

the state of our environment

Agriculture and land management





Agriculture and Land Management

In brief – what is the state?

- Over 70% of the land in Anglian region (2.1 million ha) were farmed in 2009, with 1.6 million hectares used for crops and horticulture.
- Since 2007, agricultural emissions of methane and ammonia have declined by 30% and 10% respectively.
- Over 90% of our land classified as Nitrate Vulnerable Zones and there are 15 local priority catchments under the England Catchment Sensitive Farming Delivery Initiative (ECSFDI).
- 1.2 million hectares – nearly 50% of the region - are managed under Environmental Stewardship Scheme agreements, with 90% of agreements under the Entry Level Scheme.
- A third of our most productive farmland is at risk of flooding.
- Water and soil are important agricultural resources in our region and effective management is paramount to adapt to climate change.
- In the future climate change and food security will require us to work in partnerships and embrace new technologies.

Agriculture can benefit the surrounding environment by providing habitats for plants and animals, reducing flood risk and conserving soil and water resources. However, farming practices are not always kind to the environment and have the potential to damage soils, pollute watercourses and impact on air quality.

We play a major role in helping to reduce these negative impacts, through both regulatory and non-regulatory activities, and ensuring efforts are targeted effectively to achieve the maximum benefit. We advise, inform and encourage farmers to adapt their farming practices through workshops and events. Good land management can also benefit farmers and their businesses in terms of cutting costs and improving productivity of land and livestock.

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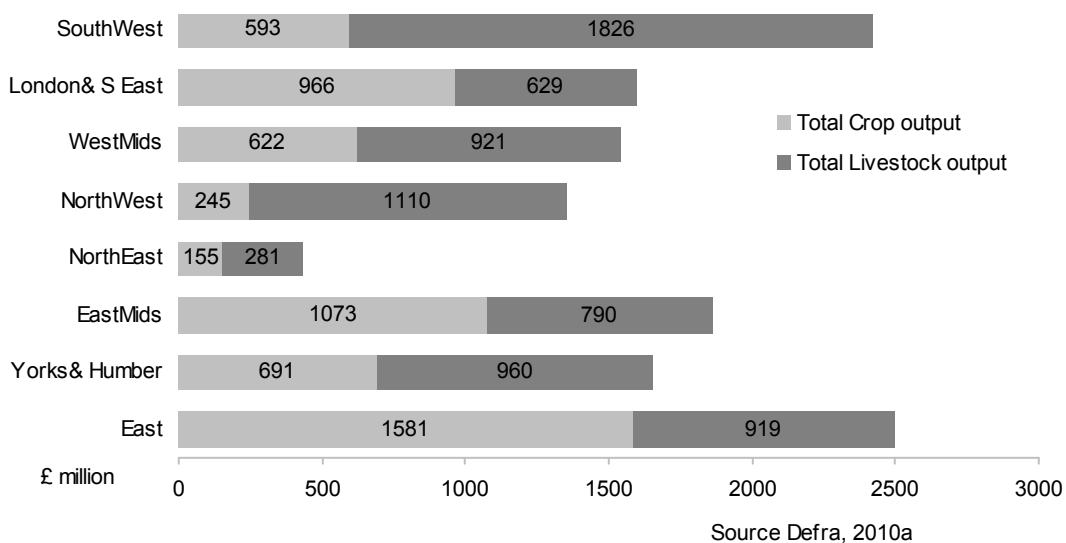


Agricultural economy - Local trends

Agriculture dominates our local landscape and brings huge economic benefits.

- In 2009, agriculture in the East of England generated £2500 million, the highest of all English regions (Figure 1). Crops and horticultural products contributed nearly 60% of this total.
- Crops and horticultural products are also important in East Midlands, whereas in Yorkshire and Humber, livestock farming contributed £960 million (54%) to the regions total output in 2009¹.

Figure 1 Agricultural output value (£ million), 2009.



- In 2009, 70,000 people were employed in full and part-time roles managing just over 2.1 million hectares (ha) of farmed land².
- Increasing numbers of smaller farms is partly due to the trend of householders moving from urban areas to the countryside and buying property with a small acreage for keeping animals such as horses³. Although these operate at a smaller scale than commercial farms they can still impact the environment.
- Nearly half of the farms in Norfolk were under five ha (3539 farms), whereas Lincolnshire had the greatest number of larger farms (1351 farms)².



Land use and farm types - Local trends

The Fens cover a large part of total land area and, along with the Broads, are made up of soils derived from silt and peat deposits providing highly fertile soils.

- Over 40% of the country's most productive agricultural land (grade 1 and 2) is in Anglian region (Figure 2).
- Over 70% of the land in the region (2.1 million ha) was farmed in 2009².
- The number of farms in the region has increased by 30% between 1990 and 2009, and 3.2% between 2008 and 2009 (Figure 3).
- 40% of the farms are arable (cereals, cropping and horticulture) (
- Figure 3), covering 1.5 million ha – over 70% of the agricultural land in 2009².
- Cereals, oil seed rape and potatoes make up the majority of the arable crops grown (Figure 4)².
- Wheat covered 30% of the farmed land (over 70,000 ha) in 2009 (Figure 4).
- In 2009, over 60% of Lincolnshire was arable farmland (380,000 ha), producing the largest areas of wheat, oil seed rape and horticultural crops (Figure 4).
- Norfolk farmed the largest area of sugar beet and spring barley; 84,000 ha in 2009 (Figure 4).
- Wheat made up over 50% of all arable crops grown in Cambridgeshire, Essex, Bedfordshire, Peterborough, and Milton Keynes (Figure 4).
- Although arable farms are more numerous and contribute more to the agricultural economy than livestock farming, there are around 400 large-scale intensive pig and poultry farms in Anglian region, mainly located in Suffolk, Norfolk and Lincolnshire. These sites have permits and are regulated where there are over 2,000 pigs or over 40,000 poultry (turkeys, chickens or ducks).
- The number of holdings classed as 'other' totalled 13,760 in 2009 (
- Figure 3). This includes holdings with only horses; with only grass or fodder crops; or with only fallow land or buildings. This land use type is reflected in the increasing number of smaller holdings across the region.

