on the correct way to store chemicals and oil by downloading Pollution Prevention Guidance notes from www.environment-agency.gov.uk ✓
- Always follow manufacturer's instructions when using pesticides and fertilisers ✓
- Be careful to never pour chemicals or paint down the drain ✓
- Always take waste to a certified amenity site ✓
- Use water wisely, especially during a drought ✓

Pollution prevention is always better than cure!

For further data and information please use the following link to the South East State of the Environment website:
http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e

healthy soils and good land management are vital for a healthy environment – together we need to look after this important resource and restore areas of neglect

land quality

land quality

Good land management is essential in order to protect soil and water, and support wildlife and the built environment. Land in the South East is under increasing pressure from agriculture, development, waste and industrial sites.

A key aspect of land management is soil protection. Healthy soils are vital to a sustainable, healthy environment. Agriculture has a major responsibility and interest in looking after soil. Good soil husbandry reduces the risk of soil run-off and erosion, which reduces the risk of diffuse water pollution and local flooding. The latest reforms to the Common Agricultural Policy present a new opportunity to protect soils and the new Environmental Stewardship Schemes have resource protection options relating to soil management.

Soils in the built environment also need careful management. Land contamination and sustainable drainage to control flooding are important issues in the South East. Contaminated land is a risk to groundwater quality and a deterrent to redevelopment. With pressures for new development in the South East, it is important to protect our existing green spaces and so new housing should use previously developed land wherever possible.

Land quality trends in the South East

- Over the last four years there has been a steady reduction in land pollution incidents from 70 to 20 incidents (see Figure 13).
- Agriculture accounts for two thirds of land use in the South East and this is mostly arable and grassland. The reform of the Common Agricultural Policy (introduced January 2005) will have substantial impacts on agriculture, mostly resulting in benefits for the environment. There is likely to be a general shift towards more extensive farming systems, with some intensification in a few areas, and it is expected that eventually more land will enter into Environmental Stewardship Schemes.
- As agriculture is the dominant land use in the South East, it makes a significant contribution to water pollution along with other sources from transport, construction, run-off from urban areas and discharges from contaminated land.
- The area of land under new Environmental Stewardship - Entry Level Stewardship/Organic Entry Level Stewardship (ELS/OELS) - is currently 381,549 hectares, 31 per cent of the total agricultural area (as at 31 July 2006). Figure 14 shows the uptake of schemes on agricultural land by the different counties. As the scheme is new it is too early to assess trends.
- The South East has 40,623 hectares of land under organic cultivation, or in the process of moving to organic farming. This represents an increase of 775 hectares over the last three years, but is still only a small proportion (3.3 per cent) of total agricultural area. As a result organic farming is contributing little to the state of the environment in the region at present.

Land pollution incidents

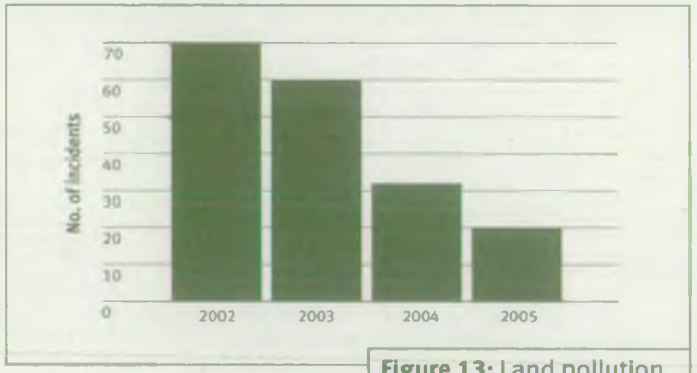


Figure 13: Land pollution incidents
Source: Environment Agency, 2005

ELS/OELS percentage area uptake of agricultural land by county

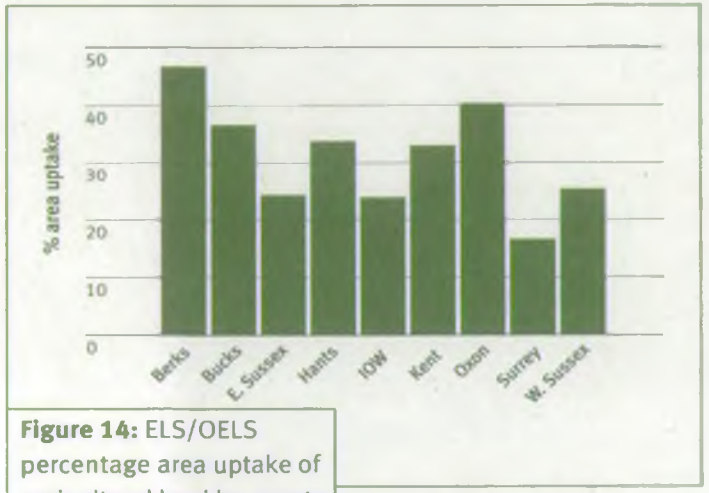


Figure 14: ELS/OELS percentage area uptake of agricultural land by county
Source: Department of the Environment Fisheries and Rural Affairs, 2006

