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The environment in Hertfordshire

July 2010

Lucy Allum and Amy Dixon

Version 1

Amendment history at end of document

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Introduction

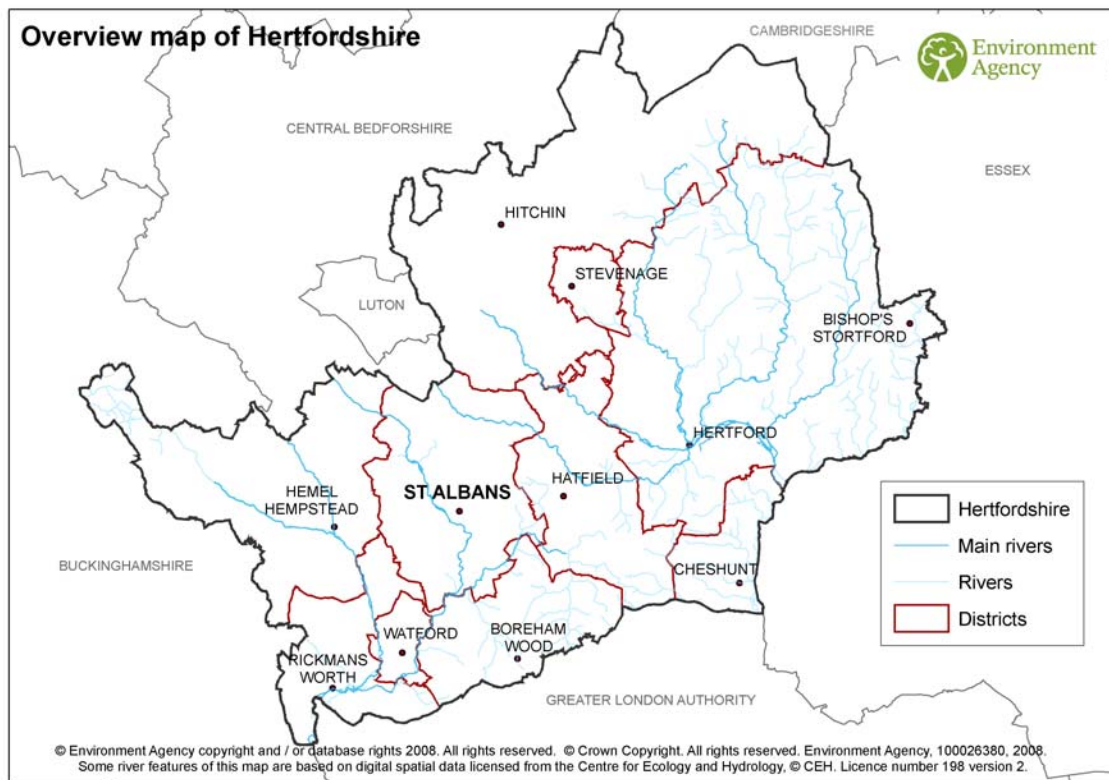
The aim of this 'Environment in Hertfordshire' report is to provide data and information for Hertfordshire, outlining where we are now and where we want to be in the future.

The report outlines the current state of the environment by theme. These themes are growth and sustainability, climate change, flood risk, waste, Water Framework Directive, water quality, water resources, land and wildlife.

We have used a range of datasets as indicators for each theme. We have given each indicator a good, moderate or bad status.

This is an influencing document that is designed to inform discussions with the county council and district councils, and decision / policy makers in Hertfordshire. It will therefore be useful to anyone who liaises with local authorities and researchers who are interested in environmental data for the county of Hertfordshire, and the districts within it.







The map below provides a general overview of the county of Hertfordshire – its districts and selected towns in each – to provide some spatial context to the information presented.

















Hertfordshire overview: where are we now and where do we want to be?

The table below gives an overview of the current status of the environment in Hertfordshire by theme. It summarises all the indicators and data used in the report to give an overall good, bad or moderate status for each theme. The table also shows an overall trend direction, where trends are evident, based on all the data for the theme. The table highlights the key points from the report – outlining where we are now and where we want to be in the future. These are our aspirations for the environment in Hertfordshire in the future.

Key

	Improving trend		Bad
	Trend is the same or unknown		Moderate
	Declining trend		Good

	Status	Trend direction	Current status (now)	Where we want to be (future)
Growth and sustainability			<ul style="list-style-type: none"> The population is increasing and more homes are being built. Particular pressures for Dacorum which has the highest population and will receive a large proportion of new homes. More renewable energy is being generated The ecological footprint (4.96 global hectares) is only 2% higher than the East of England but 6% higher than the UK average. However, this is 62% higher than the footprint per person when divided by the world's population (1.89 global hectares). 	<ul style="list-style-type: none"> Growth impacts on the environment considered in planning to ensure it is sustainable in Hertfordshire. Reduced ecological footprint in Hertfordshire, through reduction in resource consumption and waste production. Progress towards the amount available globally per person of 1.89 global hectares.
Climate Change			<ul style="list-style-type: none"> The average carbon footprint and greenhouse gas footprint for the county are both high – around 7% higher than the UK average. Carbon emissions and energy consumption are particularly high from the transport sector – mainly private vehicle use. 	<ul style="list-style-type: none"> Higher use of public transport, particularly for commuting, to reduce carbon footprint and CO₂ emissions. Increased domestic energy efficiency.
Flood Risk			<ul style="list-style-type: none"> 27,000 properties are at risk of flooding and 24% have a significant likelihood. 11,175 people are registered to receive flood warnings via FWD or EDW, 41% of all properties at risk. 	<ul style="list-style-type: none"> Increased sign-up to Flood line Warnings Direct, to at least 50% of those at risk, through programmes such as the Extended Direct Warning (EDW) project which automatically registers landline numbers. Inappropriate development should be avoided in areas at risk of flooding.
Waste			<ul style="list-style-type: none"> Production of waste is high – within the top 20 authorities in England. Disposal of municipal waste to landfill has declined by 10% in the last 3 years, but is still over 50% Household recycling is high (44%) – 6% over the UK average and already meeting the 2010 target. Big and nasty fly tipping incidents increased between 2007/08 and 2008/09. 	<ul style="list-style-type: none"> Less household waste produced despite a rising population Significant diversion of waste to landfill alongside a further increase in recycling and composting. Year on year reduction in the recorded fly-tipping incidents, to much lower levels.
Water Framework Directive			<ul style="list-style-type: none"> 24% of water-bodies are achieving good status. Water-bodies classified as poor or bad due to low biological quality in Hertfordshire rivers. 	<ul style="list-style-type: none"> All water-bodies in Hertfordshire meeting good ecological status or potential by 2027.

Water Quality		↑	<ul style="list-style-type: none"> • The length of river in Hertfordshire achieving grades A and B in the chemical GQA has increased by 22% since 1990. • Sewage treatment works (STW) compliance in Hertfordshire has been 100% for the last 3 years. • The risk to water quality from diffuse pollution is high. • No serious pollution incidents were recorded in 2009. 	<ul style="list-style-type: none"> • Reduced risk from diffuse pollution through sustainable urban drainage techniques and promotion of best practise for pesticide use. • Further reduction in water pollution incidents and no serious incidents recorded. • Continued 100% STW compliance.
Water Resources		↑	<ul style="list-style-type: none"> • Household water use in Hertfordshire is 9% higher than the England and Wales average but has declined. • Metering rates are improving and less water is being lost through leakage. • Hertfordshire is in an area of serious water stress and catchments are classified as over-abstracted or over-licensed. 	<ul style="list-style-type: none"> • Reduced water use to levels closer to the Defra aspiration of 130 litres per person per day by 2030. • Sustainable abstractions that do not have adverse impacts on water availability or quality.
Land		↑	<ul style="list-style-type: none"> • Diffuse pollution from pesticides is a big issue in Hertfordshire. • The percentage of new dwellings built on previously developed land is 89%. • 26 green spaces have been awarded the Green Flag – an increase of more than double since 2008. 	<ul style="list-style-type: none"> • Reduced risk of diffuse pollution through promotion of best practice for pesticide use and land management. • All PDL suitable for housing is used for development rather than green spaces or greenbelt land. • No category 1 or 2 incidents to land. • More green spaces awarded the Green Flag for high quality.
Wildlife		↑	<ul style="list-style-type: none"> • 92% of Hertfordshire's SSSI's are in favourable or recovering condition. • There has been a 20% reduction in river length achieving grades A or B in the biological GQA since 2000. • Fish populations in Hertfordshire rivers are healthy and diverse. • Himalayan Balsam is the most common invasive species in Hertfordshire and is found on most major rivers. 	<ul style="list-style-type: none"> • Meeting the government PSA target of 95% of SSSI's in favourable or recovering condition by December 2010. • Improved biological quality in Hertfordshire rivers to assist with WFD compliance, particularly in the River Gade and River Colne. • Improved river habitats that attract and support more fish, and improvements to fish passage through weir removal or notching. • Reduction in invasive species, particularly on river banks where they impact flow and habitat.

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1 Growth and sustainability

Key messages:

1. The population in Hertfordshire is increasing and is predicted to increase to 1.25 million by 2031. Flood risk and water use are already issues in some parts of Hertfordshire, particularly East Hertfordshire and Three Rivers districts. Future growth must address these issues to ensure it is sustainable.
2. The ecological footprint in Hertfordshire is higher than the East of England and UK average, with 6 out of the 10 districts in the county being in the top quartile of all districts in the UK. It is particularly high in St Albans.

Population



Approximately 1 million people live in Hertfordshire and 61% of these are of working age¹. Based on the Office for National Statistics (ONS) population projections, Hertfordshire's population is forecast to increase by 16% up to 2031. The predicted population is 1.25 million.

Dacorum has the largest population within Hertfordshire (139,600 people)¹. 17% of the total population within Welwyn Hatfield are 20-29 years old. This is the highest proportion in the County and is mainly due to the students from the University of Hertfordshire situated in Hatfield.

Employment



- The largest employment sectors in Hertfordshire in 2007 were Distribution, Hotels & Restaurants (27%) and Banking, Finance & Insurance (26%). Those in employment within the Agricultural and Energy sector have dropped by 25% between 2001 and 2007.
- Hertfordshire sits within the Government Office of the East of England. The East of England performs economically well compared to the national average. However, the recession affected unemployment rates and Hertfordshire has followed the National trend of an increase since June 2008.
- In March 2009 Hertfordshire's unemployment rate reached 4.4% of those in working age. This is lower than the average for the East of England (5.3%) and the UK (6.2%). Within Hertfordshire, Stevenage is the district with the highest unemployment rate whereas St Albans has the lowest.

Environmental Economy

- According to the "Low Carbon and Environmental Goods and Services: an industry analysis" (BIS 2009) the East of England has the highest rates of growth in the Environmental Sector compared to the rest of the UK. In the East of England around 82,000 are employed in the Low Carbon and Environmental Goods and Services sector (Innovas 2009) while turnover in this sector is around £10.2 billion per annum. This equates to a share of 9% of the UK Low Carbon and Environmental Goods and Services (LCEGS) sector turnover.
- London, the South East and the East of England dominate the nine sub-sectors within the environmental sector – air and marine pollution control, environmental consultancy and monitoring, noise and vibration, contaminated land remediation, waste management, waste water treatment and recovery/recycling. Together, these three regions make up almost 40% of the total turnover in the UK in the environmental sector.