Figure 2

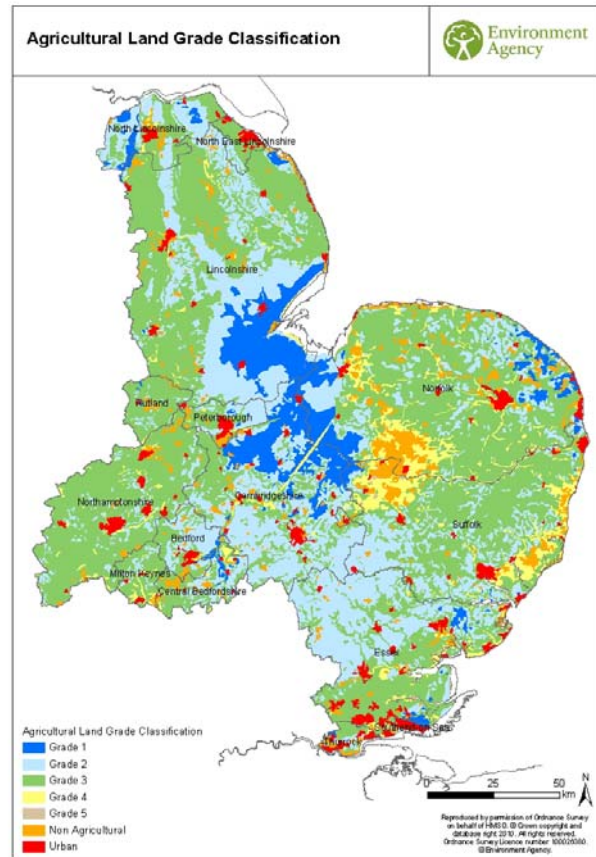


Figure 3 Anglian changes in farm types, 1990-2009.

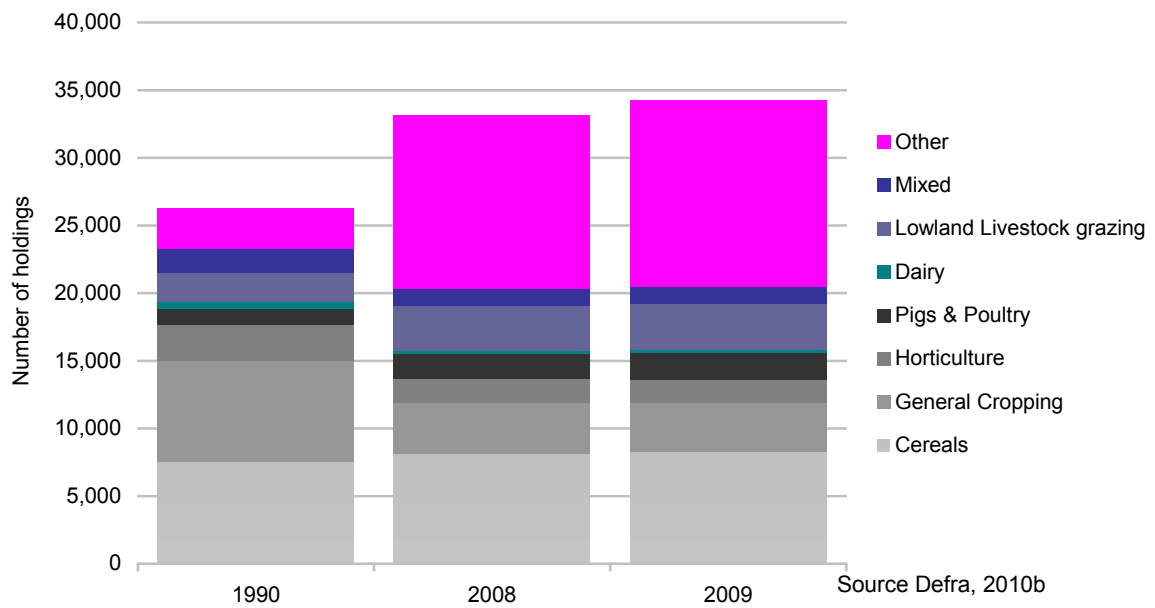
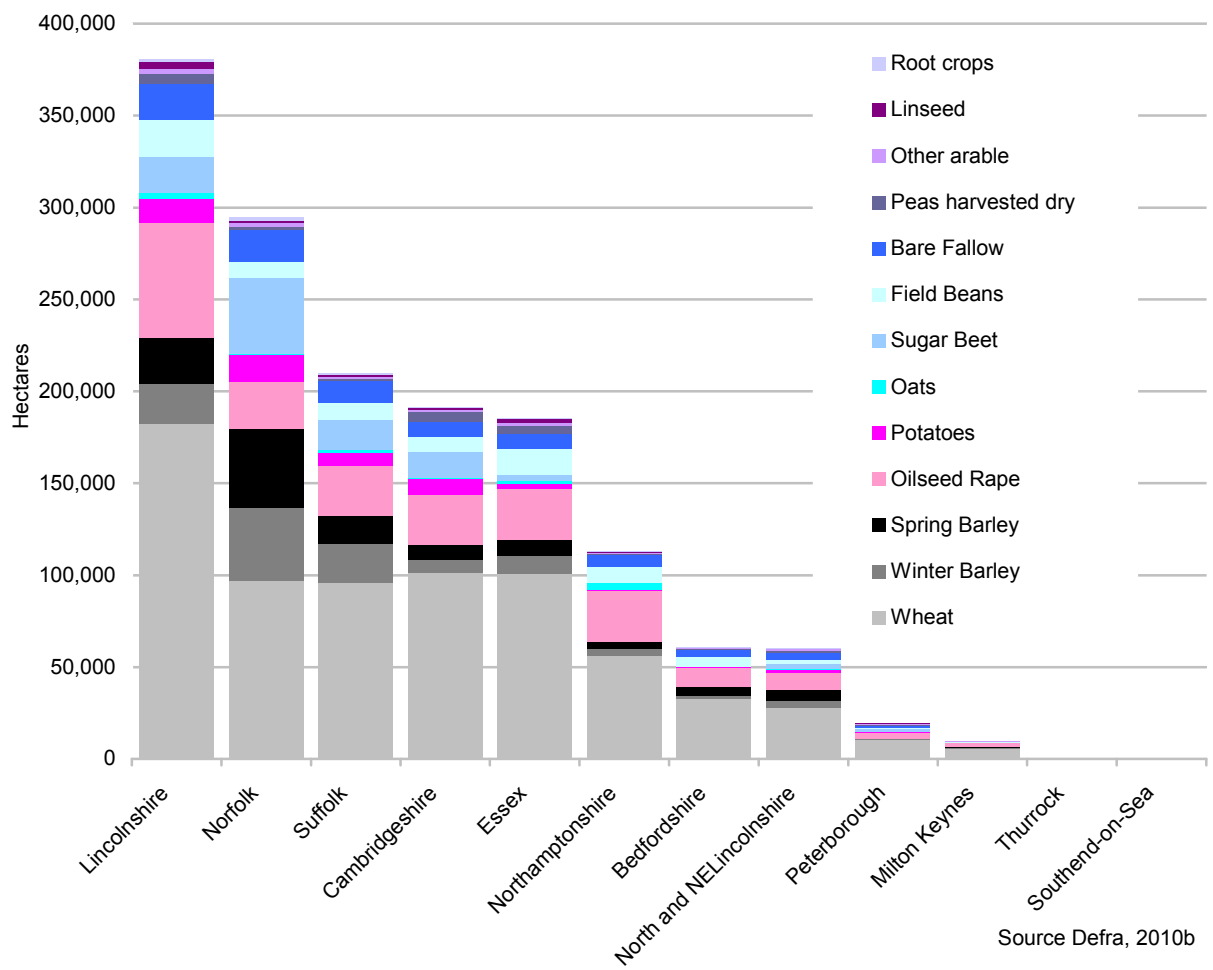


Figure 4 Local arable crop production, 2009.