Percentage of new dwellings in the South East on previously developed land

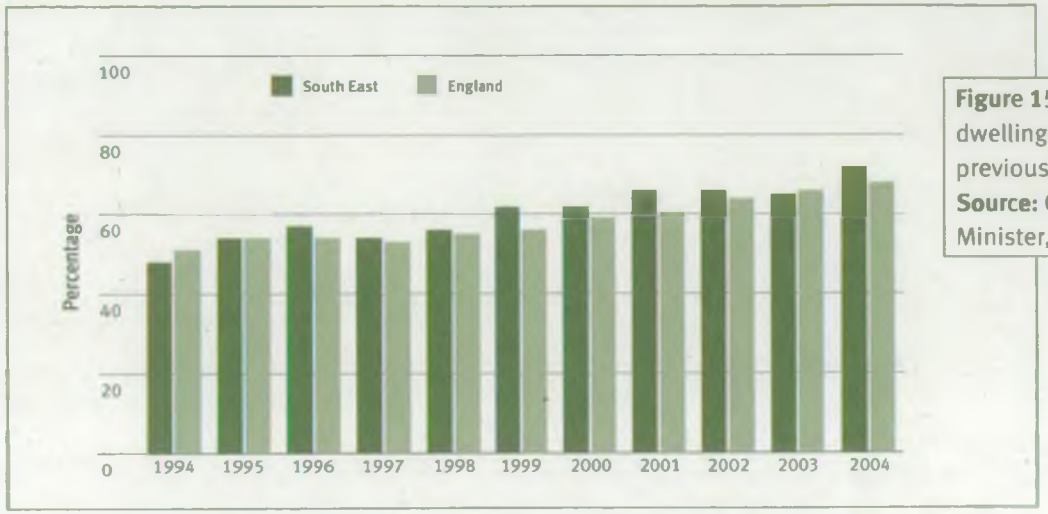


Figure 15: Percentage of new dwellings in the South East on previously developed land
Source: Office of the Deputy Prime Minister, 2004

Density of new dwellings in the South East

Figure 16: Density of new dwellings in the South East
Source: Office of the Deputy Prime Minister, 2004

- To compensate for the high demand for land within the South East, many houses are now being constructed on land that has previously been developed (see Figure 15). The number of houses constructed on previously developed land in the South East in 1994 was 2.4 per cent below the country's average. It is now 3.8 per cent above the country's average.
- The density of new homes in the South East exceeded the English average of 40 homes per hectare for the first time in 2004. There are two reasons for this: firstly it helps to address the problem of scarcity of new land for building, and secondly it complies with Government planning policy (Planning Policy Guidance Note 3 : Housing) (see Figure 16).

Sussex Wharf, Shoreham

- Developers (Taylor Woodrow Ltd) completed a mixed development of residential and commercial units on the former 'Tar Distillery' site, an area of 3.7 hectares.
- Extensive soil and groundwater investigations were carried out to assess the contamination levels on site.
- This information was used to develop risk assessments for human health and controlled waters.
- Treatment was necessary before the site was suitable for residential development and to prevent any risks to controlled waters.
- A treatment strategy was agreed upon by the developers, Adur District Council and the Environment Agency.
- An impermeable barrier was constructed on site to prevent the migration of contaminated groundwater.
- The on-site treatment of contaminated soil was monitored, to greatly reduce its hazardous nature before being sent to landfill.

photo courtesy of Taylor Woodrow, and Merebrook Science and Environment Ltd

Together we are:

- Treating and bringing more previously developed land back into good use ✓
- Ensuring that we take opportunities to improve land management through development plans and major planning applications ✓
- Promoting good soil and water management in accordance with the Water Framework Directive ✓
- Encouraging the use of sustainable land management practices across the South East, including best-practice in farm management and agri-environmental schemes ✓

Together we can:

- Report any land pollution incident to the Environment Agency on 0800 807060 as soon as possible, even if we are uncertain of its severity ✓
- Reduce the amount of pesticides and chemicals we use, whether for commercial or private use ✓

For further data and information please use the following link to the South East State of the Environment website:
http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e

photo by Stephen Limbrey

biodiversity

Biodiversity is the variety of species, habitats and ecological systems that make up the living earth. The South East is rich with diverse high-quality habitat and wildlife sites, vital to the local economy, for fishing, agriculture, forestry, tourism, recreational and cultural activities.

Biodiversity trends in the South East

- The region has the largest total Area of Outstanding Natural Beauty of the English regions, with one third of the South East designated.
- Sites of Special Scientific Interest (SSSI) in South East England cover a total of 131,000 hectares. Figure 17 shows the majority of SSSI habitats are classed by Natural England as favourable/ recovering. A notable exception is 'Rivers and streams', with 90 per cent classed as unfavourable or declining, where the assessment criterion relates to habitat health rather than water quality. Natural England have a target for all sites to reach the 'Favourable' classification by 2010. All habitats below this classification are being individually addressed through consultation with specialist organisations and regulatory bodies.
- The condition of SSSIs is improving. Sites classed as favourable/recovering have increased from 70 per cent in 2005 to 79 per cent in 2006.
- Wild bird populations have been in decline in the South East in recent years, particularly farmland and woodland species. Most recent UK data suggest this trend may be changing, but it is too early to say whether any recovery is taking place in the South East.