Renewable energy



In 2008 the East of England produced more energy from renewable sources than any other region in England². The amount of electricity generated from renewable sources in the East of England has increased by over 600 Gwh since 2003, from 1,525Gwh to 2,164 Gwh in 2008. The electricity produced in 2008 was predominantly from landfill gas which made up 47% - this came from 67 landfill gas sites. Other sources of renewable energy in the East of England (2008) are wind and wave power (40 sites), other bio-fuels (18 sites) and a very small amount of hydro power (4 sites).

There are 93 combined heat and power schemes in the East of England (8% of those in England)². This has increased over the last few years from 88 in 2006, but is the 3rd lowest regional total in England. In 2008, these generated 1,133 Gwh of electricity and 1,429 Gwh of heat.

Growth areas/housing targets 😊

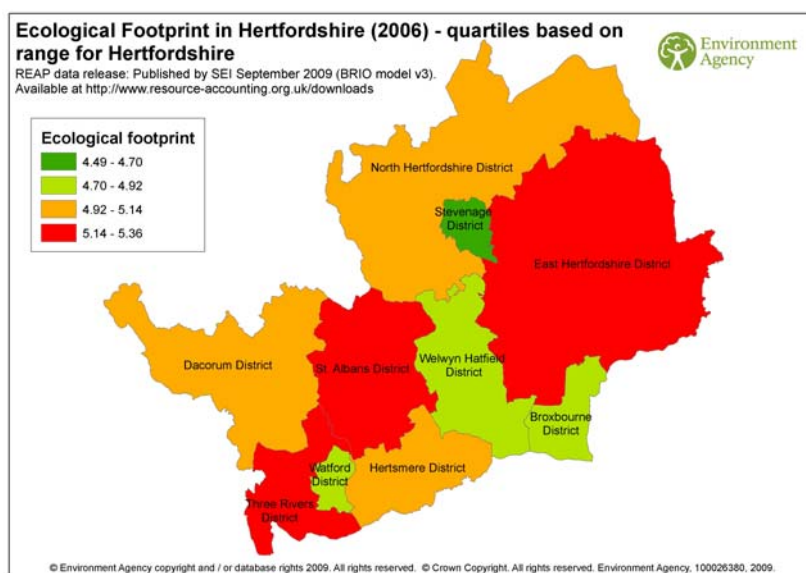
The housing target for Hertfordshire is a minimum of 83,200 new homes between 2001 and 2021, as identified in the East of England Plan (May, 2008). Up to March 2006, 17,480 (or 21%) of these new homes were built. The bulk of these new homes will be located in Stevenage (16,000), Dacorum (12,000) and East Hertfordshire (12,000) which makes up almost half of the housing target.

Growth areas in Hertfordshire are likely to be areas to the west of Stevenage, Welwyn Hatfield, Dacorum, St Albans and in East Hertfordshire.

Ecological footprint 😞

- The ecological footprint measures the area of land required to provide all the resources and services consumed, and absorb all the waste produced.
- The average ecological footprint for the 10 districts in Hertfordshire is 4.96 global hectares per person (gha/capita) – 2% higher than the East of England average (4.84) and 6% higher than the UK average (4.64)³. It is 62% higher than the global bio capacity – how much land is available when divided between the world's population.
- The total ecological footprint for Hertfordshire is over 5 million global hectares, this amounts to an area over 34 times the County itself.
- St Albans district has the highest ecological footprint (5.36 gha/capita) in Hertfordshire. This is also one of the highest in the East of England where footprints range from 5.38 to 4.27 gha/capita. Food is the highest contributing sector to this footprint accounting for 28% – particularly fruit and vegetables, catering services and meat.
- Stevenage district has the lowest ecological footprint (4.49 gha/capita) in Hertfordshire. This is also amongst the lowest in the East of England. This is the only district in Hertfordshire to have a footprint below the UK average. The housing and transport sectors have a lower footprint than the other districts.
- The districts of Broxbourne, Watford, Welwyn Hatfield and Stevenage all have an ecological footprint below the average for the East of England.
- 6 out of the 10 districts in Hertfordshire have an ecological footprint in the highest quartile of all the districts in the UK.

Figure 1: Ecological footprints for districts in Hertfordshire



Pressures and solutions

1. We want to see growth in Hertfordshire that is sustainable for people and the environment, in the right location, and not exerting further pressure on the environment or resources. The area is already water stressed, and flood risk in parts of the county are an issue - these will need to be addressed to ensure growth doesn't have an adverse effect on the environment.
2. Plans for growth in Hertfordshire need to take into account key environmental issues such as climate change, flood risk, water resources, water quality, green space and biodiversity.

3. There needs to be a reduction in the consumption of resources and the amount of waste produced in order to reduce the ecological footprint in all districts of Hertfordshire. It is higher than the UK average and the global bio-capacity (1.89gha/capita) – which is the amount of land available per person when divided equally between the world's population. The footprint needs to be reduced to more sustainable environmental limits.
4. We would like to see an increase in the production and use of renewable energy in the East of England, where appropriate.

2 Climate change

Key messages:

1. Private vehicle use and domestic fuel use in Hertfordshire are high and are contributing factors to a high carbon footprint and CO₂ emissions. This is particularly high in St Albans.
2. Hertfordshire County Council have signed up to a climate change indicator within their top 35, as part of their Local Area Agreement, demonstrating their commitment to reducing emissions.

Carbon footprint 🙄

The average carbon footprint for the 10 districts in Hertfordshire is 12.99 tonnes of CO₂ per person (2006)³ which would cost £273 per person if valued at the using the 2009 central traded price of carbon, or £662 per person using the 2009 central non traded price of carbon. This represents the cost to society of the environmental damage caused by a tonne of carbon (or the CO₂ equivalent) emitted into the atmosphere.

- All districts, except Stevenage, have a higher carbon footprint per capita than the UK average (12.10). This is predominantly due to transport and housing use in Hertfordshire.
- The carbon footprint of St Albans (14.01) is amongst the highest in the East of England, which range from 14.13 to 11.28 tonnes of CO₂ per person. This is primarily due to transport and housing which make up 31% and 28% of the footprint respectively. The transport footprint is high due to air transport and private vehicle use.
- Broxbourne, Stevenage, Watford and Welwyn Hatfield districts all have a carbon footprint lower than the East of England average (12.66 gha/capita).

The carbon footprint in Hertfordshire is predominantly due to transport – private vehicle use – and housing – domestic fuel use³. In the East of England 70% of trips per person per year were made in a car (as either the passenger or driver), with only 6% using local buses or other public transport⁴.

Per capita carbon emissions 😊

The average carbon emissions per person in Hertfordshire have stayed constant between 2005 and 2006, at 6.36 tonnes CO₂ per capita⁵. The highest emissions per person were in East Hertfordshire, at 7.3, which have the highest emissions from road transport than any other district in the county. The lowest were in Broxbourne at 5.5, which have amongst the lowest emissions per capita from the industrial and commercial sector (along with Three Rivers).

The main contributor to carbon emissions, per person, in Hertfordshire is the domestic sector⁵. This makes up 40% of all emissions. Within this sector, it is mainly emissions from domestic electricity and gas use – these make up 95% of the domestic sector in Hertfordshire.

Greenhouse gas footprint 🙄

The average greenhouse gas footprint for the 10 districts in Hertfordshire is 17.40 tonnes CO₂ equivalent per person (2006)³.

- Stevenage has the lowest greenhouse gas (GHG) footprint in Hertfordshire at 15.75.
- St Albans has the highest GHG footprint at 18.75.
- All districts, except Stevenage, have a greenhouse gas footprint higher than the UK average (16.24 tonnes CO₂ equivalent/capita).
- Welwyn Hatfield, Watford, Broxbourne and Stevenage have greenhouse gas footprints lower than the East of England average (16.97 tonnes CO₂ equivalent/capita).

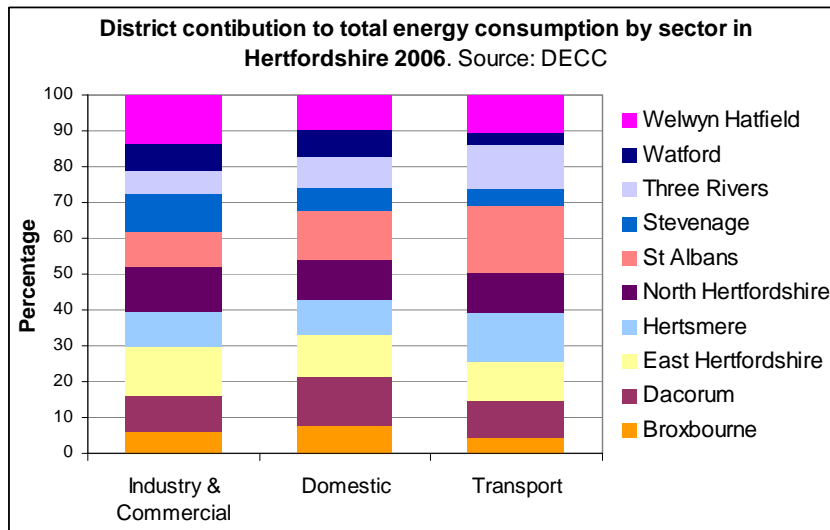
Energy consumption

The total energy consumption in Hertfordshire equates to 18% of the total energy consumption in the East of England². St Albans has the highest consumption in the County (15% of the total) whereas at 6% Broxbourne has the lowest. The main contributor to total energy consumption is petroleum products.

- Transport
 - The transport sector has the highest consumption in Hertfordshire (2006), accounting for 38% of the county total. This is very different to the overall results for Great Britain where at 29% of the total, transport has the lowest consumption and at 39% Industry and Commercial has the highest².
 - St Albans district contributes 19% of the total energy consumption from transport in Hertfordshire, which is the highest of the 10 districts. The lowest is both Broxbourne and Watford, with 4% each.

- Domestic
 - Domestic energy use is accountable for 36% of total consumption within the County². St Albans (14%) and Dacorum (13 %) are the highest users for domestic purposes.
- Industry and Commercial
 - This sector has the lowest consumption in Hertfordshire, at around 26% of the total².
 - East Hertfordshire and Welwyn-Hatfield are accountable for the highest Industrial and Commercial consumption within the County.

Figure 2: Percentage contribution to total energy consumption by sector and district.



Local Area Agreements

Hertfordshire County Council has signed up to one climate change based Local Area Agreement indicator as part of their top 35 indicators. This is NI186 (Per capita reduction in CO2 emissions in the LA area). Progress will be monitored by the independent audit commission.

Pressures and solutions

1. There needs to be a reduction in energy consumption and the associated emissions from transport and housing in Hertfordshire – in particular private vehicle use. For example, an increased use of public transport for commuting to work would help reduce this.
2. Plans and strategies need to take full account of the impacts of climate change and where appropriate, include adaptation and mitigation measures.

3 Flood risk

Key messages:

1. Approximately 27,000 properties are at risk of flooding from rivers in Hertfordshire, with just under a quarter having a significant likelihood. East Hertfordshire and Three Rivers are particularly affected.
2. 41% of all properties at risk have signed up to the Environment Agency's free Floodline Warnings Direct service.
3. Flood events have occurred fairly frequently since 2000, with the latest occurring in 2009 from the River Lee in Hertford.