Agriculture and Air quality

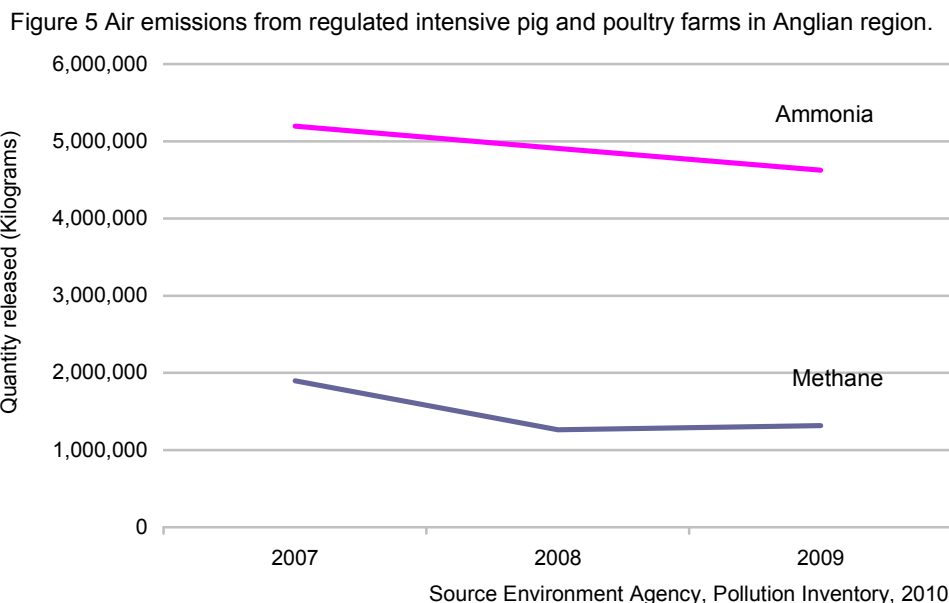
Agricultural emissions from housed livestock and spreading slurries and manures can impact air quality. Emissions from large pig and poultry units are regulated through [Integrated Pollution Prevention and Control \(IPPC\) legislation](#) under the [Environmental Permitting Regulations](#) (EPR).

The main emissions from agriculture are:

1. **Ammonia:** agricultural emissions are responsible for two-thirds of the nitrogen deposition that leads to over-enrichment and acidification of sensitive soil habitats, and fresh waters, such as heathlands and brecklands³.
2. **Methane:** main agricultural sources are the digestive processes of livestock and animal manures. Methane has a global warming potential 21 times greater than carbon dioxide⁴.

Local trends

- Intensive pig and poultry farms account for 43% of the nationally issued EPR permits for production pigs and 37% of the national permits for poultry⁵.
- However, agricultural emissions continue to decline across Anglian region.
- Emissions of ammonia have reduced by 10% since 2007 (Figure 5)¹.
- Methane from regulated farms fell 30% in between 2007 and 2009 (Figure 5).
- Changes in farming practices such as better designed livestock buildings, manure and slurry storage, and improved slurry spreading practices, as well as regulation under [IPPC legislation](#) contribute to these reductions in emissions from farming.



¹ Data extracted from Environment Agency Pollution Inventory 2010. Only EPR registered farming sites are obliged to report to the Pollution Inventory. The data shown is a 'snapshot' of the intensive farming sector and is not representative of the agricultural industry as a whole.



Agriculture and Water quality

Agriculture involves the use of potentially polluting fertilisers, slurries and manures that contain high concentrations of Nitrogen and Phosphate, as well as chemicals such as pesticides. Agriculture is recognised as a source of diffuse pollution and a potential barrier to achieving the [Water Framework Directive \(WFD\)](#) objectives. Nationally, 80% of rivers are under pressure from diffuse pollution⁶.

[Nitrate Vulnerable Zones \(NVZs\)](#) are designated where agricultural nitrate pollution of surface and ground waters is high or rising. Not only can nitrogen pollute the water environment but it can also cause harm to human health when found in very high concentrations in drinking water.

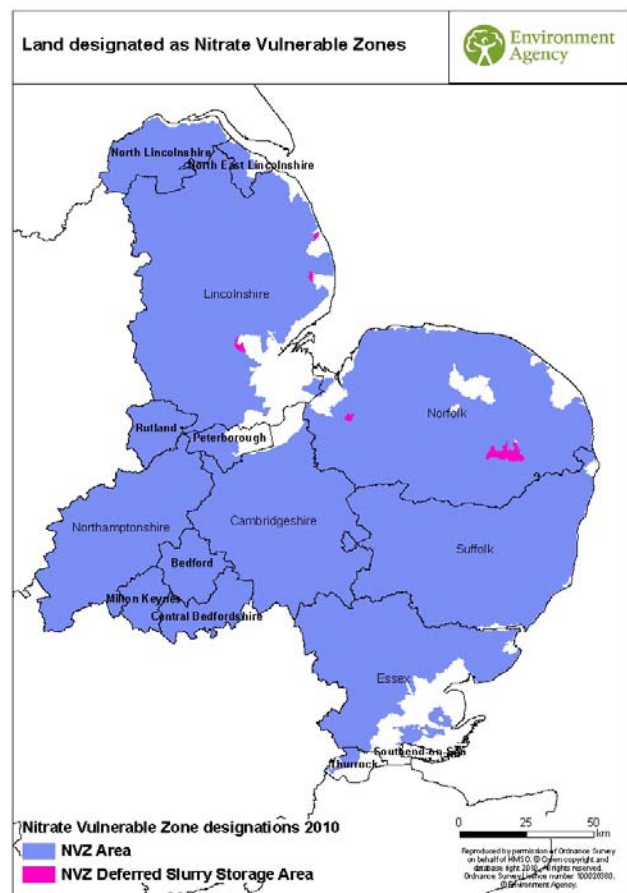
Local trends

- Under WFD, 95% of our local river catchments are under pressure from diffuse pollution, while 40% are specifically ‘at risk’ of diffuse nitrate pollution.
- 90% (2.4 million ha) of the region is designated as an NVZ (Figure 6).