Environmental condition of SSSI habitats in South East England

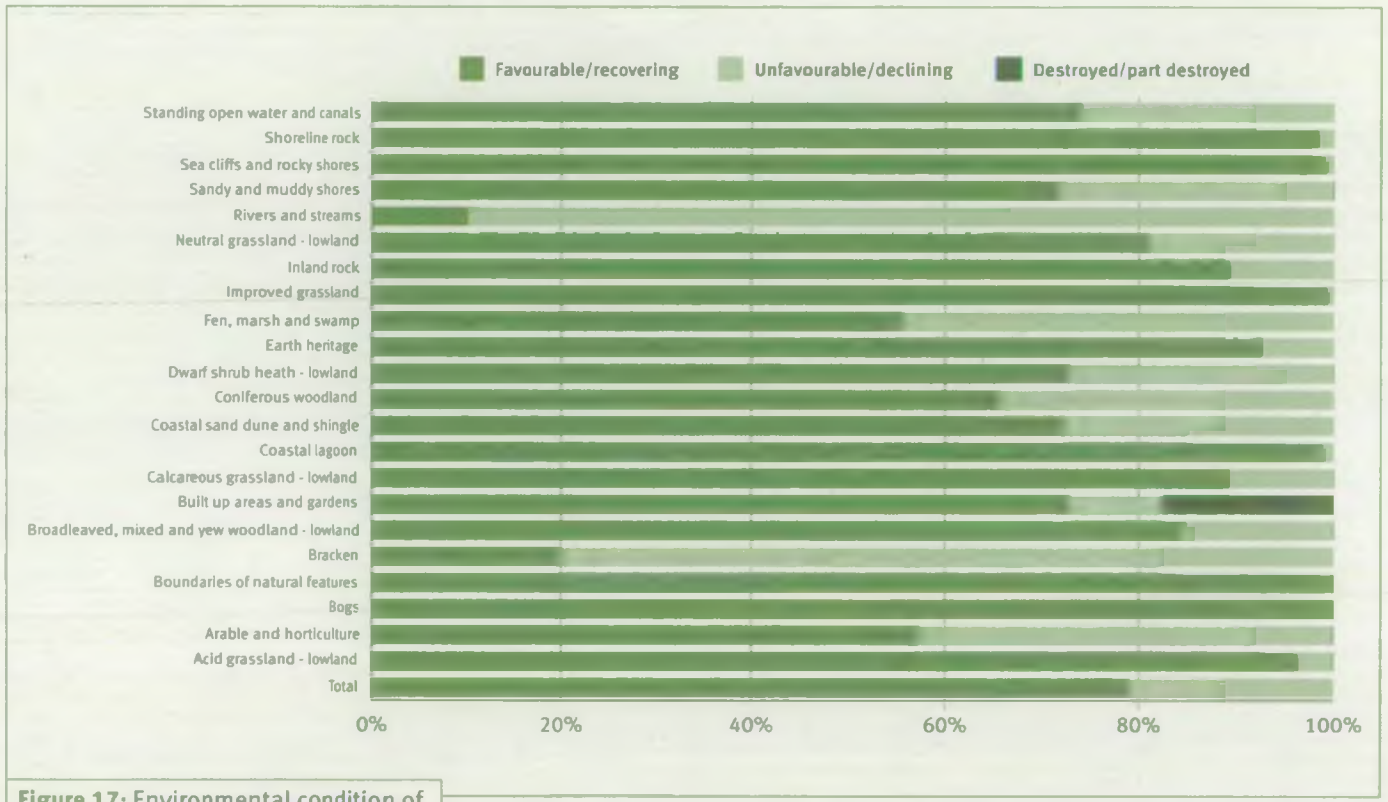


Figure 17: Environmental condition of SSSI habitats in South East England
Source: Natural England, 2006

- Sea trout stocks are stable based upon monitoring data in the Rivers Test and Itchen, but are very low in the River Thames.
- Salmon numbers declined substantially from the 1970s, but are now showing signs of stabilising. However, numbers remain below the conservation targets for the Rivers Test, Itchen and Thames.
- Water voles continue to decline and could become extinct within the region, but some localised populations have shown signs of recovery in response to habitat enhancement. Populations on the Rivers Test and Itchen and on the Isle of Wight remain important local strongholds that continue to need protection (see Figure 18).
- Otter populations are slowly recovering in the South East (Figure 19).
- In the South East work is underway to improve the status of chalk rivers, floodplain grazing marsh, otter, water vole, southern damselfly and white-clawed crayfish. This work meets our commitment to the UK Biodiversity Action Plan, in partnership with the Hampshire and Isle of Wight Management Group. Several management plans have now been drawn up for sites across the region. Improvements in progress range from restoring ditches, removing scrub, creating a number of small lakes and re-opening culverts.

Water vole populations

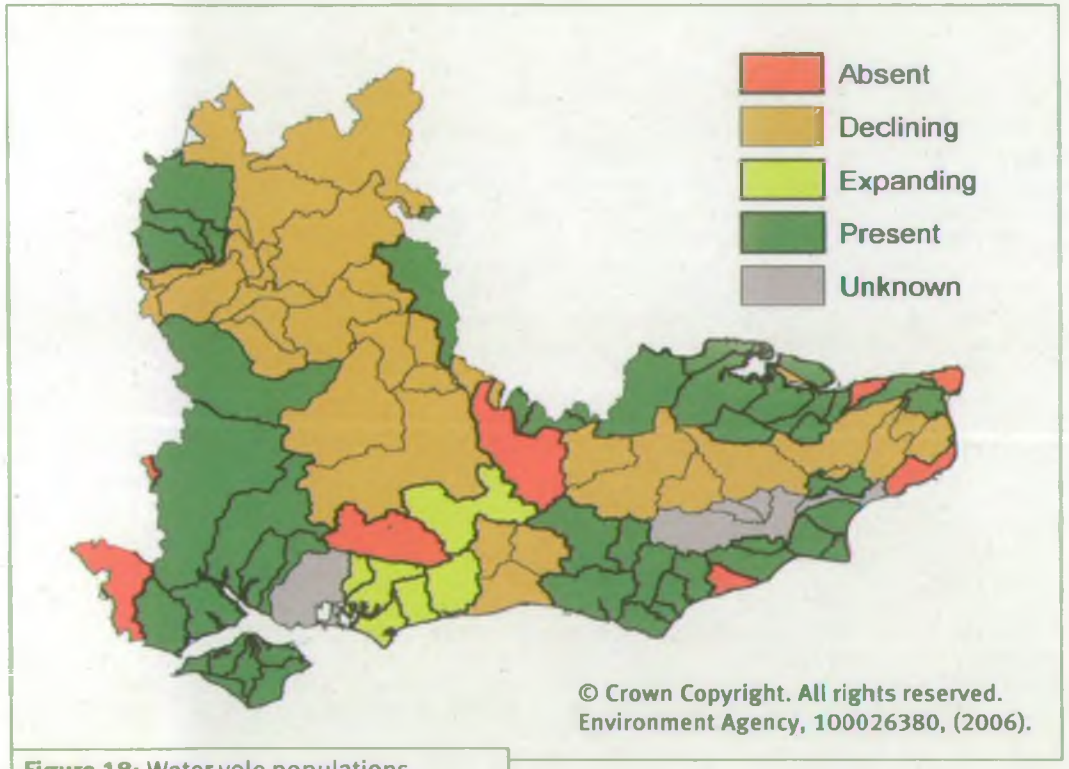


Figure 18: Water vole populations
Source: Environment Agency, 2006; Hampshire Wildlife Trust, 2006; Sussex Wildlife Trust, 2006