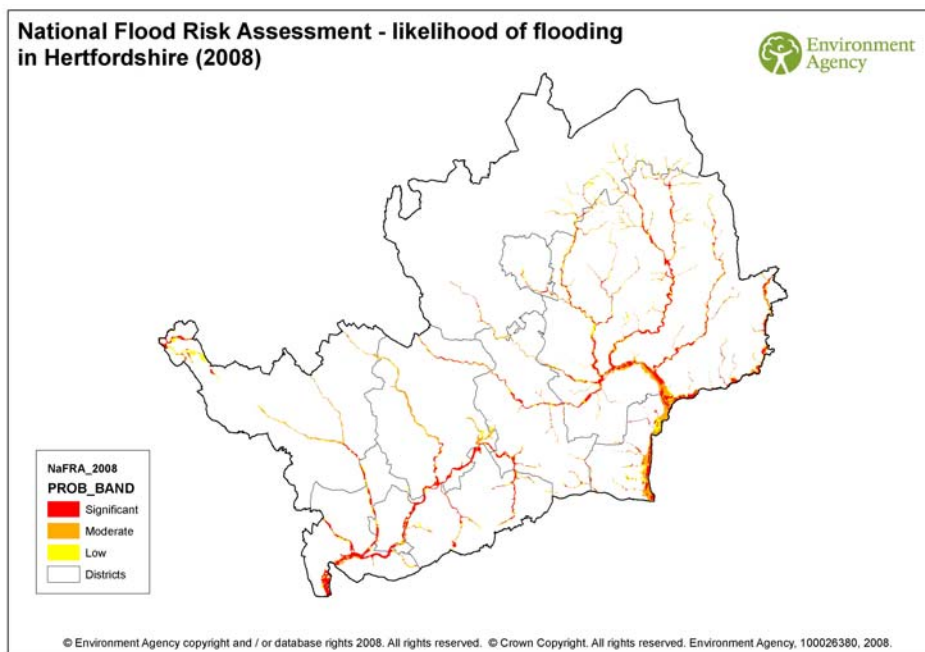
Flood Risk



The Environment Agency's National Flood Risk Assessment (Nafra) 2008 indicates:

- There are just under 27,000 properties at risk of flooding from rivers in Hertfordshire. The majority of these are residential.
- Of the 27,000 properties at risk, around 24% (just over 6,000 properties) have a significant likelihood of flooding.
- The remaining properties at risk of flooding in Hertfordshire have a moderate likelihood of flooding occurring (46% or just over 12,000 properties), or a low likelihood (29% or just under 8,000 properties).
- East Hertfordshire and Three Rivers district have the highest number of properties at risk with a significant likelihood of flooding. This is predominantly from the main rivers in the districts – the Rivers Rib, Ash, Stort, Beane, Lee, Colne and Gade.
- Stevenage has the lowest number of properties with a significant likelihood, representing less than 1% of all properties in the district.
- Broxbourne has the highest percentage (14%) of all properties in the district at risk of some level of flooding (mainly from the River Lee/Navigation) closely followed by East Hertfordshire (11%).

Figure 3: Map of the likelihood of flooding in Hertfordshire



The Environment Agency offers the free Floodline Warnings Direct (FWD) service, which provides early warning of potential flooding via phone, text, email pager or fax, to homes and businesses. In Hertfordshire there are 11,175 properties registered to receive flood warnings directly through FWD or the new Extended Direct Warnings scheme.

Current sign-up represents 41% of all properties at risk of flooding in the County, but represents 77% of those that could receive a warning or have been offered the service.

The highest sign-up is in East Hertfordshire district where 4,868* properties are registered – either directly with FWD or through EDW. Sign-up here is 81% of those who can receive or have been offered a service. Broxbourne is one of the smaller districts in Hertfordshire but it has the second highest sign up to FWD, at 2,338 properties, due to the risk from the River Lee. However, this is only 58% of those at risk who could receive a warning or have been offered the service.

**data is for April 2010.*

Flood events

Most recent flood events in Hertfordshire took place in 2000, 2001, 2003, 2007 and 2009.

The last widespread floods in Hertfordshire occurred in October 2001. This event was particularly severe along the rivers Ash and Rib which flow into the River Lee around Bishops Stortford and Hertford. In Little Hadham 44 properties were affected with 24 of those having internal flooding.

There have been intermittent occurrences of flooding across the county over the last few years but in particular events in February 2009 lead to some property flooding.

Flooding from the upper River Colne caused external flooding to two properties and flooding from the River Lee and its tributaries caused external flooding to two properties and internal flooding to 5 properties.

Future flood risk management

Long-term adaptation of the urban environment will be crucial in towns such as Hertford and Watford. The location, layout and design of developments are the most vital factors in managing future flood risk. Appropriate Local Development Document (LDD) policies, master planning and Strategic Flood Risk Assessments (SFRAs) will be necessary to achieve this to complement national planning policy on development and flood risk.

In Broxbourne we will continue to maintain the existing flood defences, but look to make changes in the long-term so that the impacts of climate change can be more effectively accommodated – sometimes alongside redevelopment. Residual risks need to be managed.

In more rural areas, the floodplain is our most important asset and we need to protect its natural function. Existing properties in the floodplain need to become more resistant or resilient to flooding. In the longer-term, re-development can help these locations to become more tolerant of flooding; however inappropriate development on the floodplain needs to be avoided. Managing the floodplain to sustain its capacity to maintain water will reduce the impact of flooding and also benefit the natural environment.

Surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management (SUDS). SUDS are an approach to managing surface water run-off which seeks to mimic natural drainage systems and retain water on or near the site as opposed to traditional drainage approaches. Advantages of which include reducing flood risk by attenuating the rate and quantity of surface water run-off from a site, promoting groundwater recharge, and improving water quality and amenity.

In general, emergency response planning and improved flood awareness that recognise the multiple sources of flooding (fluvial, groundwater and surface water) will be a priority. Hertfordshire has received £200k of Defra funding to develop a surface water management plan to help manage the risks from non-fluvial sources of flooding in Watford and St Albans.

The responsibilities for flood risk management have changed with the introduction of the Flood and Water Bill. The Environment Agency will continue to be responsible for flooding from main rivers and the sea, whilst Local Authorities will take on more formalised responsibilities for local flood risk management from all other sources of flooding with the support of other organisations and parties. This will ensure that flood risk from all sources, including from surface run-off, groundwater and ordinary watercourses is identified and managed.

Pressures and solutions

1. The floodplain is considered the most important asset when managing flood risk; it should be protected from development, to provide flood storage. We will avoid, reduce and manage flood risk through the planning process.
2. Locating property and other assets outside of the floodplain is the best way to reduce flood risk. However, in urban areas re-development in the floodplain – if designated to be safe and resilient to flooding – can provide a crucial opportunity to reduce flood risk.
3. There needs to be an increase in the number of people signed up to Floodline Warnings Direct service, particularly those who live in areas of significant flood risk. Increasing flood awareness will ensure that those at risk have the guidance they need to prepare for and respond to flooding.
4. Surface water flooding is a challenge to flood risk management - using a sustainable drainage approach to surface water management will reduce flood risk by attenuating the rate of surface water run-off from a site.
5. Climate change will result in increased and new risks of flooding within the lifetime of planned developments. We will advise local authorities and developers on designing developments that accommodate the impacts of climate change.
6. It is not always possible to put in place schemes to protect all homes at risk, therefore we need to manage this residual flood risk. We are working alongside our colleagues within the Hertfordshire Districts and at the County Council to help manage residual flood risk from all sources, not just from rivers. This is to ensure all councils are better prepared for flooding. Our flood warning service is now provided to more households in the County following the implementation of our Extended Direct Warning project. This project took all available land line telephone numbers within flood warning areas and pre-registered them to Floodline Warnings Direct (FWD) to receive flood warning messages.
7. We will be working closely with Hertfordshire County Council to implement the requirements of the European Floods Directive. This will require County, as lead Local Flood Authority, to produce plans and maps of areas at significant risk of flooding from sources such as ground water, surface water and from smaller watercourses. This will lead to a better understanding of the risks of flooding in the County, and what can be done to manage these risks.

4 Waste

Key messages:

1. The amount of Hertfordshire's municipal waste sent to landfill is declining, but is still more than half of arisings. Action is needed to divert waste from landfill.
2. The percentage of household waste that is recycled or composted has increased by 10% since 2005/06 to 43.9%. This is higher than the England average of 37.6% but lower than the East of England average of 44.5%.

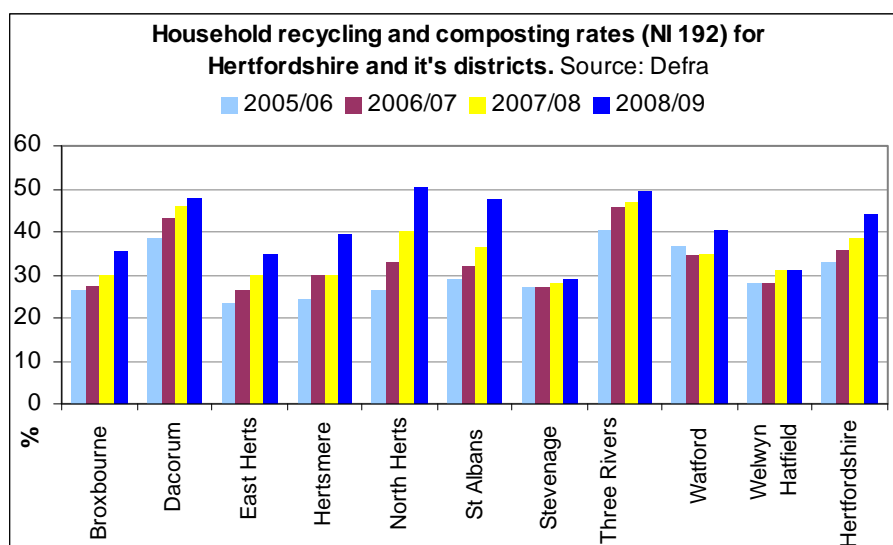
Landfill – disposal and capacity

- The amount of municipal waste sent to landfill in Hertfordshire is 290,097 tonnes in 2008/09 (52% of all municipal waste)⁶. This has declined by 10% since 2005/06 from 62%.
- Despite the recent decline, landfill is still the primary disposal method for municipal solid waste (MSW) in Hertfordshire. It is higher than the England average (50%) but currently lower than the East of England average (54%)⁶.
- The amount of biodegradable municipal waste (BMW) sent to landfill in Hertfordshire has declined by over 16,000 tonnes since 2005/06. The amount land-filled is within the allocation provided and Hertfordshire has the highest surplus allocation in the East of England in 2008/09. The amount land-filled in 2008/09 is already less than the 2009/10 allocation.
- Most of Hertfordshire's landfill contracts run out soon which will leave only one active landfill site at Westmill. Local availability of landfill is declining and sites outside the county, which receive Hertfordshire's waste, will be reducing the amounts they receive.
- There is a lack of suitable space for new landfill sites in Hertfordshire and alternatives are required to meet the need. There is an aim for a new waste treatment facility to be running by the end of 2015. This process has involved four short listed bidders putting forward their plans, all of which are energy from waste via incineration as the most appropriate technology solution.

