

Cambridgeshire Green infrastructure Strategy Appendix 14 Water and Land Management

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1 Introduction

Water and Land Management are important for delivering Green Infrastructure in Cambridgeshire. This Appendix sets out relevant policies, strategies, guidance, baseline datasets and maps for each. This information was used together with the seven Theme maps and other factors which influence Green Infrastructure, e.g. planning and growth, economic development, to inform and develop the Strategic Network of Green Infrastructure.

Water Management

2 Baseline information

The following information was taken into consideration for water management and green infrastructure.

Policy

EU Water Framework Directive (WFD)

The Water Framework Directive encourages the protection and enhancement of every aspect of the water environment. The framework introduces more stringent standards and requires 'no deterioration' from current water status. Local Authorities have a general responsibility not to compromise the achievement of U.K. compliance with EU Directives. More specifically, planning authorities have a duty under the WFD to take Environment Agency River Basin Management Plans into account.

River Basin Management Plans

These plans are produced by the Environment Agency for each river basin area. They aim to protect and improve that water environment and contain the main issues and the actions needed to deal with them. Green Infrastructure will have a very important role to play and ensuring compliance with the Water Framework Directive.

Flood and Water Management Act 2010

This Act aims to improve flood risk management and the way water resources are managed. It creates new roles for local authorities in managing surface water, ground water and ordinary watercourses and gives the Environment Agency a strategic overview role. It will reduce the risk of flooding associated with extreme weather events.

Catchment Flood Management Plans

These are produced by the Environment Agency giving an overview of flood risk for each catchment area and recommending ways to manage the risks now and in the future. Green infrastructure networks can help through reducing surface water run off and storing flood waters.

Planning Policy Statements

The most relevant for water resources and quality include:

- **PPS1** mentions how regional and local planning authorities are expected to promote the sustainable use of water resources.
- **Eco Towns – Supplement to PPS1** requires a Water Cycle Strategy to be undertaken and requires measures which contribute to water neutrality.

- **PPS11** includes the need to consider pressures on water resources.
- **PPS23 Planning and Pollution Control** includes the need to make suitable provision for the drainage of surface water and the provision of sewage collection and treatment.

Strategies

Water Cycle Strategies

These provide a plan for providing water services infrastructure through considering the impact of anticipated growth on the environment and existing infrastructure capacity for water supply, sewage disposal, flood risk management and surface water drainage.

Three Water Cycle Strategies are currently being developed: one for the growth sites in and around Cambridge, one for East Cambridgeshire and Fenland, and one for Huntingdonshire.

Green Infrastructure plays its role in these strategies through providing opportunities to help manage water resources more sustainably for wildlife and recreation, by protecting natural resources and through enabling storage and drainage of water.

Water Resources

Cambridgeshire's rivers and streams are both physically and biologically diverse with interactions between topography, geology and rainfall dictating both distribution and character. They range from spring-fed fast flowing chalk streams, such as the tributaries of the River Rhee in the south of the county and the slower flowing fenland rivers to the north.