Otter populations

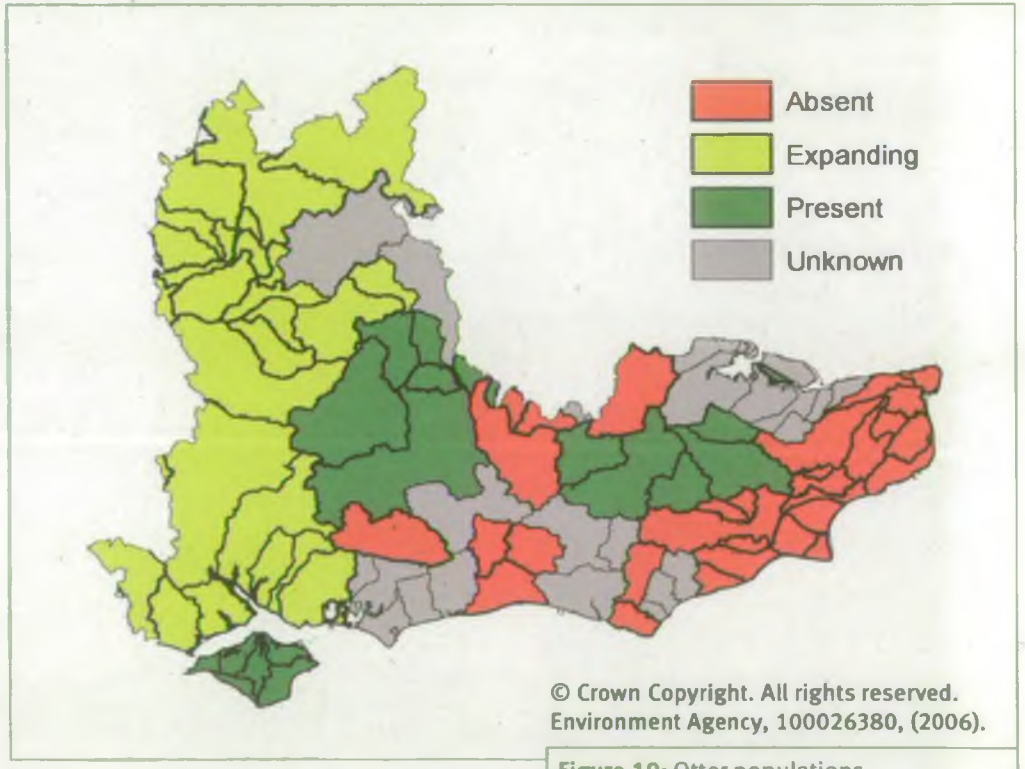


Figure 19: Otter populations
Source: Environment Agency, 2006; Hampshire Wildlife Trust, 2006; Sussex Wildlife Trust, 2006

Together we are:

- Improving and protecting our most important wildlife sites and threatened species ✓
- Working to achieve target habitat conditions through the combined efforts of regulatory bodies, Natural England, local authorities, and specialist organisations ✓
- Improving habitats in which wild bird populations may thrive, in order to halt the declining trends ✓
- Encouraging the growth of fish populations by improving water quality and managing habitats, so that conservation targets can be met ✓
- Continuing to monitor and regulate industry to minimise the effects that discharges have on climate change ✓

Together we can:

- Minimise our impact on the environment by disposing of litter and waste properly to avoid harm to wildlife and habitats ✓
- Report otter and water vole sightings to the Environment Agency on 08708 506506 ✓
- Encourage birds into our gardens and use less pesticides, which kill the insects on which they feed ✓

For further data and information please use the following link to the South East State of the Environment website:
http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e


we will continue to work together to reduce the effects of flooding on people and properties

flood risk

Winter 2002/03 Flood in Hampshire - Nether Wallop; Supplement to 2000/01 flooding report

flood risk

Reducing flood risk is a major priority. The continued investment in flood defences and warning systems will reduce the effects of floods on people and property. Inappropriate development should be avoided in areas of flood risk.

Not all flooding can be prevented. The effects of climate change will increase flood risk, while housing growth in the South East will create development pressures. Local authorities, water companies and the Environment Agency are working closely together in order to address flooding problems. This includes flooding from surface run-off, groundwater and sewage, as well as from rivers and the sea. People living in flood-risk areas need to be aware of the risks involved, how to deal with such events and what precautionary actions they should take.

We must also recognise that floods are natural events. They help maintain many coastal and inland habitats such as wetlands, floodplains, coastal mudflats, salt marshes and lagoons.

Flood risk trends in the South East

- There are 310,000 properties and businesses at risk from coastal or river flooding in the South East Region. This is higher than the 235,000 properties identified in last year's report and is due to a change in method by which we assess the risk of flooding. Until recently risk was based upon a 1 in 200 year risk of flooding for coastal and a 1 in 100 year risk for river areas. Risk is now being based upon a 1 in 1000 (0.1 per cent) probability of flooding in any one year (called Extreme Flood Outline) for both coastal and river flooding. We will now assess flood risk future trends against this new baseline.
- Whatever we do there will always be a risk of flooding. Impacts of climate change and new development increase the risk. This is balanced by our investments in defences, warning systems and helping people prepare for possible flooding which all act to reduce the risk. Overall more people and properties in the South East are benefiting from more and better standards of protection against flooding than in previous years.
- The greatest threat of widespread flooding is from the sea. The South East has 1,250 kilometres of coastline. We monitor coastal processes throughout the region through the South East Strategic Regional Coastal Monitoring Programme.
- Less than 30 per cent of properties that are within a flood risk zone are registered to receive flood warnings. The target is for 80 per cent of properties within a flood risk zone to be offered this service by 2010.
- An additional 11,300 homes across the South East have been protected since 2003/04 (see Figure 20).
- The investment in new or enhanced flood defences averages £27 million per year. More than £50 billion worth of assets are considered to be at risk of flooding in the South East.
- Flood risk schemes provide an opportunity to improve habitats and we are starting a Regional Habitat Creation Strategy to measure and carry out habitat gains.
- The Environment Agency objected to 671 planning applications on flood risk grounds in 2005/06, compared to 701 in 2004/05.