Household recycling and composting

- The overall recycling and composting rate for Hertfordshire is 44%⁶. This is higher than the England average (37.6%) but slightly lower than the East of England average (44.5%).
- The rate has improved by 10% since 2005/06 from 33.2%⁶.
- The current rate is recycling and composting levels are already meeting the governments target, set out in the 2010 Waste Strategy, of 40% by 2010. Future targets are 45% (2015) and 50% (2020).
- All districts in Hertfordshire have increased their recycling and composting rates since 2005/06, with the biggest improvements in Hertsmere, St Albans and North Hertfordshire.

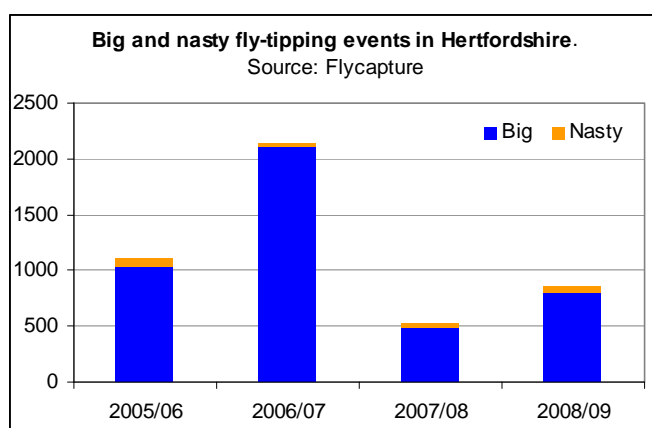
Figure 4: Household recycling and composting rates in Hertfordshire



Waste crime

- There were just fewer than 900 big and nasty fly-tipping events in Hertfordshire in 2008/09. This is a 39% increase from the number recorded in 2007/08⁷.
- In 2008/09 the average monthly incident record in Hertfordshire was approximately 67 big incidents and 5 nasty incidents. This is higher than the previous year, when the averages were approximately 41 big incidents and 3 nasty incidents per month.
- Over the last 4 years, the number recorded peaked in 2006/07 when over 2000 big and nasty incidents were recorded.
- Although the total number of incidents has fluctuated over the last few years, the composition of big and nasty incidents has remained similar. Big incidents account for around 94% and nasty incidents around 6% of the total.
- The largest numbers of big incidents recorded each year were in Dacorum district and Welwyn Hatfield district. Watford district has the lowest number of big incidents recorded each year. The largest number of nasty incidents changed from Broxbourne district in 2005/06 and 2006/07 to Dacorum district in 2007/08 and 2008/09.

Figure 5: Number of big and nasty fly-tipping incidents in Hertfordshire



- Prosecutions were made to two regulated sites in Hertfordshire, in 2009. These were at Swan lane, Potters Crouch (St. Albans) and FMS Auto's (Aldenham). Prosecution was brought at the site in Swan Lane for keeping, treating and disposing waste on land other than that in accordance with their license/permit. They were fined £17,050 and charged costs of £66,221. FMS Auto's faced prosecution for the illegal deposition of waste. They were fined £4,500.

Local Area Agreements

Hertfordshire County Council has signed up to one waste targeted Local Area Agreement national indicator. This is NI193 (percentage of municipal waste land-filled). The government's strategy on waste is to divert the proportion of waste away from landfill. Hertfordshire County Council aims to decrease the amount of municipal waste land-filled to 49% by 2010/2011. Current progress with NI 193 targets is good. The percentage of MSW to landfill in 2008/09 met the annual target of 56%, and was also lower than the 2009/10 target of 55% - at 52%.

Pressures and solutions

1. There needs to be a reduction in the amount of municipal household waste produced in Hertfordshire – the volume is declining but can decline further. The first stage of the waste hierarchy is to reduce the amount of waste produced. Hertfordshire is currently one of the top 20 authorities in England for MSW production in 2008/09.
2. Costs from landfill tax and fines procured from not reducing the amount of waste sent to landfill reduce the amount of money the County Council can spend elsewhere. These costs are also ultimately passed onto tax payers.
3. Utilise other waste technologies to allow the movement away from the landfill, except as a last resort for waste disposal, and increasing the rate of waste recycling.

4. The diversion of waste from landfill needs to continue, alongside a further increase in recycling and composting. Hertfordshire has a range of projects/initiatives that will reduce the waste to landfill in the county. These include:
 - a. Love Food Hate Waste Campaign (in association with WRAP). This aims to raise awareness among local people on how they can save money and help the environment by reducing unnecessary food waste.
 - b. Procuring a waste treatment facility in the county. Four bidders have put forward energy from waste via incineration as the most appropriate technology solution. New Barnfield is being seriously considered as a potential site but other sites are being looked into before a decision is made for which site to put forward to the next stage.

5 Water Framework Directive (WFD)

Key messages:

1. The chemistry of rivers in Hertfordshire is generally good. Lower ecological status under the WFD is generally due to low ecological and/or biological status in Hertfordshire.
2. One of the biggest challenges to meeting the objectives of the WFD is diffuse pollution.
3. Phosphate is the main contributor to low physico-chemical status of water bodies.

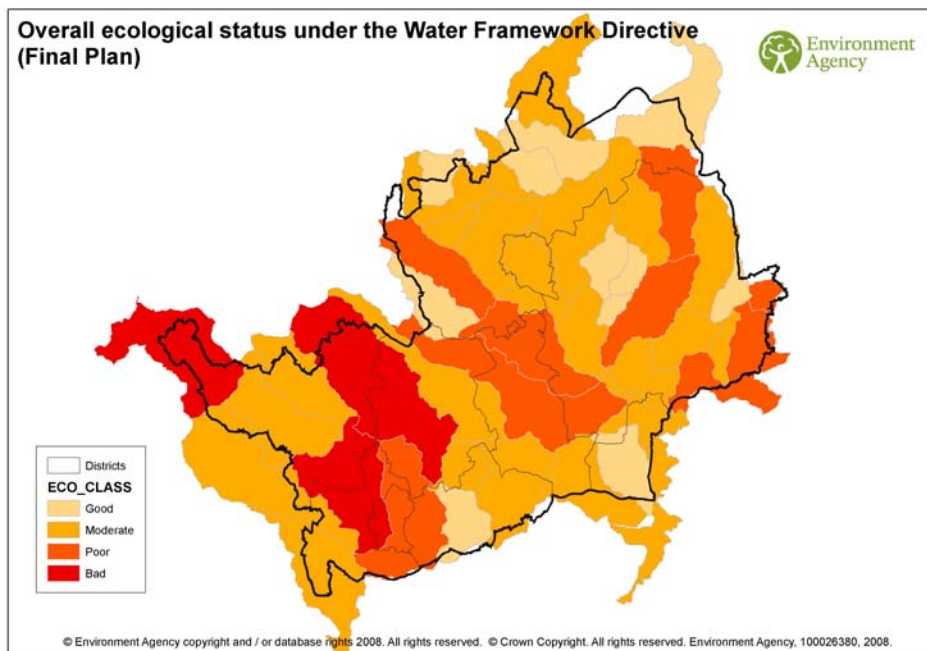
Overall ecological status of river water-bodies



Under the Water Framework Directive (WFD) there are 46 designated river water bodies within Hertfordshire. These must all meet good ecological status or ecological potential by 2027. Overall ecological status includes chemical and biological quality of the river, and status shown is that presented in the final river basin management plans. The locations and status of these is shown in the map below.

- More than half of the water bodies in Hertfordshire have been classified as having moderate ecological status⁸, and therefore not currently of high enough standard to comply with the WFD.
- There are 11 water bodies (24% of those in Hertfordshire) that are currently achieving the target 'good' ecological status. These are in the districts of Broxbourne, Hertsmere, East Hertfordshire and North Hertfordshire.
- 8 river water bodies have been classified as having poor ecological status. These are all predominantly due to the biological quality of the rivers – 5 are due to diatoms (algae in the river, indicative of nutrient levels), 1 to macro-invertebrates and 2 to fish.
- 3 river water bodies have bad ecological status – these are the Gade (confluence of Bulbourne to Chess), the Thames upstream of Aylesbury and the Ver. These 3 water bodies predominantly have bad status due to the biology, and in particular macro-invertebrate populations.

Figure 6: Map of river water body status under the Water Framework Directive

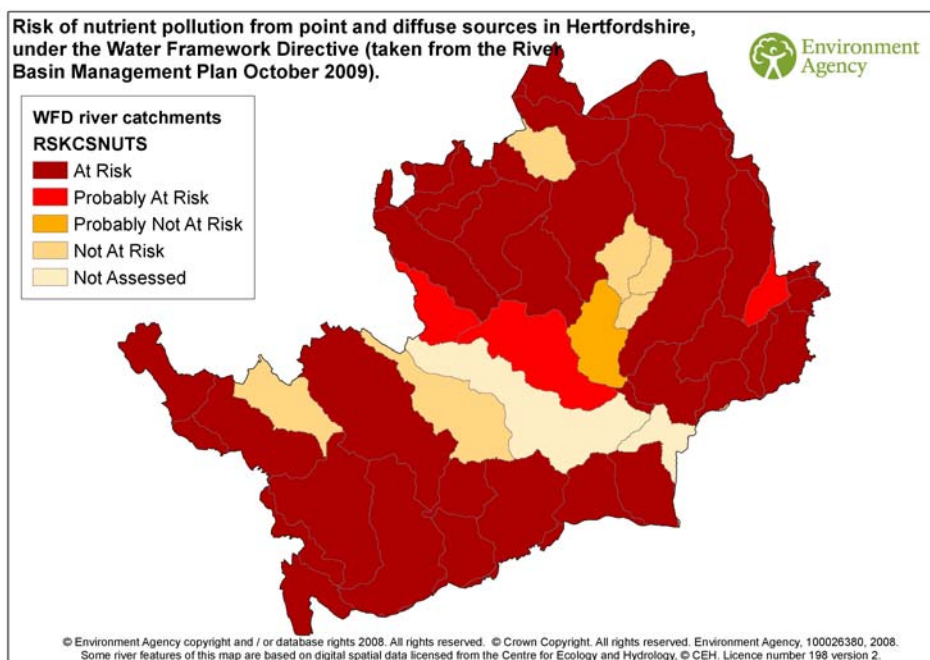


Risk of diffuse and point source nutrient pollution under the WFD



Under the river basin management plan for the Water Framework Directive, a large proportion of the river water bodies in Hertfordshire are at risk from diffuse or point source pollution from nutrients (phosphate and nitrate). There are 6 river water bodies that are classified as 'not at risk' (Gade upper, Ellen Brook, 2 Dane End tributaries, Old Bourne and the Ivel) and 1 which is 'probably not at risk' (Beane).

Figure 7: Map of risk from nutrient pollution for river water bodies in Hertfordshire



Status of groundwater bodies



Under the Water Framework Directive, there are 7 groundwater bodies in Hertfordshire. Of these, 5 have poor chemical status (quality of groundwater), and 2 have good chemical status⁸. These are the Chiltern Scarp Chalk, and the Upper Bedford Ouse Chalk, which are already meeting their WFD objective to have good status by 2015. Of the 5 currently at poor status, 1 has an objective of good status by 2015, 1 by 2021 and 3 by 2027.

In terms of quantitative status (quantity of groundwater available), all 7 have poor status. These all have an objective to meet good status by 2027.