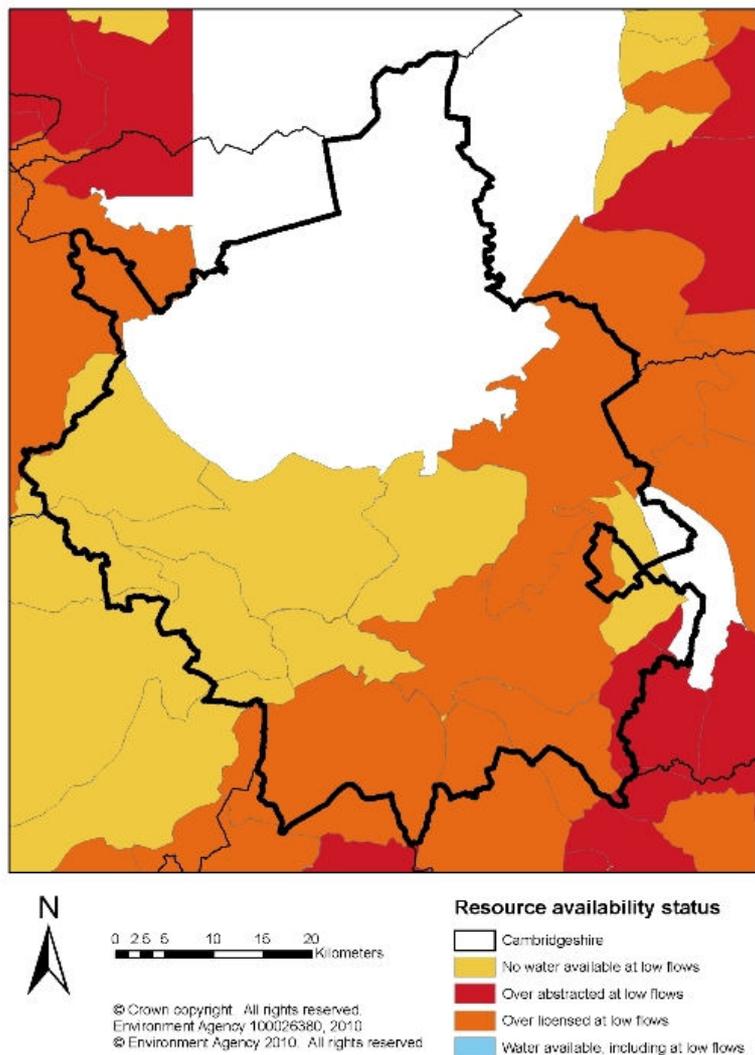


Figure 14.1 Water availability in Cambridgeshire

Figure 14.1 shows the water availability in Cambridgeshire. Cambridgeshire is one of the driest counties with average rainfall in the east of England less than 65% of that for England and Wales. Water availability per person is lower in the East of England than in many Mediterranean countries and Cambridgeshire is designated as an area of serious water stress. This means water resources are either classified as having no additional capacity or are over licensed. Two water companies are responsible for supplying potable water to residents and businesses in Cambridgeshire (Cambridge Water Company and Anglian Water Services Ltd). The water resources management activities by these companies, carried out with the Environment Agency, aim to meet the needs of Cambridgeshire. The Water Cycle Strategies explain how the water companies are addressing the pressures within Cambridgeshire.

Abstraction for public water supply accounts for the single highest use of water in the county. At present the average water consumption for the county

is 149.6 l/h/d and the national average is 150 l/h/d. The UK government would like to see this go down to 130l/h/d by 2030 ¹ to allow for the sustainable management of our water resources.

In addition the county holds a significant resource of ecologically valuable drainage channels. The Fenland landscape rarely reaches 10 m above sea level and is broken only by the straight and embanked watercourses of the drains, ditches, dykes and lodes. Figure 14.2 shows the principal river channels in Cambridgeshire. The dynamic nature of many of the rivers and streams in Cambridgeshire has been significantly affected by management; principally that of land drainage and flood defence. The shape and course of many of the rivers and streams in the county have been altered by means of embankments, culverting, canalisation, infilling and impoundment over several centuries. Nevertheless they can still provide a rich, varied and valuable ecological and recreational resource.

The first major attempt to drain the Fens was undertaken in the early seventeenth century when a Dutch engineer was engaged by the Earl of Bedford to drain the Great Level of the Fens. Over time a network of cuts, drains and sluices were completed. Since drainage of the land was completed, the Fens have shrunk below the channels that drained them and as a result the rivers are often higher than the surrounding land, resulting in the separation of the fenland drainage network into a higher level system, carrying the upland rivers across the Fens, and a low level system carrying drainage water to mills and pumps.