Number of additional houses protected from flooding per year in the South East

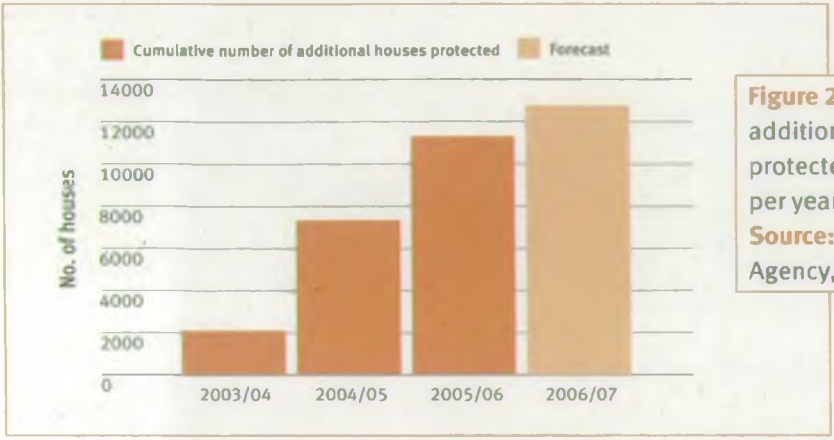


Figure 20: Number of additional houses protected from flooding per year in the South East
Source: Environment Agency, 2006

High Knocke to Dymchurch Redoubt sea defences

Work began in 2005 on the replacement of 4.5 kilometres of sea defences between High Knocke and Dymchurch in Kent. The current defences have deteriorated over time and planned works will reduce the annual risk of flooding from 5 per cent to 1 per cent against overtopping and 0.5 per cent against a breach. The project will cost £28 million, use 80 thousand tonnes of rock and take five years to complete. 2,500 homes will be protected from coastal flooding.

Together we are:

- Continuing to manage flood risk and increase the number of properties that are registered to receive flood warnings so that we minimise the threat to human life and damage to property ✓
- Improving flood risk mapping to enable the risks of flooding to be more accurately defined ✓
- Including a consideration of the impacts of climate change in all flood risk plans and strategies ✓
- Developing sustainable approaches to flood risk management working with natural processes wherever possible ✓
- Planning the location and type of all of all new development carefully so that we avoid increases in flood risk ✓
- Reviewing building regulations associated with flood risk ✓

Together we can:

- Check whether we live within a flood risk area and, if so, register our property on the Environment Agency's flood warning system 'Floodline' ✓
- Look at the Environment Agency's website for advice on how to best protect our families and belongings against flooding if we do live within a flood-risk area ✓
- Encourage birds into our gardens and use less pesticides, which kill the insects on which they feed ✓

Floodline website: http://www.environment-agency.gov.uk/subjects/flood/826674/1306207/?referrer=/subjects/flood/ or Telephone: 0845 988 1188

For further data and information please use the following link to the South East State of the Environment website: http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e


climate change is happening
together we have to adapt an
reduce further changes
climate change

climate change

Our climate is changing. Increasing greenhouse gas concentrations over the last 50 years are responsible for much of the current warming, and our present day emissions will affect climate well into this century. We must plan to limit further changes and adapt to those that are already taking place.

The challenges from climate change faced by the South East impact on all aspects of our environment. Summer heat-waves and winter storms are more likely, increasing the frequency of drought and floods. Wildlife and habitats are under pressure as climatic zones shift north by 50 to 80 kilometres per decade. Buildings and infrastructure will be at greater risk from subsidence, while drainage and sewerage systems will need to cope with increased rainfall intensities. Rising sea levels threaten coastal flood defences and contamination of coastal aquifers and soils by salt water.

Climate change trends in the South East

- Greenhouse gas emissions for the UK are within the 2008-2012 Kyoto target, with emissions in 2005 being slightly lower than in 2004.
- Carbon dioxide emissions in 2005 were slightly greater than in 2004 and remain outside the more demanding UK target. The target is to achieve carbon dioxide emissions by 2010 that are 15-18 per cent below those of 1990 (revised from a previous target of 20 per cent below 1990 levels). Up to 2005 we had achieved a reduction of only 5.3 per cent from 1990 levels. Carbon dioxide emissions in the South East are greater than the UK average for four sectors commonly used as assessment indicators - industry and commercial, road transport, domestic and land-use change.
- The South East has the greatest carbon dioxide emissions of all the English regions for transport and domestic use and second highest for industry and commercial use (see Figure 22). Despite the high emissions from industry and commercial use, this sector largely consists of 'cleaner' industries such as computer manufacturing and luxury goods.
- The 1990s was the warmest decade in 100 years. Six of the ten warmest years on the UK record were between 1995 and 2004. Brogdale, Kent recorded the hottest UK day ever, in August 2003 at 38.5°C. Summer 2006 will also be remembered as very warm and dry. The South East was again the warmest place, when temperatures in Wisley, Surrey reached 36.5°C in July.