Pressures and solutions

1. All districts in Hertfordshire have river water-bodies that are not currently meeting the 'good ecological status or potential of the Water Framework Directive. All river water-bodies must meet good status or potential (if they are heavily modified) by 2015 or 2027 depending on the water body.
2. Abstractions from rivers in Hertfordshire have implications for compliance with the Water Framework Directive. Chalk Rivers in the area are over-abstracted which will impact their compliance with flow objectives, and the quality of the rivers due to reduced dilution.
3. Under the Restoring Sustainable Abstraction programme, we are undertaking investigations to determine where abstraction is limiting the achievement of good ecological status. To understand the impact of abstraction on the ecology of our rivers we need to be able to establish the flows required to support the ecology of those watercourses. Investigations are underway on the Rivers, Mimram, Beane, Ver, Gade and Bulbourne using a variety methodologies to establish these flow requirements. The results will be used to support the setting of flow targets for river reaches that are the subject of low flow investigations. This will provide a mechanism by which an appropriate level of abstraction can be defined for a particular catchment or site by relating the impact of the abstraction to river flows. This work is now underway with initial results expected in September 2010.
4. Diffuse pollution from urban and rural sources is a major challenge for meeting targets of the Water Framework Directive, especially phosphate in some areas. Most of Hertfordshire is at risk from nutrient pollution.
5. Modified river channels in Hertfordshire are affecting biological quality through limited habitat conditions in the channel, and limited fish passage. This is affecting all rivers in the county in some way. The rivers need to be returned to their natural state to improve river habitats and the biological quality of the river.

6 Water quality

Key messages:

1. The chemical general quality assessment (GQA) has shown an improvement in quality (ammonia and dissolved oxygen levels) in Hertfordshire rivers; with 78% achieving A and B grades (very good and good quality) in 2008, compared to 56% in 1990.
2. The total number of water pollution incidents has declined since 2005 and the majority of those since have had a low environmental impact. No serious impact incidents were recorded in 2009.
3. There are possible issues with sewerage capacity in Stevenage, which will be affected by any further growth in the area. Water cycle studies have been carried out to assess infrastructure needs associated with proposed growth.

Diffuse pollution

Phosphate

- Natural concentration of phosphorus are between 0 and 0.001mg/l (depending on geology), and levels over 0.1 mg/l increase the risk of eutrophication in the river.
- The River Colne from Blackbirds STW to Hartsbourne showed bad concentrations of phosphates in 2008 under the GQA, as did the River Rib from Buntingford to the Quin.

Nitrate

- In 2002 all of Hertfordshire was designated as a nitrate vulnerable zone; therefore the majority of rivers and groundwater are at risk of diffuse pollution from nitrate. Under the Nitrate GQA in 2008 the Colne from Blackbirds STW to Hartsbourne, the Rib from Buntingford to the Quin and the Lee from East Hyde Bridge to the Rib were all classified at Bad.

Chemical GQA (general quality assessment) - ammonia and dissolved oxygen levels

Historically chemical CQA was historically assessed using ammonia, dissolved oxygen and BOD (Biological Oxygen Demand) levels. In 2007 BOD was removed as an indicator, and the network of designated rivers was reduced.

- There has been a significant increase in the length of designated stretches achieving grades A and B (very good and good quality) since 1990, from 56% to 78% in 2008.
- Significant improvements have been recorded in the Ver from Sopwell to the Colne. Between 1998 and 2000, and again in 2003, this stretch was classified as a grade D. Since then the stretch has been a constant grade A.
- Improvements are also noticeable in the River Stort from Spellbrook to Pincey Brook. This stretch has fluctuated from A to E grades over the past 18 years but has managed to retain a constant B since 2004.
- In 2008 only two stretches were classified as E (poor quality). These are the River Gade at Great Gaddesden to Bulbourne and the Grand Union Canal from the summit to Bulbourne. The stretch on the Gade achieved grade A in 2001 and 2002 but has subsequently dropped. The stretch on the GUC has never achieved higher than a grade C and since 2004 has consistently been classified as grade E.

Sewage treatment works compliance

There are 38 major sewage treatment works in Hertfordshire, 28 operated by Thames Water, and 10 operated by Anglian Water. These have shown 100% compliance with their consented discharge limits since 2007.

Sewerage capacity and growth

Five sewage treatment works (STW) in Hertfordshire have been approved by OFWAT for improvement works under the PR09 scheme (periodic review) between 2010 and 2015. Schemes at Berkhamsted and Weston STWs will, respectively, improve the status of the Grand Union Canal and prevent further deterioration of a tributary of the River Beane. Schemes to improve Caddington, Whitwell and Dane End STWs will prevent pollution to groundwater.

A water cycle study of the Rye Meads area was undertaken by Stevenage Borough Council to assess the water infrastructure needs to support housing development proposed in the East of England Plan (EEP). This proposes almost 70,000 new dwellings from 2001 to 2021, with similar rates of growth after 2021.

The study concluded that there are no overwhelming constraints to the planned growth in the Rye Meads catchment up to 2021. However, there is a risk that water quality and wastewater treatment will constrain development in the Stevenage area in the long term.

The stretch of the River Lee receiving effluent from Rye Meads STW is not currently achieving good ecological status under the Water Framework Directive (WFD). In the short to medium term water quality will not constrain development, but the demands of the WFD may result in the consent limits becoming tighter in future (although this is unlikely prior to 2021).

Planned upgrades at Rye Meads should allow development to continue in the medium term although further investigation is required to find a long-term solution beyond 2021. Alternative options have been considered, including upgrading a STW in Anglian region, and the possibility of a new STW closer to Stevenage in the Thames region.

The sewerage network is known to be close to capacity in Stevenage. Thames Water’s network can be upgraded to create capacity for the additional Stevenage development, but due to uncertainties surrounding development details, no specific funding for network upgrades has been sought by Thames Water or Anglian Water in PR09.

Sewer misconnections 🚫

Misconnections can occur when a house is extended, when people make other home improvements or when a new house is built, and wastewater pipes are incorrectly plumbed. They result in untreated wastewater flowing straight into local rivers or streams instead of going to the foul sewer and the local wastewater treatment works. Between 2005 and 2009 – the PR09 period - action was taken to locate and deal with misconnections in 20 polluted surface water outfalls (PSWO). These were in the Colne (6) and Upper Lee (14) catchments.

Water pollution incidents 😊

- The majority of water pollution incidents in Hertfordshire have a low environmental impact.
- There has been an overall decline in the total number of category 1 - 3 water pollution incidents since 2005 ⁹.
- The number of recorded incidents with a major environmental impact (category 1) has declined since 2005 when 3 incidents were recorded. No category 1 incidents have been reported in 2008 or 2009 in Hertfordshire.
- The majority of water incidents in 2009 were low environmental impact incidents (category 3), however two category 2 incidents occurred in December 2009.
- East Hertfordshire has the highest number of serious water pollution incidents recorded between 2005 and 2009, almost double the district with the next highest number (Dacorum).
- Dacorum district has the highest number of category 1 incidents recorded. The Buncefield oil depot fire, which occurred in 2005, is included within this number. Category 1 incidents have also been recorded in East Hertfordshire and Welwyn Hatfield district.
- The main cause of the serious water pollution incidents in Hertfordshire is containment and control failure at a number of premises including the water industry, waste industry and manufacturing.

Figure 8: All impact water pollution incidents

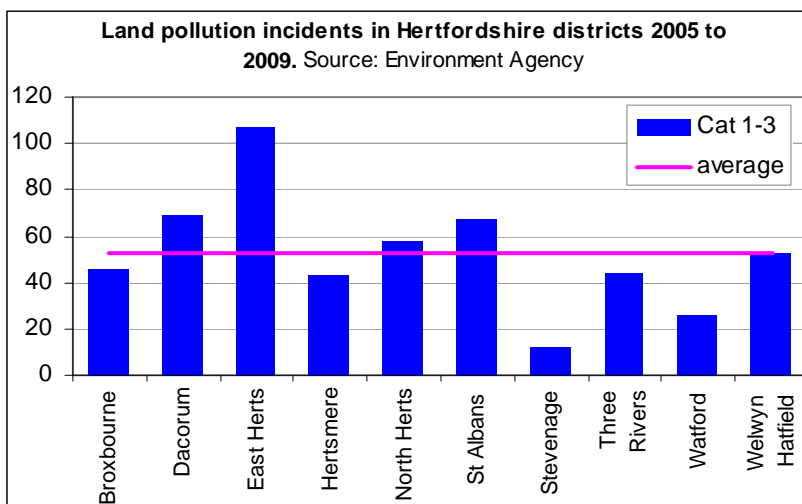
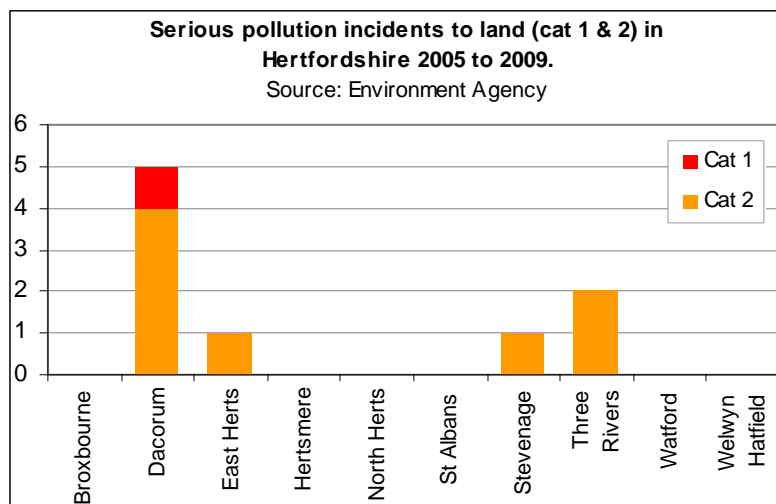


Figure 9: Serious water pollution incidents



Groundwater quality



Groundwater quality is measured at 63 locations across Hertfordshire on a regular basis and the results are summarised in our Aquifer reports [Groundwater Quality Review: Upper River Lee](#); [Groundwater Quality Review: Mid-Chilterns and Colne](#). We also receive information via site investigations during pollution incidents, through redevelopment, routine monitoring of landfills, and inspection strategies of local authorities. Further groundwater chemistry is provided in EA/BGS Baseline Report - [The Chalk of the Colne and Lee River Catchments](#).

- Bromate and Bromide groundwater contamination from a former chemical works site in Sandridge (near St. Albans) is the largest contaminant plume in the UK rendering around 50km² of the chalk aquifer unusable for water supply. The contamination has formed a plume which stretches eastwards for 20km to the Lee Valley. The contamination has caused the closure of public supply borehole in Hatfield and imposed constraints on the operation of around 10 other boreholes. The affected water companies are mitigating the effects by removing contaminated water from the aquifer – this is likely to be required until at least 2020. Legal action to cover remediation costs is ongoing.
- A review of groundwater quality under the WFD has shown the Mid Chilterns Chalk around Watford as poor status due to elevated levels of chlorinated solvents. These are a persistent pollutant, and problems have been identified at a further 5 sites.
- Other groundwater concerns in Hertfordshire relate to elevated levels of ammonium from landfill leachate and leaking sewers.