¹ Water Resource Strategy for England and Wales, March 2009

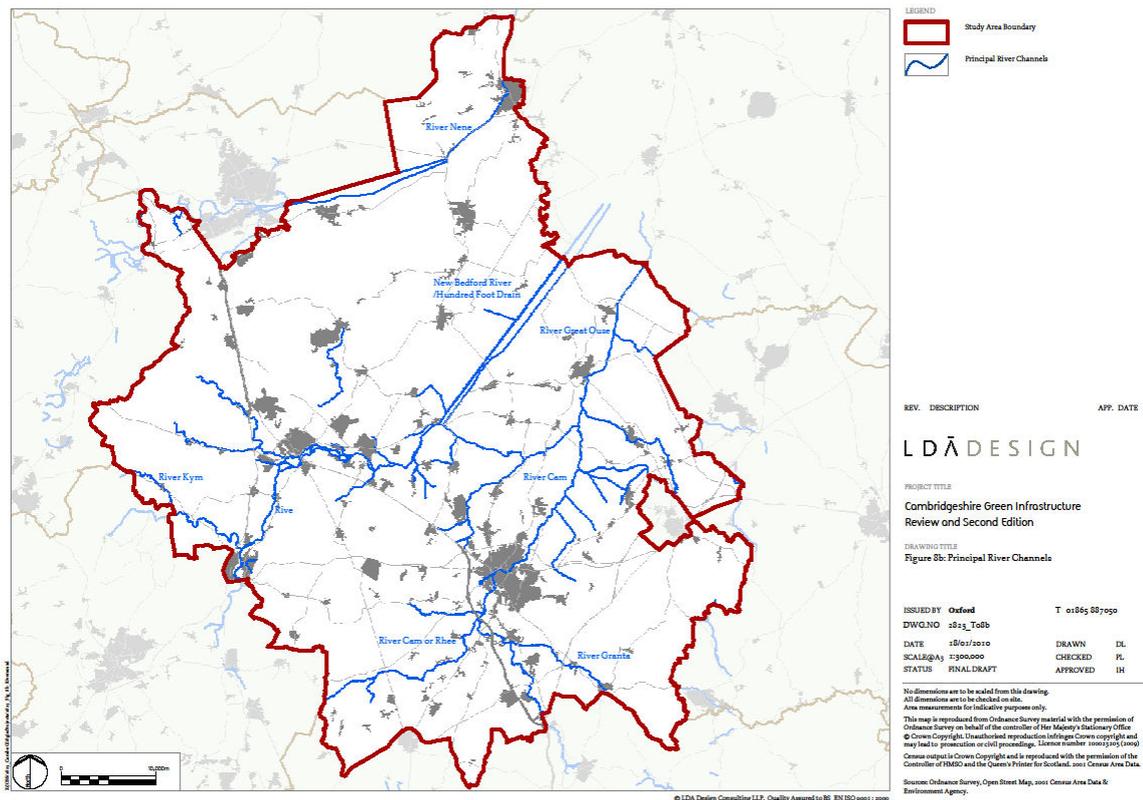


Figure 14.2 Principal river channels in Cambridgeshire.

Flooding

The low-lying nature of Cambridgeshire means that some areas are at high risk of flooding e.g. the Fens, which are England’s largest river floodplain. In 2005, 23% of Cambridgeshire area was at 1% of risk of flooding² from rivers and 26.8% at 0.1% of risk of flooding from rivers. The district that had more area at risk of flooding was Fenland followed by East Cambridgeshire. At least 90,000 properties are at risk of flooding with just under half of these properties susceptible to surface water flooding³.

Significant areas along the county’s principal rivers have been identified as flood zones by the Environment Agency. Large tracts of land in Fenland and East Cambridgeshire are identified as Flood Zone 3, with a high risk of flooding⁴.

² area could be flooded from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year

³ Anglian Region State of the Environment Report 2010 (Environment Agency)