UK greenhouse gas emissions

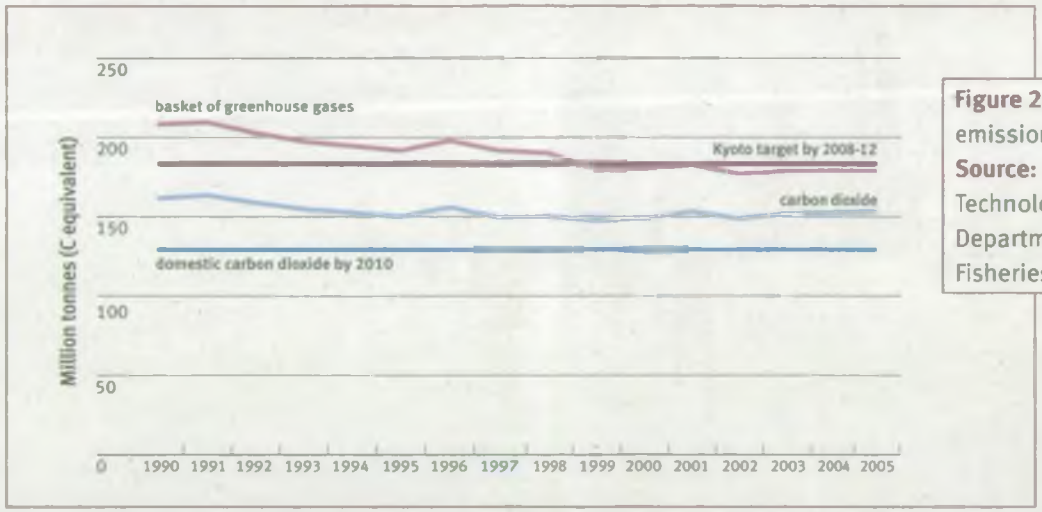


Figure 21: UK greenhouse gas emissions
Source: National Environmental Technology Centre, 2006; Department of the Environment, Fisheries and Rural Affairs, 2005

CO_2 emissions by English region

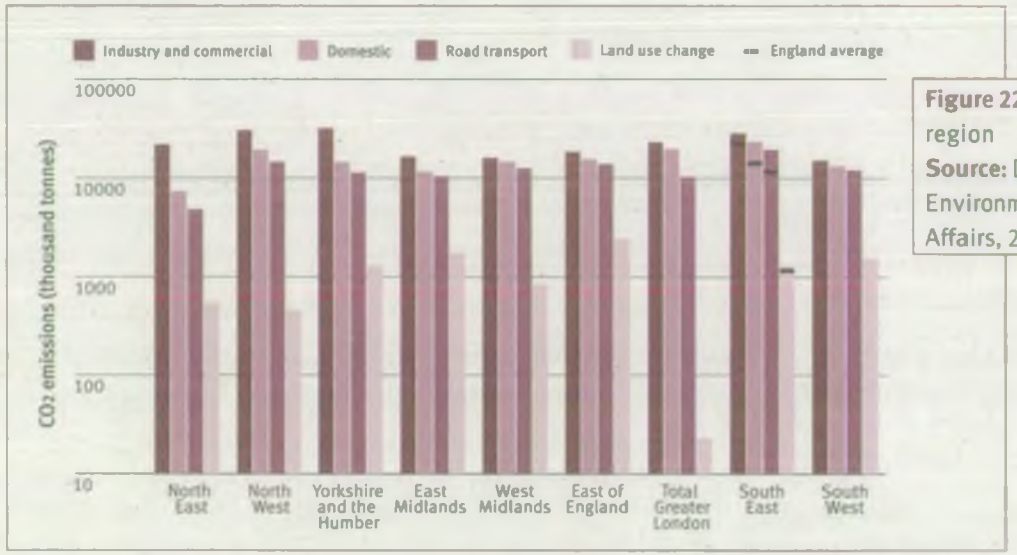


Figure 22: CO_2 emissions by English region
Source: Department of the Environment, Fisheries and Rural Affairs, 2005

Summer rainfall records for the South East - compared with the average rainfall for 1961-1990

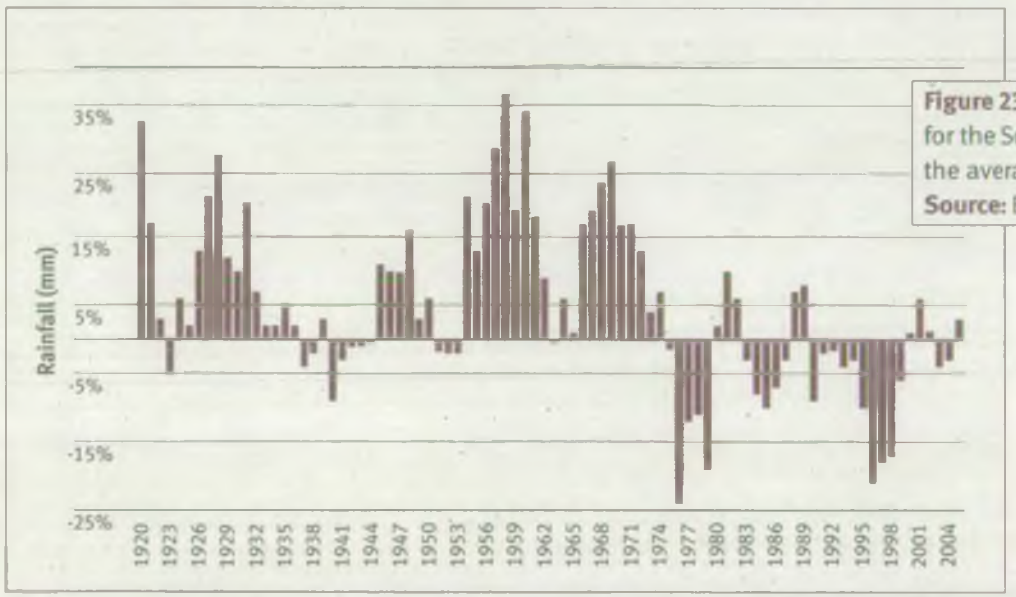


Figure 23: Summer rainfall records for the South East - compared with the average rainfall for 1961-1990
Source: Environment Agency, 2005

- Due to the effects of land movement, sea level rise will be greatest in the South East. Sea levels at Sheerness have risen by 249 millimetres between 1834 and 2005, or 1.5 millimetres per year. Average UK sea levels have risen by 10 cm since 1900.
- Seasons are likely to change in the future, with an increase in the number of winter storms. There will be hotter, drier summers and wetter winters. Heavy rainfall events will become more frequent. This will be particularly significant in the South East where climate change effects are forecast to be most extreme.
- Rainfall totals vary greatly from year to year demonstrating the range of climatic influences that dictate the UK weather. There has been a higher frequency of dry summers since 1976, with all 10 of the driest summers occurring in the last 30 years. Drier summers, compared to the South East's long term average (1961-1990), are shown as negative values in Figure 23.
- There is no clear trend for winter rainfall. With groundwater making up around 75 per cent of the region's water resource, the impacts of climate change on winter rainfall will be important as this is the time when groundwater stores can refill. Any changes to the frequency and intensity of winter storms will also have an impact on flood risk within the South East.