Pressures and solutions

1. The chalk aquifer in Hertfordshire is particularly susceptible to activities at the surface which may cause pollution to move rapidly and extensively along well developed fractures in the Chalk. There is a need to carefully regulate all potentially polluting activities and to build levels of protection and control any accidental release. Information on how this should be done can be found in [Groundwater Protection: Policy and Practice \(GP3\)](#).
2. The main challenge for water quality in Hertfordshire is coping with growth. Impacts on wastewater infrastructure/capacity and water quality need to be considered at all planning stages, and mechanisms should be incorporated to ensure growth is sustainable and has no negative impacts on the environment. Sufficient wastewater infrastructure should be in place before developments are occupied. Rye Meads sewage works has enough capacity for another 6,400 homes, therefore based on current growth scenarios and completion rates in the catchment; it can cope with a further 4 years of expansion. If operational procedures are optimised capacity could be expanded. Options to upgrade sewage treatment capacity are being investigated by Thames Water so that funding can be sought in the next periodic review in 2014. Infrastructure capacity and growth scenarios are still being investigated for the Luton STW catchment.
3. There is ongoing water quality issues related to the Buncefield oil refinery incident, which happened in December 2005. Fire water is still undergoing treatment at Maple Lodge sewage treatment works, to remove PFOS (a component of fire-fighting foam) and investigations are taking place into potential ground water issues.

7 Water resources

Key messages:

1. Hertfordshire has one of the highest domestic water uses in the Country. It has declined in recent years but still remains above the national average. This needs to reduce significantly to meet the Defra aspiration of 130 litres per head per day (l/h/d) by 2030.
2. Hertfordshire is classified as suffering from serious water stress and assessments for the County show that the vast majority of the rivers and groundwater in the county are over-abstracted. This highlights the importance of water efficiency in the area.

Water use per person

In 2008/09 the household water use in Hertfordshire was approximately 163 l/h/d¹⁰. This has declined from the previous year (2007/08) when it was approximately 169 l/h/d. Water use in Hertfordshire is much higher than the England and Wales average of 148 l/h/d. It is also higher than Surrey, a comparative county, where it was 159 in 2008/09.

The districts in Hertfordshire with the highest water use per person are St Albans, Three Rivers and Watford district where average water use per person is approximately 174 litres per person per day. Household water use has declined in all districts except Broxbourne which saw an increase of around 5 litres per head per day between 2007/08 and 2008/09.

Water metering

Household water metering in Hertfordshire, in 2008/09, was 35.6% of households, an increase of 4.1% from 2007/08¹⁰. Four districts in Hertfordshire have just over 40% of households with a water meter. These are East Hertfordshire, North Hertfordshire, Stevenage and Welwyn Hatfield. Broxbourne is the only district where the percentage of metered households stayed the same between 2007/08 and 2008/09 – it also has the lowest percentage, at 21%.

Leakage

The leakage rate per person in Hertfordshire is declining. In 2008/09 leakage per person was 49.6 litres per person per day – down just over 2 litres per person per day each year since 2006/07¹⁰.

Broxbourne district has the highest leakage rate at around 86 litres per person per day, although this has declined since 2007/08. Dacorum is the only district that has seen an increase in the leakage rate per person since 2007/08.

Abstraction licences

Hertfordshire is classified as suffering from serious water stress. Water efficiency is now essential for managing the availability and use of water. Domestic water consumption within the County in 2008 was 20% higher than the national average for England and Wales. Abstraction rates have significantly increased to meet this demand for water, putting pressure on our local rivers and groundwater sources.

Figure 10: Groundwater abstractions

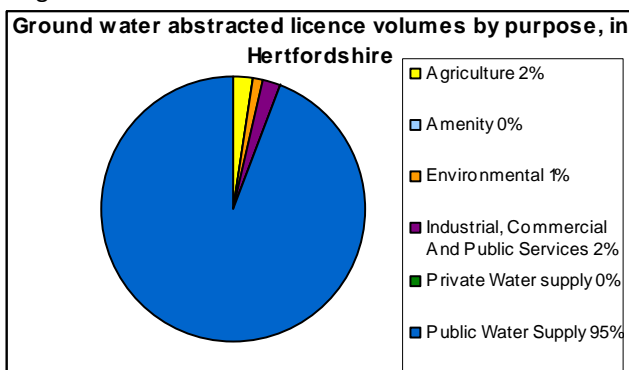
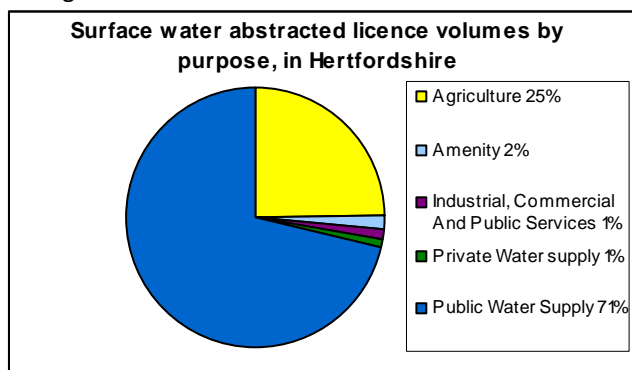


Figure 11: Surface water abstractions



There are 265 abstraction licences in Hertfordshire. The sector which abstracts the most amount of water is for public water supply, followed by agriculture. Roughly 6% of all the water abstracted in Hertfordshire is non-consumptive; an

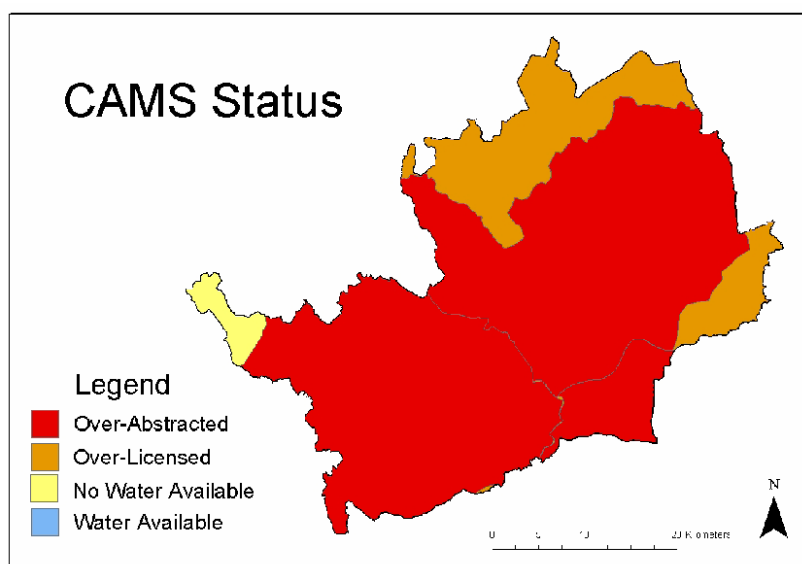
example of a non-consumptive licence is a fish farm which uses a through flow of water. Most of the non-consumptive licences are within the agricultural sector from surface water sources.

Catchment Abstraction Management Strategy (CAMS)

The CAMS assessments for Hertfordshire designates the vast majority of the rivers and groundwater in the county as over-abstracted. The exceptions are the Stort catchment in the East (over-licensed), the Bedford Ouse catchment in the north (over-licensed) and the Thame catchment in the West (no water available). The table below shows what each CAMS status means.

Status	Meaning
Over-abstracted	At times of low flow there is not enough water for the environment
Over-licensed	At times of low flow there would not be enough water for the environment if all licenses were used to their capacity
No water available	At times of low flow there is enough water for the environment but no additional water is available for abstraction
Water available	At times of low flow there is enough water for the environment and additional water is also available for abstraction

Figure 12: Map of the CAMS status in Hertfordshire



Restoring sustainable abstractions

Hertfordshire includes 7 sites that are in the Restoring Sustainable Restoration (RSA) programme. The majority of these sites are related to public water supply abstractions. They are currently being investigated due to concerns over the environmental sustainability of the abstraction licences. These investigations look at whether the quantity of water being abstracted is adversely impacting on the environment. Where an abstraction licence is proven to damage the environment we work with the abstractor to identify the most appropriate and sustainable solution.

Pressures and solutions

1. Climate change and growth will result in licensed abstraction rates being maximised to meet demand for more water. This will result in less water being available to support the local environment. In response to this, we want to see:
 - a. All Councils to adopt water efficiency targets within their LDF documents that require developers to achieve 105 l/p/d.
 - b. An increase in public understanding of water efficiency and a push to introduce water efficient measures into all homes.
2. There is an imbalance in where abstractions are located and where water is returned to the river from sewage treatment works. In Hertfordshire the major sewage works are located at the lower end of our catchments, whilst many abstractions are at the upper end of these catchments. This means many of our main tributary rivers do not benefit from any significant returning flows from these major sewage treatment works.

3. The Environment Agency will continue to work in partnership with water suppliers and others to achieve a reduction in domestic water use in Hertfordshire.
4. The lack of available new sources of water in Hertfordshire could mean that water would have to be pumped from further away. This is likely to have higher carbon costs and the implications of this need to be fully understood and potentially mitigated.

8 Land

Key messages:

1. With 1,696 farm holdings in Hertfordshire revenue acquired from the sector highlights how much of an important resource our farmland is.
2. The majority of farmed land in Hertfordshire is used for crop production, notably wheat. Cereal crops generally require a higher usage of pesticides than other crops.
3. Diffuse pollution from pesticides is a significant problem in Hertfordshire. We need to reduce the risk to the environment by promoting best practice in pesticide usage, with particular focus on Metaldehyde which is an active ingredient in slug pellets.
4. The majority of land pollution incidents in Hertfordshire have low environmental impact. There have been no major incidents since 2005.

Agriculture and pesticides

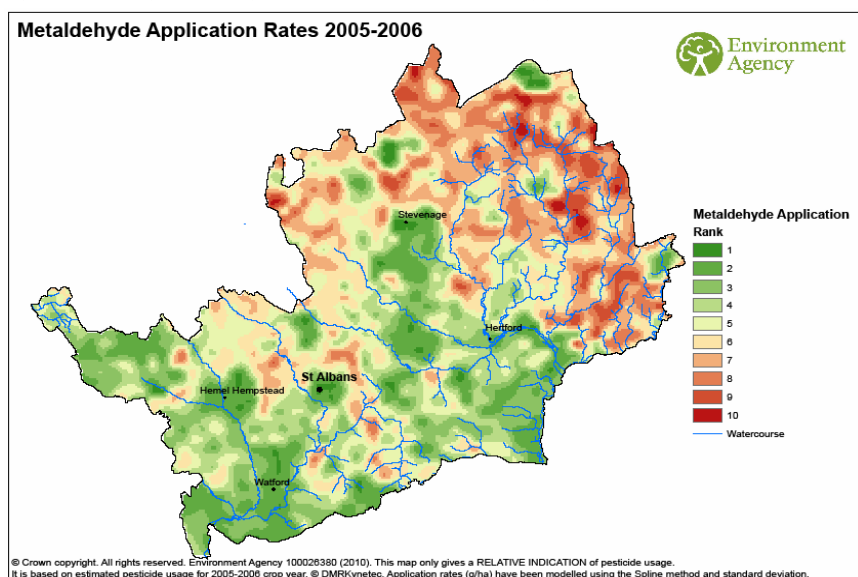
Hertfordshire is an important rural economy in England, particularly for arable farming. Based on Defra's farming statistics:

- In 2008 there were just under 3,000 people employed on farms in Hertfordshire.
- The total number of farm holdings in Hertfordshire has increased between 2007 and 2008, from 1,651 to 1,696 holdings. Just over 40% of these are <5 hectares in size.
- These holdings farm 98,074 hectares of land (2008). The most common type of farm is those used for growing cereal crops with a total of 440 holdings.
- In 2008, agriculture's gross value added (GVA) in the East of England region (£934 million) equated to 17% of England's total. The average GVA for all regions is £689 million.
- The most significant contributions to output in the East of England in 2008 were wheat followed by poultry production.