⁴ Flood Zone 3 - high risk with annual probability of flooding of 1% or greater

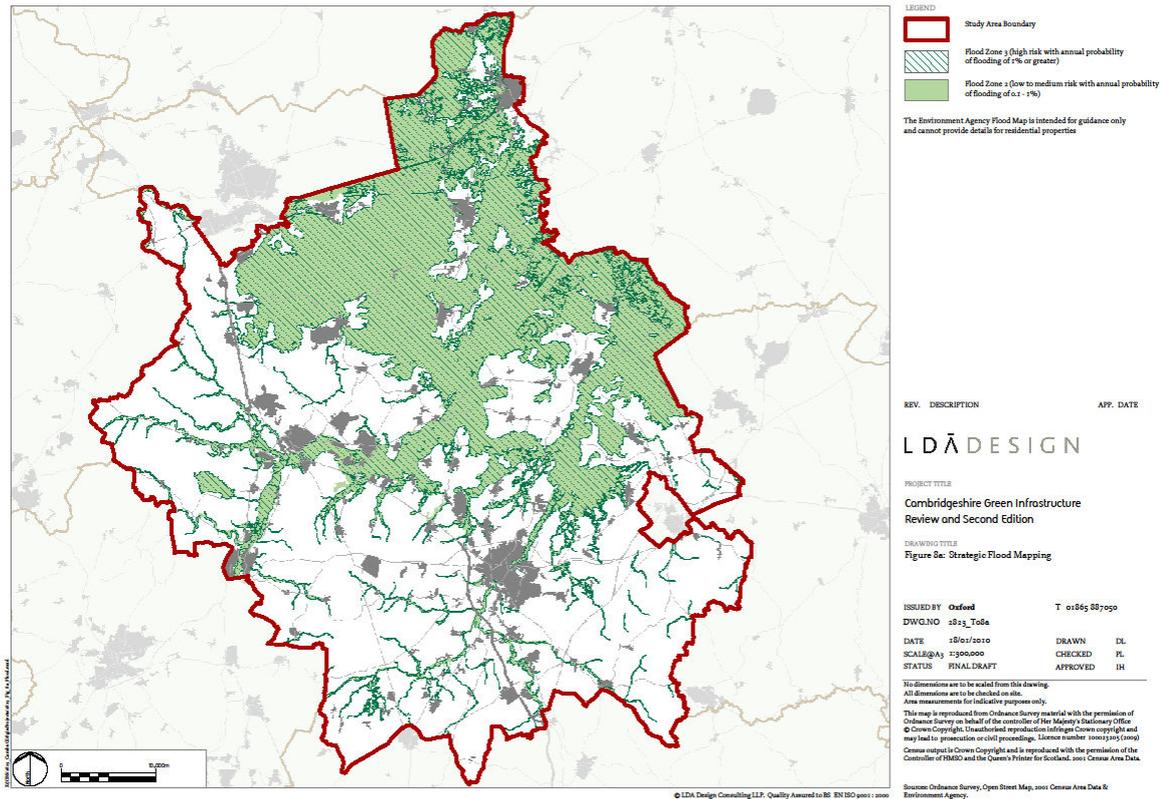


Figure 14.3 Strategic Flooding risk in Cambridgeshire

Figure 14.3 details Environment Agency Flood Zones 2 (low to medium risk with annual probability of flooding of 0.1 – 1%) and 3 (high risk with annual probability of flooding of 1% or greater) and shows how a significant part of the north of the County is at risk from flooding, as well as many of the rivers, brooks and drains across Cambridgeshire.

Strategic Flood Risk Assessments (SFRAs) have been carried out for each of the districts in Cambridgeshire in order to provide a detailed and robust assessment of the extent and nature of the risk of flooding and its implications for land use planning. Cambridgeshire County Council is developing a county-wide “Surface Water Management Plan” to provide a comprehensive understanding of the risks associated with flooding.

Water Quality

In Cambridgeshire, 20% of rivers are classified as having a good or high ecological status. Our single groundwater body is at poor status due to the impacts of abstraction and inputs of chemicals such as nitrates and pesticides.