Several factors influence the high area of designation in our region:

1. The growth of intensive agriculture and the use of nitrogen-based fertilisers has contributed to the increased levels of nitrates in our surface and ground waters. Although the amount used has levelled out over recent years, with the use of precision farming techniques and improved best practice knowledge we have to deal with this historic build-up of nitrogen in groundwaters and some surface waters.
2. Arable farming practices in particular require high nitrogen input. For example, in 2009 90% of cropped land in the East of England and the East Midlands received nitrogen fertilisers⁷.
3. Sandy soils, such as in parts of Norfolk and Suffolk, allow greater loss of nitrates through leaching.

Figure 6



Pesticides - Metaldehyde and Clopyralid

Pesticides can enter surface and ground water from both point and diffuse sources and can occasionally get into drinking water sources. Two pesticides that are widely used are **Metaldehyde and Clopyralid**.

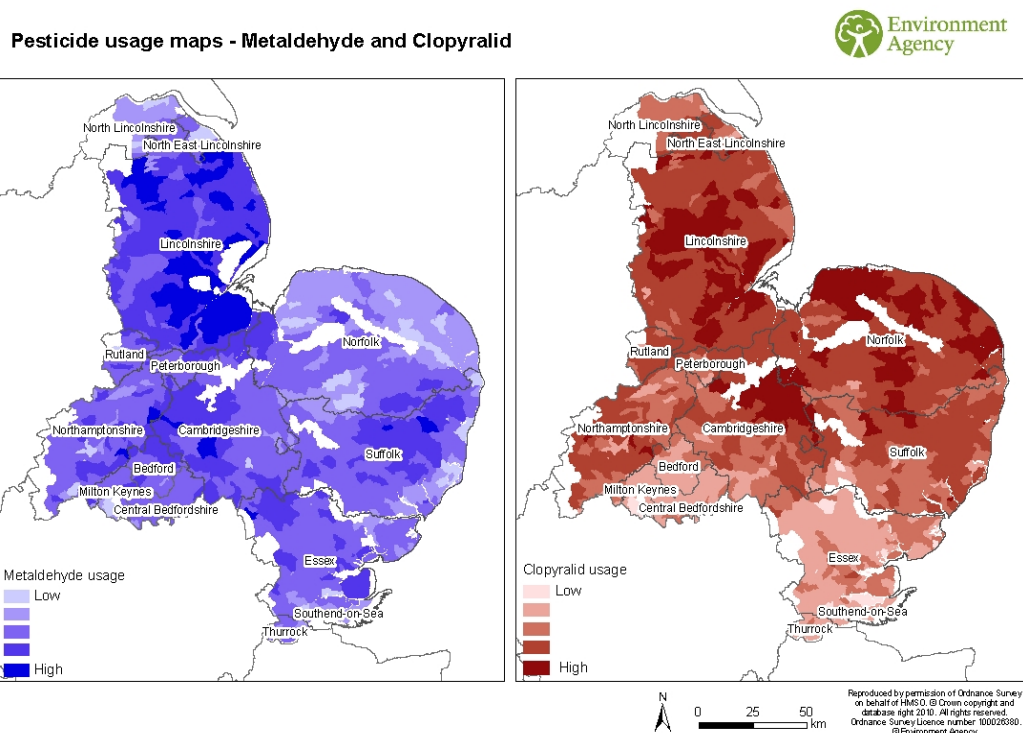
Metaldehyde is used for slug control on heavy clay soils. Slugs thrive in wet conditions so autumn-sown crops are at most risk, such as winter wheat and oilseed rape, both of which are grown in large areas in Anglian, as well as potatoes (Figure 4). High levels of slug pellets are used to control populations on susceptible crops.

Clopyralid is a broad-leaved weed herbicide, particularly effective against thistles and mayweed. It is used on a wide range of crops, such as oil seed rape and sugar beet.

Local trends

- Figure 9 shows usage of these two pesticides: the darker the colour, the higher the usage. The area treated with pesticides has increased steadily between 1990 and 2008 across the East of England and East Midlands⁸.
- Our surface and ground waters are vulnerable to pesticide pollution due to the high rates of pesticide application over large areas of arable and horticultural land.
- [The Drinking Water Inspectorate](#) sets a standard of 0.1 µg/litre for drinking water, and together with the water companies, we are monitoring to determine the extent of the issue. It is expensive and difficult to remove pesticides from water
- In 2008, initial sampling showed that many rivers and reservoirs in Anglian had metaldehyde concentrations exceeding the Drinking Water Limit, with maximum concentrations of 9 µg/l⁹.
- In 2009, the majority of water bodies showed improvements with lower concentrations of metaldehyde compared to levels in 2008⁹. However, continued sampling is needed to see if this trend continues.

Figure 7



Catchment Sensitive Farming (CSF) is a key approach to tackling diffuse pollution issues and fundamental to the WFD.

We are a partner in the England [Catchment Sensitive Farming Delivery Initiative](#) (ECSFDI), which works to reduce diffuse pollution from agricultural sources in the immediate catchment and further downstream¹⁰. The initiative promotes good land management, including: managing the use of fertilisers, manures and pesticides; promoting good soil structure to avoid run-off and erosion; protecting watercourses from faecal contamination, sedimentation and pesticides; managing stock on farms to avoid compaction; and separating clean and dirty water on farms¹⁰.

Local trends

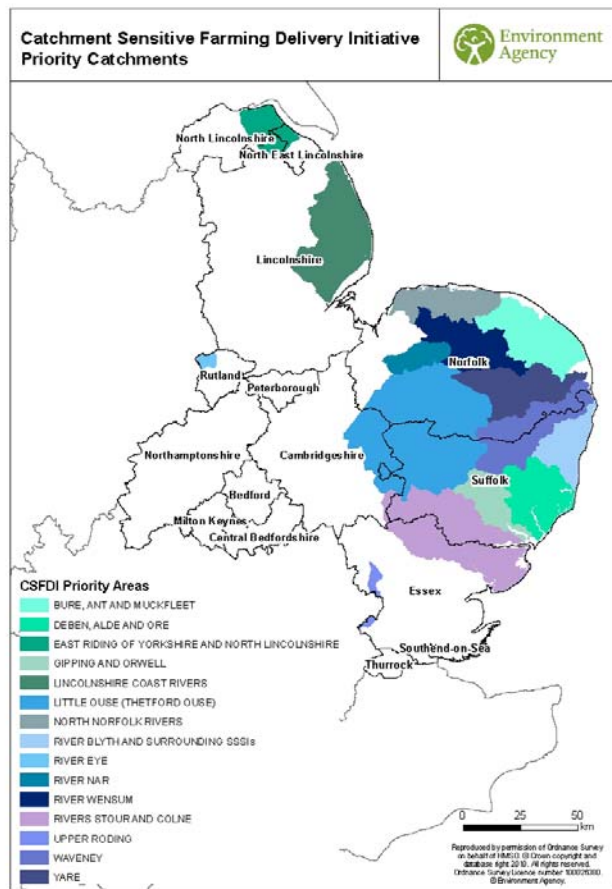
There are 15 local priority catchments including the North Norfolk Rivers, the Little Ouse (Thetford), Yare, Waveney and the River Blyth and surrounding SSSI's (Figure 8).