197 farms in Hertfordshire have lowland grazing. Grazing management is particularly important as overgrazing can lead to detrimental effects on biodiversity whilst sensitive grazing management can encourage threatened invertebrates. In Hertfordshire there are 15,506 cattle, 35,183 sheep, 571 goats and 4,975 horses.

Hertfordshire's farms can be a valuable habitat. Through the Agri-environment Schemes farmers are managing their land more environmentally friendly such as replanting hedgerows and creating buffer strips along watercourses and other linear habitats. In Hertfordshire there are 248 farms under agri-environment schemes¹¹. The majority are under the entry level scheme and one farm is registered in a higher level scheme.

Figure 13: Map showing metaldehyde pesticide application rates in Hertfordshire



In Hertfordshire crop production is responsible for 67% of land cover of the farmed land. Out of this 74% is used for cereal growing with wheat being the most widely sown crop (38,559ha) followed by oilseed rape (8,647ha). This

means that usage rates of pesticides used to control weeds in arable crops, such as Clopyralid, Cypermethrin and MCPA are particularly high across the county. Concentrations of pesticides are particularly high in the north east of the County. All commonly used agro-chemicals cause concerns. Recently identified among these are levels of Metaldehyde, which is used as an active ingredient in slug pellets.

Previously developed land (PDL) 😊

Previously developed land includes vacant or derelict land or buildings, or land that is currently in use with planning permission or known redevelopment potential.

Area of PDL

- The area of previously developed land in Hertfordshire has increased by 50 hectares since 2007¹².
- There are 559 hectares of previously developed land in Hertfordshire (2008). Approximately 79% of this land is currently in use, with the remainder being derelict or vacant land and buildings. Of the land currently in use, 283 hectares currently has planning permission for redevelopment, and 161 hectares has known redevelopment potential.
- Stevenage district has the highest area (99 hectares) of previously developed land in Hertfordshire, in 2008, accounting for 18% of the county total. Dacorum and Three Rivers districts have the lowest area (16 hectares or 3% of the total each).
- Previously developed land in Hertfordshire accounts for 9% of the total in the East of England.

PDL suitable for housing

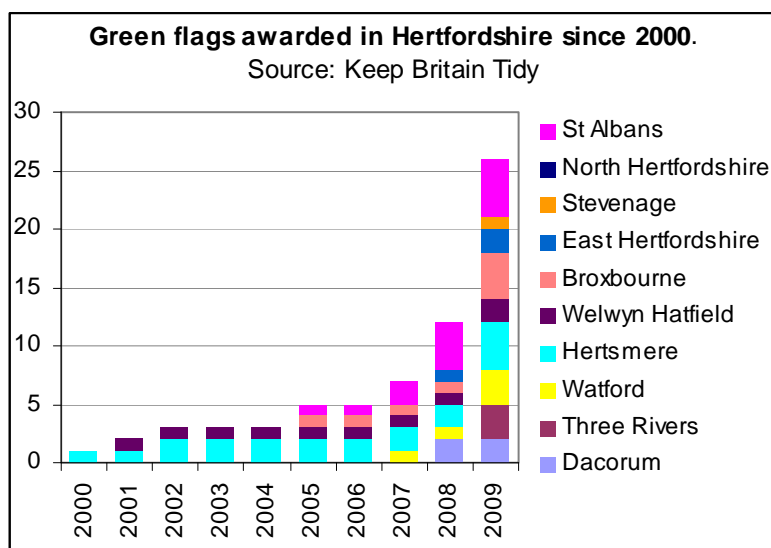
- Out of the 559 hectares of previously developed land, 389 hectares (70%) is suitable for housing. This means that development can take place on this land, where suitable, protecting greenbelt land and other urban green spaces.
- The average proportion of new dwellings built on PDL in Hertfordshire has increased by nearly 20% since 1993, to 89%. The highest proportion is in Hertsmere, which has 99% of new dwellings on PDL, with Watford and St Albans at 98%.
- Since 2001, all districts have increased the new dwellings built on PDL except Three Rivers and Watford which have seen a decline. Stevenage and Broxbourne had the biggest increase, although it should be noted that Stevenage had the largest area of PDL suitable for housing (75% of all PDL in the district).

Green Flag Award 😊

There are 26 parks and green spaces in Hertfordshire that have been awarded the Green Flag in 2009/10¹³. This recognises high environmental quality and management, and access to green space for all members of the community. The districts in Hertfordshire with the largest number of parks with the Green Flag award are St Albans district (5 awards), Broxbourne district (4 awards) and Hertsmere district (4 awards).

There has been a significant increase in the number of green spaces in Hertfordshire being awarded the Green Flag since 2000, and particularly since 2008 where the number has more than doubled.

Figure 14: Green flag awards in Hertfordshire between 2000 and 2009



Land pollution incidents

- The majority of land pollution incidents have low environmental impact. Category 3 incidents make up over 90% of all incidents in each district between 2005 and 2009. For some districts, 100% of the incidents to land were category 2⁹.
- No major environmental impact land incidents have occurred since 2005, when 1 was recorded in Dacorum district. This was the Buncefield oil depot incident in Hemel Hempstead.
- Dacorum, East Hertfordshire, Stevenage and Three Rivers districts are the only districts in Hertfordshire that have recorded serious land pollution incidents between 2005 and 2009.

Pressures and solutions

1. Climate change may lead to a change in agricultural practises across the county. Such changes could have an adverse effect on the environment in Hertfordshire, for example, it could mean there is an increase in crops that require a higher water use. This could lead to water resource issues, alongside the increasing population. Climate change impacts need to be considered within planning and land management plans across the country.
2. Our farmlands offer a valuable habitat for a wide range of wildlife. Working closely with landowners through projects such as the entry level scheme will have a positive impact on the environment. We are currently working with Natural England to target agri-environment schemes in priority water bodies (under WFD). This is looking at what can be included in the scheme to reduce the risk of diffuse pollution e.g. the introduction of buffer strips and the reversion of arable land to grassland.
3. Diffuse pollution is a significant challenge to water quality and meeting the objectives of WFD. Promotion of best practice and good management of pesticide use in Hertfordshire will help reduce the impact from agriculture.
4. Hertfordshire has been identified as a key county in the “Campaign for the Farmed Environment”. The aim of the campaign is to exceed the environmental benefits offered by set-aside by establishing a coordinated and engaging. The three key themes of the campaign include resource protection (e.g. protecting soil and water) which is consistent with the Environment Agency’s resource protection aspirations under the WFD.

9 Wildlife

Key messages:

1. The chalk streams of Hertfordshire are outlined as strategic river corridors under the East of England Biodiversity Plan. The value of these streams means that sections of them need restoration work to further improve and strengthen the habitats.
2. There are a number of areas which present significant opportunity for wetland BAP priority habitat creation, the most significant areas are around the River Lee and the River Stort.
3. 92% of Sites of Special Scientific Interest (SSSI) in Hertfordshire are in favourable or recovering condition, and meeting the governments Public Service Agreement (PSA) target. Sites in unfavourable no change or declining condition need to be targeted as priorities for improvement, where possible.
4. Non-invasive species are a continual problem along Hertfordshire Rivers. Signal crayfish are a significant and continued problem with Giant Hogweed, Japanese Knotweed and Floating Pennywort also causing concern.

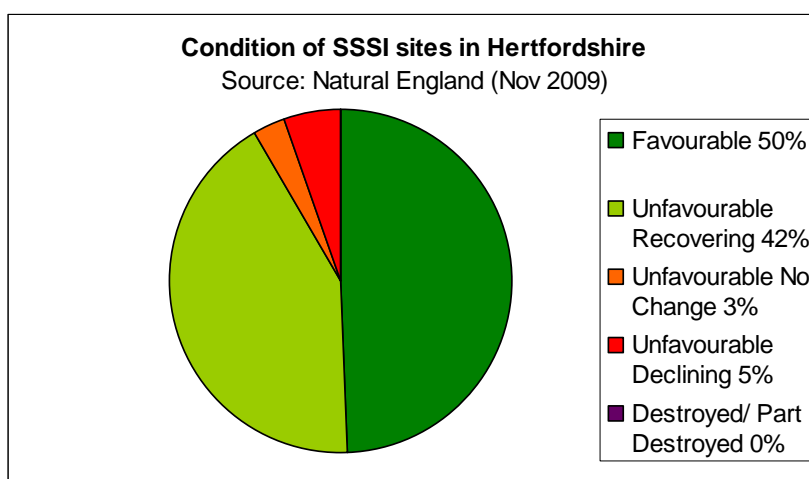
SSSI condition and other wildlife sites



There are 43 Sites of Special Scientific Interest (SSSI) within Hertfordshire.

- 50% of the County's SSSI area is in favourable condition; this is slightly higher than the 44% average of England¹¹.
- The government's Public Service Agreement (PSA) target is to have 95% of the SSSI area in favourable or recovering condition by December 2010. Hertfordshire is almost reaching this target, with 92% of the SSSI area achieving this status. The average for England is 89%.
- Ten sites (3% of SSSI area) in Hertfordshire are unfavourable no change.
- There are seven SSSI sites (5%) within Hertfordshire where the condition is unfavourable declining. These are Blagrove Common, Castle Lime Works Quarry Moor Hall Meadows, Northaw Great Wood, Therfield Heath, Thorley Flood Pound and Westwood Quarry.
- Dacorum district has the largest area of SSSI land in Hertfordshire, with 636 hectares. Almost all (99%) of this is meeting the PSA target of favourable or recovering condition.
- Stevenage and Watford are the only districts in Hertfordshire that do not have any SSSI land.

Figure 15: Graph of SSSI site condition in Hertfordshire



Overall there are 1,994 wildlife sites within Hertfordshire covering a total area of 16,373 hectares. They aim to increase the number of Local Sites in Positive Conservation Management (PCM); this is assessed under NI197 which is the National Indicator for biodiversity.

There are 36 Local Nature Reserves and 1 National Nature Reserve (Broxbourne Woods) in Hertfordshire; these sites aim to conserve wildlife and increase people's awareness and enjoyment of their natural environment. Part of the

Chiltern Area of Outstanding National Beauty is found in the North West part of the County, this area is made special by its chalk grassland and unimproved heath.

There is also 1 RAMSAR site and 1 Special Area of Protection (these are both the Lee Valley), 2 Special Area of Conservation (Broxbourne woods and Chilterns Beechwoods) and 18 RIGS (Regionally Important Geological and Geomorphological Sites).

River and habitat restoration

The Hertfordshire Water Vole project was completed in 2008 on the River Purcell, a tributary of the Great Ouse in North Hertfordshire. This addressed bank erosion and restored 200 metres of habitat. The project coordinated a catchment wide mink control programme across the county, which has safe guarded isolated water vole populations and maintained a mink free zone in many rivers. It is hoped that where populations were devastated by mink predation, re-introductions may now be the next step in water vole conservation in Hertfordshire.

Other restoration projects in Hertfordshire have restored around 2000 metres on the River Mimram for fisheries and other habitats, and 2000 metres on the River Lee. Restoration projects have also taken place on the Rivers Ver and Ash to improve habitats in Hertfordshire.