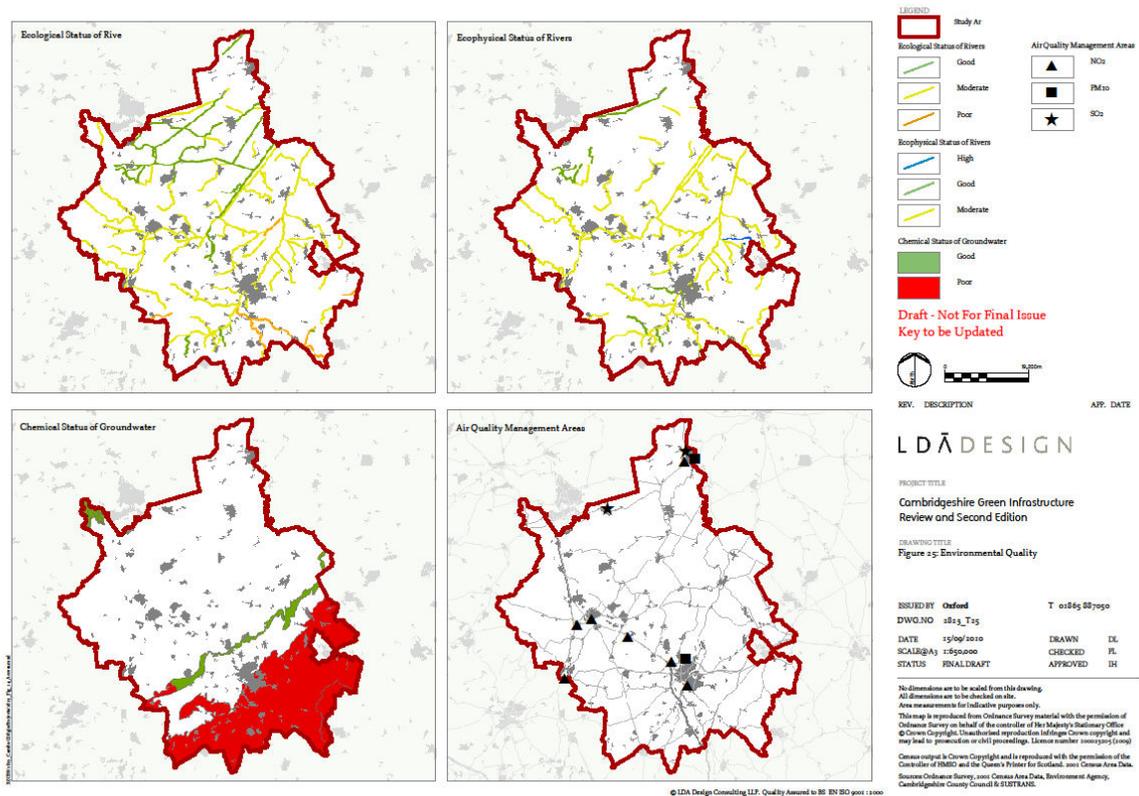


Figure 14.4 Ecological status of rivers in Cambridgeshire

Figure 14.4 shows the ecological status of rivers (top left), the ‘ecophysical’ status of rivers (top right) and the chemical status of groundwater (bottom left). It demonstrates a variety of water quality issues for Cambridgeshire and shows that the ecological quality of rivers in Cambridgeshire is predominantly moderate whilst there is a substantial portion of the County that has a poor chemical status for groundwater.

Climate Change

The latest UK Climate Projections⁵ for the East of England predict an increased risk of hotter, drier summers impacting on water supply by reducing river flows and water availability for the natural environment, housing and population growth. Changes in rainfall patterns will increase the risk of more intense episodes of drought, which will mean less water for human consumption and for the natural environment. By contrast, changes in rainfall patterns i.e. warmer, wetter winters will also increase the risk of flooding.

Extreme weather events are also likely to become more severe and will happen more often. The number of winter storms crossing the UK has already doubled in the last 50 years and it is during periods of heavy rainfall that drains and rivers overflow, causing floods.

⁵ www.ukclimateprojections.defra.gov.uk

3 What this information tells us

Water is an important element of Green Infrastructure and is composed of important environmental and landscape features such as rivers, wetlands, flood plains and estuaries.

Good water management is a way of delivering and improving Green Infrastructure across the wider landscape of Cambridgeshire, and not just within specific Green Infrastructure sites and areas. Management of Green Infrastructure sites can be conducive to improving or maintaining good water quality, reducing flood risk and improving surface water drainage.

Water is an essential commodity which supports the livelihoods of both wildlife and our growing communities. Abstraction puts pressure on water resources, discharges from urban and rural areas impact on quality and changes in climate impact on weather patterns, which result in floods and droughts.

Pressure on water resources will continue to increase as the county's population grows and the impacts of climate change are felt. Human activities such as farming, excessive water abstraction and planned development all impact on the quality of surface and ground water. Intense rainfall events and prolonged wet weather will increase run-off from land and increase the likelihood of flushing contaminants into groundwater and rivers through infiltration and 'over-land flow' respectively. Lower flows during drought conditions mean less dilution and higher concentrations of pollutants downstream of discharges.

An integrated approach to water management and a strategic approach for the creation, protection and management of networks of Green Infrastructure will enable social, economic and ecological resilience to climate change. Green Infrastructure can work towards storing excess water during times of flooding and releasing it slowly during times of drought. By protecting and enhancing rivers, aquifers, lakes and wetlands, future water resources are in effect being better managed, increasing resilience against climate change

4 Issues and opportunities

Whilst there are a number of pressures and major challenges currently facing the water environment, the way water is managed will deliver benefits for Green Infrastructure.