The project is entering Phase 3 and funding is secure for another two years. Some additional target areas are currently being scoped out where WFD issues have been identified.

There is also 3 Catchment Partnerships in the Nene; Upper Ouse; and Blackwater and Chelmer which are part funded through CSF and involve other partners.

Greater adoption of best farming practices through schemes such as CSF will help reduce the amount of diffuse water pollution from agriculture in our region and contribute towards WFD objectives, whilst proving real benefits and return for farmers and land managers.

Figure 8



[Appendix 1](#) on pages 14 to 19 summaries the priority CSF catchments in 2010, that focused on key WFD objectives.. This data is taken from [Defra priority catchment information](#) (June 2007). Case studies on how farms can benefit from a catchment sensitive farming approach is available in our booklet [Best farming practices, what's in it for you](#). Report reference GEHO0908BOMP-E-P.



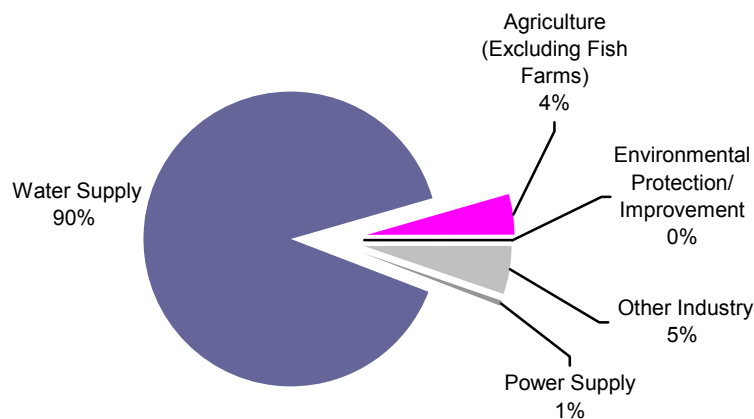
Agriculture and Water Resources

Agriculture is a key water user in Anglian, with many crops requiring irrigation to ensure high quality and good yields. Water, therefore, is very valuable in our region.

Local trends

- In 2008, 4% of the freshwater abstracted from surface and ground waters was used for agriculture, that is over 35,000 megalitres (Figure 9).
- Although agricultural use of water for irrigation makes up a small proportion of total water abstraction it can be much more significant during dry weather - making up 20% of all abstractions¹².
- 60% of our freshwater is currently sourced from surface waters that are 'over-abstracted' or 'over-licensed'. Agriculture uses the most water in the summer months when water availability is already low. Further water abstraction can cause unacceptable damage to water environments.
- The demand for consistently high quality crops, combined with climate change means that levels of abstraction are likely to continue rising, with a predicted 25% increase in the use of water for irrigation by 2020¹².

Figure 9 Anglian abstracted freshwater use, 2008



In the future, the conflicting demands for water resources between agriculture, an increasing population, and the environment will increase as climate change makes our region even drier, increasing demand on reducing supplies. Spray irrigation will continue to put pressure on water resources unless farming practices adopt drought-tolerant crops and sustainable water resource measures. Ensuring sufficient quantities of water are available when required in the summer months is one way of adapting agricultural business to the changing climate. [Rain water harvesting on farms](#), storage reservoirs and abstractor groups are all methods of water resource planning.

Local case study 1: storage reservoirs and abstractor groups

Six Water [Abstraction Groups](#) (WAGs) are already operating in the UK – four in East Anglia, one in Lincoln and another on the River Till in Northumberland¹¹.

Lincoln Water Transfer (LWT) has 19 members and was formed through early collaboration between the Environment Agency, the Upper Witham Internal Drainage Board (IDB), and the local National Farmers Union. Today, LWT holds a single abstraction licence for all its members. It allocates water and manages its own arrangements, using the IDB to collect data and monitor water use. These arrangements allow members to abstract water from 25km of drainage channels and irrigate any of the 4,600 ha of land, allowing flexibility in water and land use.

LWT is a model of cooperation and alongside other agricultural water storage schemes and abstraction groups, can help to manage the available water supply for the future and ensure that it can be targeted to areas where it is needed.

Agricultural land management and flooding

As over 70% of the land in Anglian region (2.1 million ha) were farmed in 2009, farmers and land managers have a pivotal role in managing the land and ensuring real environmental benefits are gained by managing natural resources and conserving biodiversity.

Environmental Stewardship is an agri-environmental scheme, administered by Natural England, that provides funding to farmers and land managers who manage their environment to the benefit of the environment. We work closely with Natural England to influence the targeting of different management options.

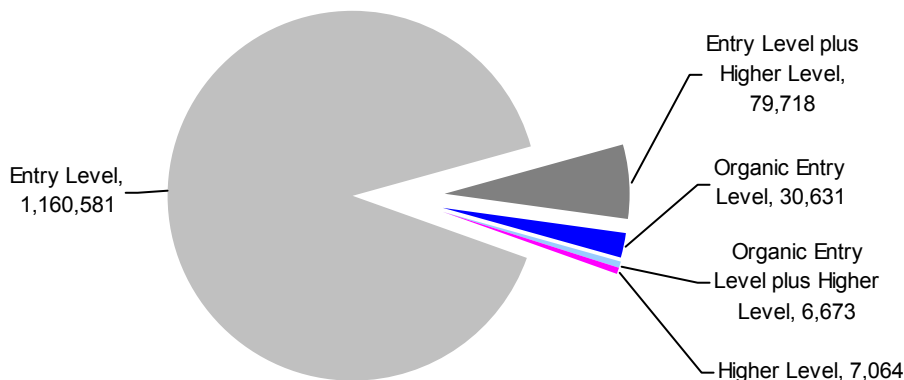
There are three overarching schemes within environmental stewardship:

1. **Entry Level Scheme (ELS)** is a 'whole farm' scheme open to all farmers and land managers who farm their land conventionally. Farmers can choose management options that are easily incorporated into land management routines and have real benefits. For example, managing hedges appropriately can reduce the risk of soil erosion on slopes by slowing and intercepting surface water run-off, and provides important habitats for breeding birds¹³. Field corner management is a useful option for farmers with difficult to access field corners, and provides important habitats for beneficial invertebrates and birds.
2. **Organic Entry Level Scheme (OELS)** is for partly or wholly organic farms.
3. **Higher Level Scheme (HLS)** uses a spatial approach and aims for significant environmental benefits in high priority areas. Targeted objectives of HLS include wildlife conservation, natural resource protection, and flood risk management. Several HLS options provide opportunities for landowners to undertake measures that may help reduce flood risk whilst enhancing biodiversity and environmental quality.

Local trends

- 7683 schemes cover around 1.3 million hectares, nearly 50% of the region¹³.
- 90% of this area is under ELS, compared to only 0.5% under HLS (Figure 10).