Together we are:

- Continuing to raise awareness of climate change impacts and the need to mitigate and adapt to them
- Encouraging the reduction of greenhouse gas emissions
- Continuing to support the work of the South East Climate Change Partnership and Sustainable Energy Partnership
- Emphasising the importance of adapting lifestyles to meet the effects of climate change

Together we can:

- Use our cars less and public transport more
- Buy energy efficient goods
- Avoid leaving electrical equipment on standby
- Fit energy saving light bulbs
- Switch off lights at home and work
- Install loft insulation and double glazing to reduce heat loss

For further data and information please use the following link to the South East State of the Environment website:
http://www.environment-agency.gov.uk/regions/southern/1168940/?lang=_e

South East England indicators 2006

South East England indicators 2006

A summary of the indicators used in our assessment of the South East environment is presented in Table 2. The table shows where the environment is showing signs of improvement or deterioration, or where pressures on the environment are increasing or decreasing.

The overall trends are shown by the following colours:

- Environment improving / environmental pressure decreasing
- Environment deteriorating / environmental pressure increasing
- No significant change in environment / environmental pressure
- Limited data to identify change or trend not applicable

An 'environment improving' status does not necessarily mean the indicator is meeting relevant targets/objectives or sustainability criteria, but only that improvements are occurring.

Table 2: Long term trends and status of South East State of the Environment indicators.

Notes: Years in brackets show the most recent data used in the assessment of indicators. Status descriptions refer to the South East unless otherwise stated.

Further information

You can find more in depth information on South East environmental issues, indicators, data and trends on the following websites:
http://www.environment-agency.gov.uk/regions/southern **http://www.environment-agency.gov.uk/regions/thames**

Indicator	Trends	Status
		People and lifestyles
Indicator 1 Population change (2004)		The South East has the largest population of any region with over 8 million people in 2004. This is projected to increase by 800,000 by 2017.
Indicator 2 Water demand and availability		
• **Supply-demand balance** (2006)		In dry years, water demand is greater than water supply for some areas. Improvements are being carried out to address deficits.
• **Annual abstraction by use** (2004)		Water supply and electricity production account for the majority of water taken from the environment. For electricity production most water is taken from tidal reaches of rivers. Overall abstraction for public water supply has been fairly steady in recent years, following declines since the 1970s.
• **Household per capita consumption** (2005/06)		Per capita consumption rose by around 9 per cent between the early 1990s and 2003/04 to an average of 168 litres per person per day. Since then, this has decreased by about 2 per cent per year to 161 litres per person per day in 2005/06. This is influenced by the increasing number of metered households. We would like to see a target of 120 litres per person per day in the future.
• **Predicted water demand** (2006 with projection to 2031)		Water demand is predicted to rise by approximately 10 to 12 per cent over the next 25 years. This increase will result from population and housing growth, and lifestyle changes with more households containing fewer occupants, all requiring water supplies.
• **Leakage** (2004)		While seven of the region's eight water companies have reduced leakage rates since 1999/2000, average leakage is still over 100 litres per property per day.
• **Household water metering** (2005/06-2015)		There has been an 8 per cent increase in the number of households receiving metered water supply since last year and water companies plan to increase metering more significantly in the future. We want to see full metering in place across the South East, and believe this is possible by 2015 with more compulsory metering.
Indicator 3 Energy consumption (2004)		There has been an overall increase in UK energy use over the last 20 years, mainly because of increased demand from transport and households. Transport has been the biggest single energy user in the UK since 1988.
Indicator 4 Waste arisings and disposal methods (2005)		
• **Waste arisings**		Generation of municipal waste continues to rise and reached 4.6 million tonnes in 2004/05, an increase of seven per cent compared with five years ago.

Indicator	Trends	Status
		People and lifestyles
• **Waste disposal**		The amount of municipal waste going to landfill in the South East has decreased by 10 per cent over the last five years, but landfill still remains the most common disposal method. With landfill space running out, it is essential that suitable alternatives are established. During the same period, household recycling has increased from 16 to 24 per cent, with the South East having the fourth highest rate of the nine English regions. The incineration of waste for energy has increased from zero to 186 thousand tonnes in 2004/05 during the same period.
Indicator 5 **Fly-tipping** (2005/6)		Fly-tipping in the South East is costing local authorities nearly £6.5 million per year. 10,200 incidents per month were reported in the South East during 2005/06 with 58 per cent of incidents involving household waste.
Indicator 6 **Road traffic** (2004)		South East residents make an average of 702 trips by car each year, either as drivers or passengers, second only to South West. South East and East of England residents are the least likely to use the bus. Road traffic volume is higher in the South East than in any other region. Cars are the major means of transport with 67 per cent of all trips carried out as a car driver or passenger. 76 per cent of people in the South East travel to work by car.
		Air quality
Indicator 7 **Days when air pollution is moderate or higher** (2005)		Overall air quality has improved since a poor-quality peak in 2003 due to increased ozone and particulate matter in the hot summer. In 2005 four of the five sites monitored, showed improved air quality compared to 2004.
Indicator 8 **Sulphur dioxide concentration** (2005)		Over the last decade there have been substantial reductions in the concentrations of sulphur dioxide, with smaller decreases since 2004.
Indicator 9 **Nitrogen dioxide concentration** (2005)		There is generally a decreasing trend in nitrogen dioxide concentrations, which have been compliant with air quality objectives since 2000.
Indicator 10 **Particulate concentration** (2005)		Particulate matter (PM_{10}) concentrations are generally decreasing or remaining consistent, and are compliant with air quality objectives. However, air quality problems caused by elevated PM_{10} concentrations continue to occur from air pollution events, including those originating from outside the South East.
Indicator 11 **Emissions to air from processes regulated by the Environment Agency** (2003)		Many of these emissions remain low compared to the total UK regulated emissions and other sources in the UK and processes are operating within agreed limits. However, regulated emissions of greenhouse gases, nitrogen oxides and volatile organic compounds have increased during the last five years.