The main pressures on and challenges for the water environment include:

- **abstraction and other artificial flow regulation** – problems related to taking water from rivers, lakes and groundwater.
- **alien (non-native) species** - invasive non-native species are plants and animals that have deliberately or accidentally been introduced outside their natural range, and by spreading quickly threaten native wildlife and can cause economic damage.

- **nitrate pollution**– a nutrient found in fertilisers used in agriculture, and in sewage effluent. Diffuse pollution is a major pressure on the water environment and can come from both urban and rural areas.
- **organic pollution** – an excess of organic matter such as manure or discharges from sewage systems which depletes the oxygen available for wildlife and impact on water quality
- **Physical modification of water bodies.** Modified water bodies account for over 90 per cent of rivers and 75 per cent of both lakes and estuaries. The negative impacts of these centuries-old changes need to be mitigated, so as to provide the best habitat for wildlife possible, whilst recognising the ongoing need for those modifications to continue to exist.
- **Climate change.** An increased risk of hotter, drier summers impacts on water supply by reducing river flows and water availability for the natural environment, housing and population growth. By contrast, changes in rainfall patterns i.e. warmer, wetter winters will increase the risk of flooding.

Water is the primary medium through which climate change impacts will be felt. These changes in Cambridgeshire's local climate require:

- an integrated approach to water management to build social, economic and ecological resilience - through managing competing demands/ enabling a flexible response to climate change; and
- a strategic approach for the creation, protection and management of networks of Green Infrastructure, particularly in locations where it will assist in reducing the impacts of climate change by providing natural flood storage areas.

The wildlife corridor function of rivers and streams is also important in Cambridgeshire which is an intensively farmed county. The habitats associated with and linked by rivers and streams include backwaters and cut-offs, springs and spring-fed mires in head-water systems, artificial channels such as dykes and ditches, ponds, wet meadows, fen reed beds and wet woodland. Many of these habitats support rare and threatened plants and animals, in some cases of national and international importance.

Rivers in Cambridgeshire are also noted for their recreational value, offering opportunities for pleasure boating, fishing, punting and canoeing, both within rural and urban areas. There are several navigable waterways including the River Great Ouse and parts of the Cam. In addition there are several lodes that provide access by boat through parts of the Fens.

Land owners and managers can support and develop Green Infrastructure through appropriate water management. This also maintains and improves environmental quality and the environmental resources that underpin economic, social and cultural growth.

Managed well, housing growth and regeneration will be an opportunity to make improvements to the water environment in a way that also enhances people's quality of life.

Flood risk management

At a strategic level, wetlands, flood plain meadows and balancing lakes may 'mimic' natural processes which allow for effective water management. This is achieved by naturally storing and slowly releasing water into the wider river catchment. For example, the value of wetlands in managing flood risk has been estimated to be £1,279/ha/year⁶.

Through the Green Infrastructure Strategy, Green Infrastructure can be delivered to reduce the impacts of flood risk by restoring and safeguarding natural flood plains along river valleys and the creation of SUDS as part of development proposals. This approach supports the Government's new Floods and Water Bill which calls for a whole catchment approach to water management, in order to take better account of the environmental and social consequences of flood risk. This will in turn aid Cambridgeshire with its responsibility regarding the Floods and Water Management Act.

Well-designed Green Infrastructure also helps adaptation to the increased flood risk associated with climate change by:

- managing surface water runoff at the source to prevent flooding
- storing tidal flood water to reduce the risk of tidal flooding in estuaries
- storing river flood water to reduce the risk of fluvial flooding e.g. through the restoration of floodplains

At a local level, sustainable urban drainage (SuDS) and rainwater harvesting systems both alleviate the risk of flooding by reducing surface run off. Examples of SuDS include green roofs, swales, retentions ponds and constructed wetlands. Rainwater harvesting concerns the capture and storage of rainwater until needed for future use and the water collected can be used for irrigation and maintaining functional green infrastructure. However, there needs to be a balance between adaptation actions and carbon management, as certain technologies can increase carbon emissions overall.