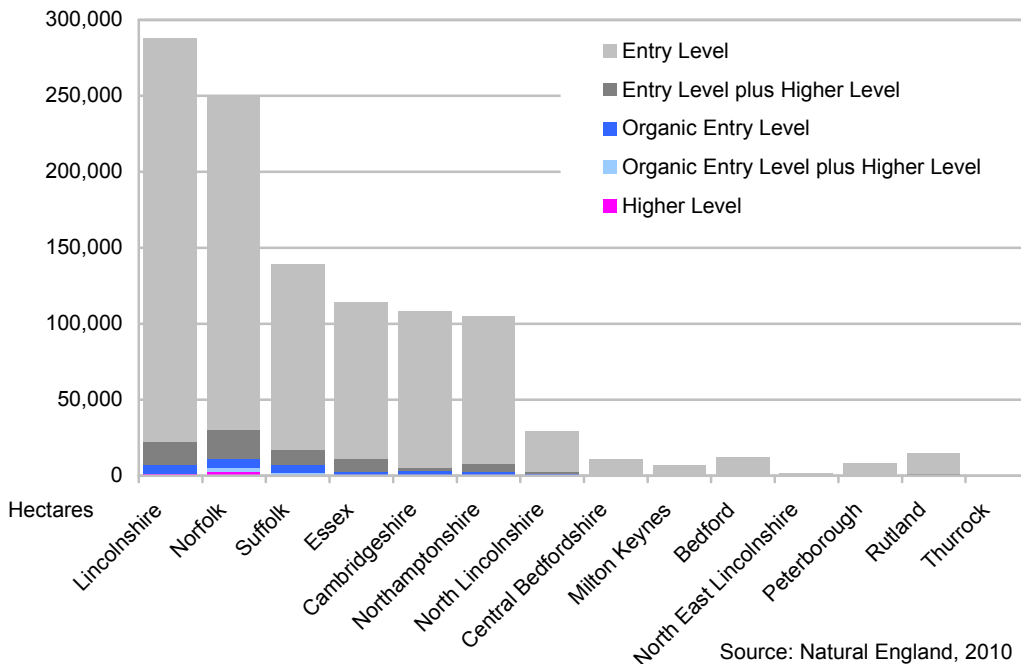
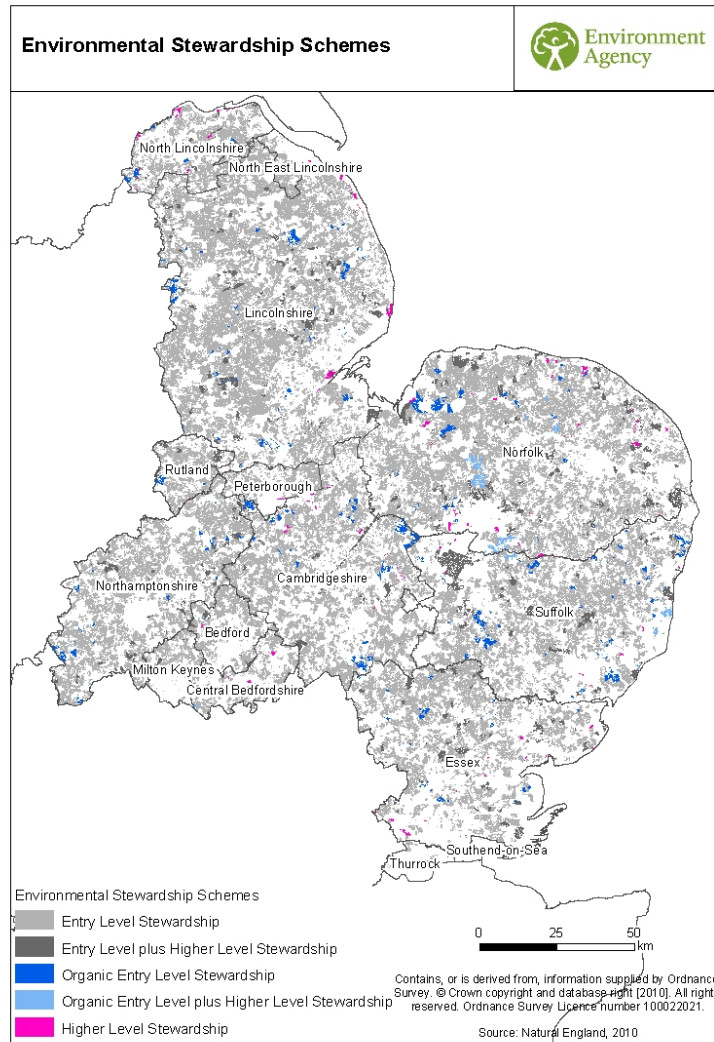
Figure 10 Anglian area (ha) under Environmental Stewardship Schemes in 2009



Source: Natural England, 2010



Figure 11 Area under Environmental Stewardship schemes in 2009.



Source: Natural England, 2010

NB, figures may not add up due to blank entries and rounding.



Flooding

Flooding can have a devastating impact on the agricultural industry. The July 2007 floods cost agriculture around £11.2 million nationally in crop losses alone. Up to 5000 farms are estimated to have been affected by the floods with the average loss per farm between £2,670 and £6,675. Farms with large areas of high value cropping may have incurred losses of over £100,000¹⁴.

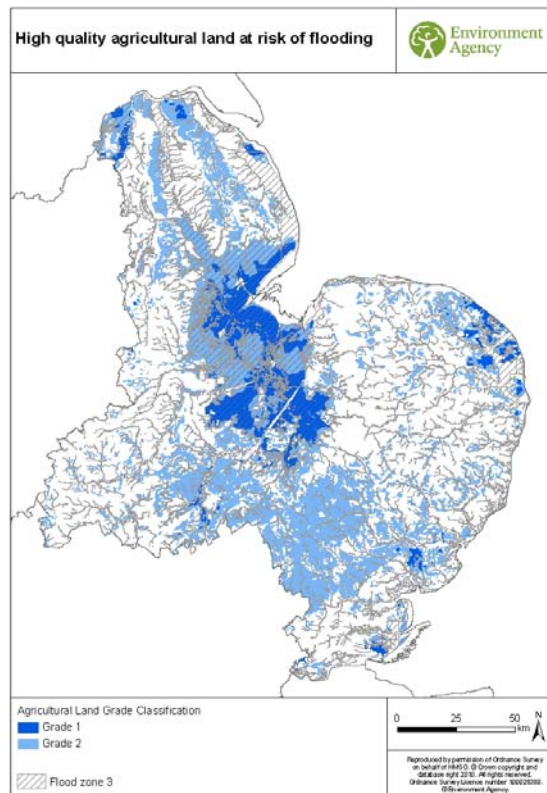
Across England and Wales, 11% of agricultural land is at high or moderate flood risk. 44% of the most productive land (Agricultural Land Classification Grade 1) is located within areas at most risk of flooding (Flood Zone 3)¹².