Indicator	Trends	Status
		Water quality and resources
Indicator 12 River water quality		
• **Chemical** (2005)		River water quality is generally good and has improved slightly over the last year. There has been an underlying trend of improvement since the 1990s.
• **Biological** (2005)		The biological quality of rivers shows a very slight improvement compared with last year. Biological water quality has shown a steady improvement since the 1990s.
Indicator 13 Compliance with River Quality Objectives (2005)		Compliance with River Quality Objectives fell after low flows caused by drought conditions in 2003, but has since recovered in 2004 and 2005.
Indicator 14 Compliance with the EU Bathing Water Directive (2005)		Bathing water quality has improved significantly with no beaches consistently failing the imperative standards since 1998 and no failures at all in 2005.
Indicator 15 Nutrient status of freshwaters (2005)		
• **Phosphate**		Phosphate levels continued to decline in 2005 compared with results in the early 1990s, showing an underlying trend of improvement. Much of the decrease is due to investment by water companies in nutrient stripping at sewage treatment works.
• **Nitrate**		Nitrate concentrations in freshwaters have remained stable since the 1990s.
Indicator 16 Nitrate status of groundwater (2005)		Nitrate concentrations pose a major problem to groundwater quality with around 50 per cent of the South East designated as either a groundwater or surface water Nitrate Vulnerable Zone. Trends show that there have been a continued increase in nitrate concentrations throughout the region, with the only decreases being seen during periods of drought when the water table is lower than usual.
Indicator 17 Water pollution incidents (2005)		There has been a continued decrease in the total number of reported water pollution incidents over the last four years.
Indicator 18 River flows and groundwater levels (2005/06)		River flows and groundwater levels have been close to historic lows after two consecutive dry winters. Water companies imposed restrictions on water use throughout Sussex, Kent, Isle of Wight and the Thames basin in order to manage water effectively and reduce the risk of damage to the environment.

Indicator	Trends	Status
		Land quality
Indicator 19 New homes built on previously developed land (2004)		There has been a 24 per cent increase in new homes built on previously developed land during the last decade, and an increase in density from 22 to 41 dwellings per hectare during this period.
Indicator 20 Area under agri-environment schemes (2006)		The area of land under new Environmental Stewardship Schemes is increasing and trends will be seen in future years.
Indicator 21 Land pollution incidents from agriculture and other sources (2005)		The total number of pollution incidents impacting on land have continued to decrease over the last four years.
Indicator 22 Use of pesticides in agriculture and horticulture (2004)		The area of land treated with pesticides has increased for the first time since 1998, to 8.1 million hectares. The amount of pesticide used has also increased slightly, but remains around 25 per cent less than amounts used in the mid 1990s.
		Biodiversity
Indicator 23 Condition of Sites of Special Scientific Interest (2006)		The condition of Sites of Special Scientific Interest is improving with 78 per cent being in favourable or recovering condition in 2005/06.
Indicator 24 Area of woodland (1996)		The South East is the most wooded of all the English regions. Woodland area has increased by 7 per cent over the last 15 years.
Indicator 25 Distribution of otters (2006)		Although otters remain rare, distribution has increased significantly.
Indicator 26 Distribution of water voles (2006)		Whilst some strongholds remain, water voles are rare in around half of the region. In the last decade, water voles have disappeared from three quarters of their previously known sites across the South East. Local known populations require protection.
Indicator 27 Numbers of salmon and sea trout (2006)		
• **Salmon**		Salmon numbers declined substantially from the 1970s, but are now showing signs of stabilising. However, numbers remain below the conservation targets for the Rivers Test, Itchen and Thames.
• **Sea trout**		Sea trout stocks are stable.
Indicator 28 Wild bird populations [2004]		Over the last 10 years, the South East has recorded the highest decline in woodland bird populations and the second highest decline in forest bird populations compared with other regions. This is believed to be the result of agricultural intensification and the resulting habitat loss and degradation.

Indicator	Trends	Status
		Flood risk
Indicator 29 Number of properties at risk from flooding (2006)		Approximately 310,000 properties are at risk from flooding. There is still significant demand to build within flood risk areas. Less than 30 per cent of these properties have registered to receive flood warnings.
Indicator 30 Housing protected from flooding (2006)		11,300 properties have benefited from new or improved flood defences during the last three years, with a further 1,455 set to benefit during 2006/07.
		Climate change
Indicator 31 Future climate change in the South East (2006)		Climate change scenarios for the South East show an increase in seasonality. We will experience hotter, drier summers and wetter winters. These changes will have significant impacts on biodiversity and water resources, and may increase flood risk.
Indicator 32 Quantity of rainfall (2005)		Rainfall data suggest a decline in summer rainfall since the 1970s and an increase in winter rainfall since the 1990s. Although these trends are consistent with climate change predictions for the South East, without further data these results cannot be attributed to man-made climate change.
Indicator 33 Sea level change at Sheerness, Kent (2005)		Since 1834, sea levels have been rising at Sheerness by an average 1.7 millimetres per year. The rise in sea level places the region under greater threat of coastal flooding and erosion.
Indicator 34 UK greenhouse gas emissions (2005)		Greenhouse gas emissions fell by 14 per cent and carbon dioxide emissions fell by 5.3 per cent between 1990 and 2005. However, these improvements are threatened by carbon dioxide emissions from the transport sector, which rose by 90 per cent between 1970 and 2003 as a result of the increase in road traffic.

notes

contact details

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