Well-designed Green Infrastructure can reduce flood risk by creating space for the conveyance, infiltration and storage of water during intense rainfall events. Benefits can arise for wildlife by providing areas for habitats and create places for people to enjoy.

Water Quality

Human activities such as farming, excessive water abstraction and planned development all impact on the quality of surface and ground water. Intense rainfall events and prolonged wet weather will increase run-off from land and increase the likelihood of flushing contaminants into groundwater and rivers through infiltration and 'over-land flow' respectively. Lower flows during drought conditions mean less dilution and higher concentrations of pollutants downstream of discharges.

⁶ Anglian Region State of the Environment Report 2010 (Environment Agency)

High quality GI will help filter/hold back and in some cases reduce pollutants entering river systems, thus aiding in maintaining and improving good status for water bodies in Cambridgeshire.

SuDS should be implemented in both future, and existing developments. This will ensure the natural treatment of water by microbes in the soil by allowing rain water to infiltrate as close to where it falls as possible, thus decreasing the rate at which it runs off into the river network, and increasing its overall quality.

Land Management

5 Baseline information

Land Use Data

The Cambridgeshire Land Use Analysis ⁷(LUA) is a comprehensive overview of land use types in the county. This provides a guide to the spatial coverage and extent of these uses. For the purposes of this appendix two elements are covered in detail – Agriculture, and Forestry and Woodland. Table 14.1 give some selected information from the LUA.

Table 14.1 Cambridgeshire Land Use Analysis output for selected land use categories

Land Use Category	Total Hectares	% of total area of land in Cambridgeshire
Agricultural Land	251,055	81.80
Urban and Built Development	36,934	12.03
Woodland	10,022	3.27
Semi Natural Habitat (Non-Woodland)	6,214	2.02
Minerals/Landfill	655	0.21
Unknown or Unclassified	2,023	0.66
County Total	306,904	100

^{7 7} – Data presented based on Draft LUA 2010. Data clipped to County Boundary and statistics are based on this clipped output.

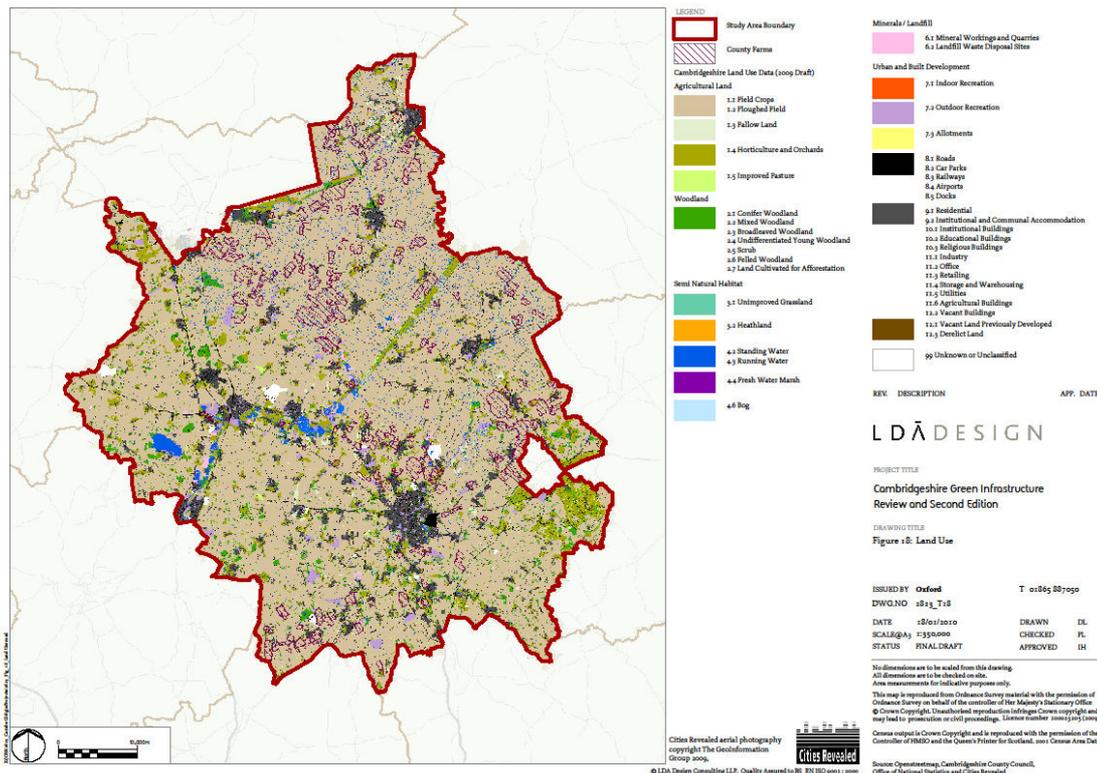


Figure 14.5 Land uses within Cambridgeshire.