Local trends

- 20% of the region is in the flood zone.
- However, around 30% (over 300,000 ha) of our most productive agricultural land (Grade 1&2) is located within Flood zone 3^b, mainly around the low-lying coastal regions of the Fens, the Norfolk Broads, and areas of North and North East Lincolnshire (Figure 12).

Climate change could increase the likelihood and frequency of flood events. Schemes under [Environmental Stewardship](#) offer a financial incentive and can help farmers manage their land to help reduce the severity of floods when they occur and reduce the amount of potential damage to crops and soil.

Figure 12



^b The extent of Flood zone 3 is defined as the area that, without defences, would be inundated by a flood event that has: an 1% chance of occurring in any one year from rivers; or a 0.5% chance of occurring in any one year from coastal flooding.

Farming in the future – what are our future challenges?

Climate change will have a significant impact on agriculture and farmers will face many challenges (Table 1). We work to help farmers to adopt their measures and practices for the benefit of the environment.

Table 1: Climate change impacts on agriculture.	
Predicted climate changes	Possible impacts
Increased summer temperatures	<ul style="list-style-type: none"> • Longer growing season, although some crops and livestock may not adapt well to the heat. • Pests and disease may become a greater problem.
Decreased summer rainfall	<ul style="list-style-type: none"> • More crops will be dependent on irrigation to remain profitable, or even to grow at all.
Increased winter rainfall	<ul style="list-style-type: none"> • Wetter winters will cause flooding, increasing soil erosion and nutrient loss from land. • Compaction of farmland may also be a problem for waterlogged soils.
Sea level rise	<ul style="list-style-type: none"> • In low-lying coastal regions, rising sea levels could permanently flood or contaminate soils and aquifers with salt. In Anglian much of the high grade land is located in low-lying areas are therefore at high risk of coastal flooding.
More frequent extreme events (flooding, drought, heatwaves)	<ul style="list-style-type: none"> • Damage to crops and soil resulting in poor yields. • High intensity rainfall results in a flush of pollutants entering the soil, which may have adverse effects on groundwater.

Food security is a key concern as agricultural production will need to increase significantly over the next few years to provide for an increasing population. This could place additional pressure on environmental resources such as water and soil. We want to support sustainable farm businesses as we recognise these are key to a healthy and prosperous environment. The use of Precision Farming Technologies has helped greatly with accurate application of key inputs and helps to reduce diffuse pollution.

What will we do?

Partnerships are key to the success of our work and the drive to achieve positive environmental outcomes from land management activities. We must work in partnership with key organisations to share expertise and to use available funding streams to ensure environmentally effective targeting.

The [Campaign for the Farmed Environment](#) (CFE) is a good example of a joint initiative. This industry led campaign aims to ensure the environmental benefits, that were captured from set-aside, are encouraged and maintained. We are working closely with the National Farmers Union, Country Land and Business Association, Natural England and the RSPB to provide evidence and support in targeting county activities to ensure the success of this campaign.



We need to support the agricultural industry in the uptake of **new technologies**, such as [Anaerobic Digestion](#), which can make use of agricultural wastes, reduce emissions of methane and ammonia and provide a source of energy for farmers and land managers. We can do this by having a better understanding of the processes involved and where these technologies will provide the biggest benefits for farmers and for the environment.

The production and use of both purpose grown crops for energy use (energy crops) or food and feedstock crops for fuel (sugar beet, wheat, barley, rape seed oil) may offer opportunities for agriculture in our region. Providing that there are local reliable markets for these alternative crops, this may provide an economic and environmental return for farms.



Appendix 1 Summary of key issues within CSF priority catchments in 2010

Appendix: Summary of key issues within CSF priority catchments in 2010			
CSF Catchment	Priority Problem/Issue	Description	Justification, data source
Bure, Ant & Muckfleet	Run off from agricultural fields	Sediment and associated phosphate	Modelling data and anecdotal evidence have identified areas which present potential high risk of diffuse water pollution from agriculture. The main priority areas are the Upper Bure and Hundred Stream/Ant catchments.
	Nitrate leaching from intensive agriculture on sandy, free draining soils.	The sandy soils in the East of the catchment are well suited to root vegetables e.g. potatoes, onions, carrots, and sugar beet. The cropping regime and soil type means that nitrate leaching is a significant issue.	The area is designated an NVZ. Surface water concentrations of nitrates in the Deben, Aide and Ore are consistently >30 mg/l and commonly in excess of 50 mg/l. Nitrate concentrations in groundwater are commonly > 50 mg/l; there are a large number of groundwater-fed private water supplies in the area.
Deben, Aide & Ore (Sandlings subcatchment)	Soil erosion/wind erosion	Water and wind erosion is a localised problem within the Sandlings sub-catchment. Specifically where light soils are intensively farmed, fields are sloping and have no vegetation cover.	Land use pressure maps highlight sediment loss as being a potential problem locally in the Sandlings area. Visual assessment has identified soil on roads; wet weather survey identified problem fields.
	Outdoor pigs – nitrate leaching and soil erosion	Outdoor pigs units are well suited to sandy soils in the Sandlings sub-catchment. Nitrate leaching is a problem on densely stocked outdoor pig units, as is soil compaction, water and wind erosion.	Visual assessment has identified soil compaction problems, localised mud on roads, with tracks acting as pathway, wind and water erosion. Currently outdoor pig units are not regulated under the NVZ rules or under PPC and therefore CSF has an important role to play in raising awareness of the diffuse pollution issues associated with outdoor pigs.



CSF Catchment	Priority Problem/Issue	Description	Justification, data source
Lincolnshire Coast Rivers	Pig/poultry sector	Large, intensive indoor and outdoor pig farms. Large, intensive poultry farms producing large amounts of slurry and manures. Disposing large amounts of slurry needs to be managed carefully	Several local watercourses show excessive nutrient levels and evidence of eutrophication. Main area of pig farming is in headwaters of chalk rivers, the majority of which are situated on the steepest slopes in the catchment. Outdoor pigs are classified as high risk for Phosphate; indoor pigs are medium risk. Poultry sector is situated further south in an area of intensive drainage systems. Indoor poultry sector is classified as medium risk from P.
	Hobhole Drain	High levels of eutrophication	Intensive cropping involves high pesticide use. Few buffer strips. High levels of Nitrogen and phosphates have been found in Hobhole Drain in recent years.
	Long and Great Eau area	Eutrophication and siltation. High levels of cereals and oil seed rape production.	Chalk stream rivers with sensitive habitats affected by abstraction levels and also silt deposition and nutrient levels. Sedimentation has major effect on ability of the river to support populations of salmon and trout as it covers the gravel bed where spawning takes place.
	River Steeping, Wold Drift Drain/ Willoughby High Drain	Eutrophication. High levels of cereal production and some sugar beet.	Moderate Nitrate levels; very high and high Phosphate levels.
Little Ouse (Theftford area)	Excess Nitrates and Phosphates from farmyard manure, slurry applications and storage.	High concentrations of livestock, particularly pigs & poultry, in the northern, eastern and southern target areas of the catchment along with insufficient manure and crop nutrition management.	Water quality data from Environment Agency (EA) & Anglian Water Services (AWS), and anecdotal evidence suggest this being a problem that adds significantly to high N & P loadings.
	Occasional excess Nitrates and Phosphates. Growing of N leaky crops such as peas and oilseed rape, and inefficient users of P such as potatoes.	The area is under intensive arable and horticultural crop production.	Water quality data from EA & AWS, and anecdotal evidence suggest this being a problem that adds significantly to high N & P loadings.