In 2009/10, £23,500 was invested in restoration projects in Hertfordshire. These included reed bed restoration at Tewinbury and Amwell, and river restoration on the River Mimram.

Planned projects for 2010/11 have projected investment of £178,000 in Hertfordshire. These include river restoration and weir removal on the River Ash and River Ash, Ditch and reed bed works on the River Colne, water meadow restoration on the River Chess and restoration works at the SSSI sites of Little Hallingbury marsh and Spellbrook.

Further details can be found at the [River Restoration Centre](#).

Biodiversity Action Plan

A “Biodiversity Focus group” within Hertfordshire was established to produce a 50 year vision which aims to improve and restore priority habitats and species under the UK Biodiversity Action Plan (BAP). The group is chaired by the Hertfordshire and Middlesex Wildlife Trust and consists of a number of organisations within Hertfordshire Environmental Forum and has support from Natural England and the Environment Agency.

The Hertfordshire Biodiversity Partnership has identified 30 key biodiversity areas within Hertfordshire. These are areas which have the highest concentration of priority species and habitats under the Hertfordshire Biodiversity Action Plan, these included SSSIs, Areas of Outstanding Natural Beauty and County Wildlife Sites. The group completed a prioritisation of habitats and species based on factors such as decline, proportion of the UK’s resource within Hertfordshire and if they are locally distinctive. An example of priority habitats is the county’s chalk streams and Oak-hornbeam woodlands.

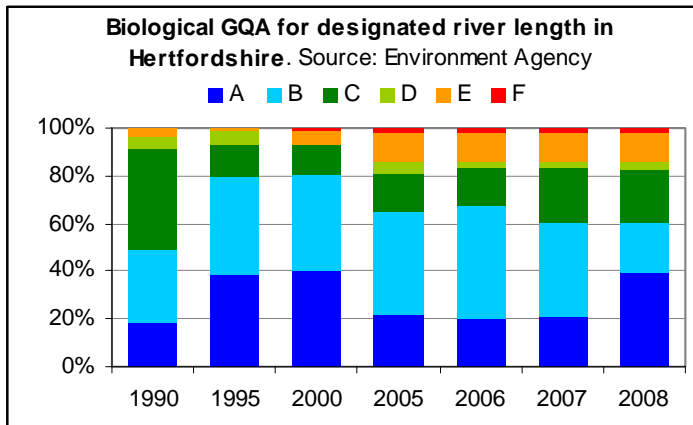
Biological river quality

Historically the biological quality is assessed using the biological General Quality Assessment (GQA) which uses macro-invertebrate populations to give a long-term indication of water quality. This is because macro-invertebrates can be affected by pollutants that occur at low concentrations or infrequently, and are often missed by chemical sampling. This has now changed to classifications under the Water Framework Directive.

Since 2000, there has been a decline in the stretches of rivers meeting very good or good biological river quality under the GQA scheme in Hertfordshire, from 81% to 61% in 2008. However, the majority of river stretches is still of high biological quality. These rivers are predominantly located in East Hertfordshire. Alongside this, there has been a slight increase in the river length achieving grades C and D (moderate quality), and E and F (poor quality). In 2008, a quarter of all designated river length was grade C or D and approximately 14% was grades E or F.

- Notable improvements are evident on the River Lee (from Luton sewage works to Wheathampsted) where the quality has improved from grade E (poor) in 1990 to grade A in 2008 (very good).
- Constant high biological quality (grade A) can be found in sections of the rivers Ash, Chess, Mimram, Quin, Rib and Stort.
- Declining biological quality is evident in the Gade (from Croxley Mill to the Colne) which has declined from a grade C to a grade E, and the River Colne (from Gade/GUC to the Chess) which declined from a grade B to an E from 2004 onwards.

Figure 16: Graph of biological GQA in Hertfordshire



Fish 😊

Our monitoring sites indicate the majority of fish stocks in Hertfordshire's rivers are healthy and diverse, with some being exceptional. The Lee around Wheathampstead for example has a great diversity of species, a range of life stages and at some sites extremely high biomass. The upper reaches and tributaries of the Lee and Colne are chalk streams. Chalk streams are globally rare, rich in biodiversity and are a priority UK BAP habitat. Brown trout dominate these chalk streams but salmon are not present in Hertfordshire. Further down the rivers coarse fish densities increase.

Some of Hertfordshire's rivers suffer from low flows due to abstraction. This can put stress on the fish, invertebrate and other wildlife populations and is reviewed and managed using schemes such as Catchment abstraction management Strategies (CAMS).

Across Hertfordshire, barriers to fish migration are a real issue to coarse fish and brown trout population. Improving fish passage is considered a key to locally delivering the aims of the Water Framework Directive and plans to remove or notch weirs have been successful. At Hartham common on the River Lee a weir was successfully notched to increase fish passage. The weir was notched in three places increasing up stream migration. Future projects include the removal of Easeneye weir on the River Ash, a tributary of the River Lee. For a successful delivery it is vital that we work in partnership with the land owner and receive consultation from external organisations such as The Wild Trout Trust (WTT). These partnerships are an important element for successful habitat improvements and river restoration.

Invasive species 😞

There have been 272 recorded sightings of invasive species in Hertfordshire¹⁴. Most of these live in or around watercourses. The [Wildlife and Countryside Act](#) (1981) is a measure for preventing the establishment of non-native wildlife which may be detrimental to native species. The Act states that it is an offence to plant or cause to grow in the wild any plant which is stated in part II of schedule 9.

- The most abundant/frequently recorded invasive plant in Hertfordshire is Himalayan Balsam. This species grows rapidly to a height of 2 metres and over, and out competes native flora. This reduces habitat/food for native animals and leaves bare banks in the winter which are vulnerable to erosion.
- Signal crayfish are a huge problem from a point of view of competing with and preying on native species and wiping out the native white-clawed crayfish. The populations in Hertfordshire are massive and probably represent the worst in the UK.
- [Giant Hogweed](#) which has been reported at 26 sites within the county is a toxic plant and potentially hazardous to human health.

It is the riparian owner's responsibility to remove invasive weeds. We only have a duty to remove invasive species that are affecting river flows and increasing flood risk.

Pressures and solutions

1. We have a limited programme to control and remove Floating Pennywort. We're currently investigating the feasibility of introducing a biological control for Japanese Knotweed, this has been extensively tested and is shown not to effect native species - if successful this would be a significant step towards controlling and eradicating Japanese Knotweed. We are also continuing to gain better data on the numbers and spread of invasive species throughout Hertfordshire by working in Partnership with Hertfordshire Biological Records Centre to record all invasive species along Hertfordshire Rivers Corridors.

2. Changes in the way we monitor the aquatic environment come into effect this year. With more emphasis on investigating water-bodies that do not reach good ecological status. We have moved away from GQA monitoring, towards monitoring under the Water Framework Directive.
3. Continue investigations into restoring wetland SSSI's, in unfavourable condition through Water Level Management Plans, includes monitoring and evidence gathering. For 2010/11 we are continuing work on Hunsdon Mead, Rye Meads and Tewinbury.
4. Continue to restore, enhance and create rivers and wetlands throughout Hertfordshire ourselves (and working in partnership) and advise interested partners how they can do this themselves.
5. Advise and influence stakeholders and developers to include the restoration of river and wetlands in developments and include their incorporation in strategies.
6. In partnership, produce a River Restoration Strategy for Dacorum (Rivers Ver, Gade and Bulbourne.)

Conclusion

Hertfordshire has a high quality environment in many aspects, but it is facing increasing pressure from climate change and growth. We must address current challenges to ensure future growth is sustainable and takes into account climate change adaptation measures.

There is already a high consumption of resources in Hertfordshire, and in particular energy use in homes and for transport, water use, and one of the highest levels of municipal waste production in the country. The population in Hertfordshire is increasing, so it is vital this growth is sustainable to meet these challenges without having an adverse affect on the environment.

Diffuse pollution from urban and rural sources is a big challenge to water quality and wildlife in Hertfordshire's rivers.

The main issues for Hertfordshire are:

- **Flood risk** - over 25,000 properties in the county are at risk of flooding, which particular concern in East Hertfordshire which also has a high number with significant likelihood of flooding. This is predominantly where flood events of the last few years have occurred.
- **Sustainable development** – the population in Hertfordshire is increasing, and the East of England plan proposes a minimum of just over 83,000 homes per year until 2021 to cope with the growth. The bulk of these is around Stevenage, Dacorum and East Hertfordshire. Flood risk and water use are already issues in some parts of the county, particularly East Hertfordshire. Future growth must address these issues to ensure it is sustainable.
- **Water resources** – the county has one of the highest domestic water use in the Country, and despite recent declines, is still well above the national average. The County is classified as under serious water stress and CAMS assessments largely show over-abstracted rivers and groundwater.

Glossary of terms

1. **Renewable energy** – energy generated from natural sources such as wind or waves.
2. **East of England Plan** – a planning document that sets out the vision for the East of England for the next 15-20 years.
3. **Ecological footprint** – an indicator of how much land and sea is needed to provide the energy, food and materials we use in our everyday lives, and how much land is required to absorb our waste, measured in global hectares per person.
4. **Bio-capacity** (biological capacity) – a measure of land available weighted by the productivity of the land. It looks at the capacity of land to supply resources and absorb waste (Global Footprint Network). It is used alongside the ecological footprint to show where we should be able to achieve sustainable living.
5. **Local Area Agreements** – a 3 year agreement that sets out priorities for the local area, agreed between central government and the local authority.
6. **National Flood Risk Assessment (Nafra)** – modelled data that assesses likelihood of flooding, and the extent to which flood defence structures reduce the chance of flooding. Vulnerability and impacts of floods are mapped, according to level of risk (significant, moderate or low). It also provides a picture of the damage that might arise including costs, and numbers/types/location of properties affected.
7. **Strategic Flood Risk Assessment (SFRA)** – produced by local authorities to assess all types of flood risk within their area.
8. **Municipal waste** – predominantly household waste collected by a local authority, which can also contain a small proportion of commercial waste (collected by the local authority).
9. **Biodegradable municipal waste (BMW)** – predominantly household food waste and green waste, that is biodegradable and will break down within a landfill site.
10. **Diffuse pollution** – pollution where the source is indirect, and therefore often difficult to determine.
11. **Water Framework Directive (WFD)** – European legislation that came into force in December 2000. It provides a simple approach to managing the whole water environment. The aims are to prevent deterioration of current status and to set actions for improvements to meet good status by 2027, where status is low.
12. **General Quality Assessment (GQA)** - Environment Agency assessment scheme looking at the chemical, biological and nutrient quality of designated rivers using representative sample points along their length. River stretches are given a grade between A and F to classify the quality.
13. **Catchment Abstraction Management Strategy (CAMS)** – management of water resources at a local level. The strategies look at the requirements of abstractors and the environment and looks to achieve a balance.
14. **Previously developed land** - this includes vacant or derelict land or buildings, or land that is currently in use with planning permission or known redevelopment potential.
15. **Site of Special Scientific Interest (SSSI)** – area of land with a conservation designation.
16. **Biodiversity Action Plan (BAP)** – detailed plan to conserve, protect and enhance UK biodiversity.
17. **PSA target** – public service agreement outline the Governments priorities, and sets out targets to achieve them.
18. **Invasive species** – non-native species that have detrimental impacts on the habitats where they colonise.

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