CSF Catchment	Priority Problem/Issue	Description	Justification, data source
Little Ouse (Thetford area)	Soil erosion from steeper slopes/lighter soil and areas of heavier soils in arable fields in the headwaters of the Wissey and Little Ouse, causes sediment deposition. Fen and sand blows occur when soils are dry and there is a lack of crop cover.	Relatively small areas of sandy soil with slopes greater than 3°, particularly those with maize & root cropping.	Data analysis and soil risk assessment has highlighted these areas as high risk.
	Nitrates & Phosphates causing eutrophication/ loss of certain habitats & species	Diffuse Water Pollution from Agriculture (DWPA,) cited as being a cause of unfavourable/declining condition in certain SSSIs and SACs. It has caused the de-notification of Hinderclay Fen.	Natural England SSSI Condition assessment reports, Environment Agency Reviews of Consents - appropriate assessment stage 3 reports, wildlife trust evidence, etc.
North Norfolk Rivers	Outdoor pigs and crops with high risk for soil erosion are produced including spring sown cereals, field vegetables, sugar beet, maize, potatoes.	These crops and land uses are considered high risk due to the nature and timing of their operations resulting in land being left bare during periods of high rainfall. This can result in sediment entering watercourses and tributaries via direct run-off from fields, and run-off from fields to roads / fords. This is an issue throughout the target area.	Anecdotal evidence and modelled data has identified this area as high risk due to light soil types, heavier soil types which are under drained, steep slopes, high connectivity to watercourses and high risk land uses. The CSF programme can target this problem through soil erosion workshops for farmers, 1:1 advice and the capital grants scheme.
	Cattle Poaching	Meadows upstream of Wighton are stocked with cattle, resulting in poaching of the river banks and sedimentation. Poaching may also be a problem in other areas which have not yet been identified.	Although cattle are grazed in areas along all four rivers, there is only evidence of this on the Stiffkey. The CSF programme can target this problem through capital grants and 1:1 advice on appropriate stocking densities.
Gipping & Orwell	Excess Nitrates and Phosphates possibly from farmyard manure & slurry applications in the Gipping Headwaters, Haughley Watercourse & River Jordan.	High concentration of pigs (indoor and outdoor). High N & P in watercourse.	Research reports, water quality, modelled data & anecdotal evidence all suggest this is a problem that contributes significantly to high N & P loadings.
	High N & P in Somersham watercourse. Potential for leaching of lighter soils.	Excess Nitrates and Phosphates from slurry applications. Some steeper slopes flank the main watercourse.	Small catchment with outdoor pigs. Some historic pollution issues & problems relating to pig units. Data analysis and soil risk assessment suggests this area is high risk.



CSF Catchment	Priority Problem/Issue	Description	Justification, data source
Gipping & Orwell	Diffuse Water Pollution from Agriculture (DWPA) in Nacton (North & South of Orwell estuary) cited as being a possible cause of unfavourable /declining condition in the Orwell estuary.	Excess Nitrates and Phosphates. No strong water quality evidence but DWPA thought to be causing loss of certain habitats & species. Light sandy soils, loss from erosion.	Natural England SSSI Condition reports suspect DWPA has an impact on SSSI. Limited monitoring, pressure maps indicate issues of diffuse pollution from pig farms.
River Nar	Cattle poaching	Meadows at Castle Acre and other areas further upstream around Litcham are stocked with cattle, resulting in poaching of the river banks and sedimentation of the river. Poaching may also be a problem in other areas which have not yet been identified.	The River Nar Geomorphological Audit identifies livestock erosion of the river banks around Castle Acre as eroding fine sediments, which are deposited further down the river. The CSF programme can target this problem through capital grants and 1:1 advice on appropriate stocking densities.
	Outdoor pigs and crops with high risk for soil erosion are produced including spring sown cereals, field vegetables, sugar beet, maize, potatoes,.	Sediment entering watercourse and tributaries via direct run-off from fields, and run-off from fields to roads / fords. This is an issue throughout the target area	Anecdotal evidence and modelled data has identified this area as high risk due to light soil types which are easily eroded, heavier soil types which are drained, steeper slopes, high connectivity to watercourses and high risk land uses. The CSF programme can target this problem through soil erosion workshops for farmers, 1:1 advice and the capital grants scheme.
River Wensum (south of Fakenham and around Reedham)	Run-off from agricultural fields.	Sediment and associated phosphate	From appraisals which cover modelling data and anecdotal evidence, areas have been identified which indicate potentially high risk of diffuse water pollution from agriculture.
River Yare (Blackwater & Tas)	Soil erosion from steeper slopes and vulnerable soils on agricultural land in fields along the rivers Blackwater and Tas and associated waterbody catchments, giving rise to sedimentation and associated phosphate problems	The Blackwater and Tas sub-catchments have predominately clay loam soils, localised areas of lighter soils, and steep slopes. In addition, the Blackwater area has the highest annual rainfall of the Yare catchment and high numbers of days at field moisture capacity. Significant pig production including outdoor pigs, maize production (especially Tas), and sugar beet (especially Blackwater).	Modelled data and analysis, anecdotal evidence, including farming practices, dredging activity and soil risk assessment.



CSF Catchment	Priority Problem/Issue	Description	Justification, data source
River Waveney	Excess Nitrates and Phosphates from farmyard manure & slurry applications	High concentrations of livestock, particularly pigs & some poultry, in the south west of the catchment along with insufficient manure and crop nutrition management	Research reports, water quality, modelled data & anecdotal evidence all point to this being a problem that adds significantly to high N & P loadings.
	Soil erosion from steeper slopes/lighter soil arable fields along Waveney River terraces.	Relatively small areas of sandy soil with slopes greater than 3° particularly those with maize & root cropping.	Data analysis has highlighted these areas & soil risk assessment makes them high risk.
North Lincolnshire	High nitrates and phosphates	Nutrients	Both groundwater and the emergent streams have high levels of nitrate and the surface streams have high phosphate levels.



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