Figure 14.5 illustrates the different land uses in Cambridgeshire as mapped by the Cambridgeshire Land Use Analysis. It also includes the distribution of Cambridgeshire County Council’s County Farm Estate.

Agriculture

Agricultural land is the most prominent land use category, constituting some 80% of the total land area of Cambridgeshire. The most prominent agricultural land use according to the LUA is field cropping. This is widespread, but particularly evident across the flat fenlands where industrial scale farming is a key characteristic, an important component of the rural economy and a significant contributor to the food consumed in Cambridgeshire and the U.K.

Agriculture plays an important role in the economy and to food security. Modern agriculture is generally based on intensive practices, with an increasing number of farms concentrating on a small number of products to increase efficiency⁸.

Policy

Rural Development Programme for England (RDPE)

⁸ Natural England, State of the Natural Environment, 2008

The RDPE seeks to support agricultural and forestry workers in delivering environmentally beneficial land management practices, which are not always supported by the market. It aims to improve competitiveness and sustain rural businesses whilst safeguarding and enhancing the rural environment.

Schemes

Environmental Stewardship

This is an agri-environment scheme which offers payments to farmers and land managers in England for protection and enhancement of the environment. The scheme is delivered by Natural England for Defra and forms part of the Rural Development Programme for England (2007 – 2013). This agri-environment incentive scheme operates at two principal levels - Entry level and Higher Level. The overall objective of both schemes is to encourage environmentally friendly farming, conserve wildlife, maintain and enhance landscape quality and character, protect the historic environment, protect soil and water, and promote public access and understanding of the countryside.

Natural England reports for the East of England Region indicate that over 150,000 hectares of land has been entered into the Entry Level Stewardship (ELS), which covers basic environmental management over a five year period. A further 9,000 hectares of land has been entered in to combined ELS and Higher Level Stewardship (HLS) which represents a more complex environmental management regime over a 10 year period. However, only 800ha of land has been entered into stand alone HLS, which suggests potential for additional HLS schemes and associated contributions to GI.

To further increase the environmental benefits delivered through HLS, Natural England has produced targeting maps, drawing together information on biodiversity, landscape, natural resource protection, public access and historic interests⁹. In relation to Cambridgeshire, the East Anglian Chalk National Character Area is identified as a Target Area, and is noted for its significant contribution to biodiversity, landscape character, the historic environment and access HLS objectives. In particular the Target Area Statement (EE03) highlights the importance of areas of old meadows and pastures on limestone geologies, waterside meadows and pastures along the River Cam and ancient semi natural woodlands. The Target Note also refers to the wealth of historic features such as Fleam Dyke, acknowledging both the vulnerability of archaeological sites to intensive arable cultivation and the significant opportunities they present for access provision.

Farm diversification is leading to changes in land-use and increasing the amount of development and visitor pressure in rural areas. The Rural Development Programme for England (RDPE) East of England Implementation Plan¹⁰, published by EEDA, supports social and economic development in rural areas between 2007 and 2013. This includes specific

⁹ http://www.naturalengland.org.uk/images/hlstrargeting/Chilterns_&_East_Anglian_Chalk.pdf

¹⁰ EEDA, RDPE: East of England Regional Implementation Plan 2007 – 2013 (Draft), 2008

targets for new businesses and enterprises in the rural economy and opening up of new areas for public access and enjoyment.

Under the RDPE, grants are available for energy crops and the Department for Environment, Food and Rural Affairs (Defra) has developed a set of regional maps identifying opportunities and optimum sites for energy crops in England. Much of the East of England is considered as having high potential with predictions that biomass crops could cover 20% of farmland by 2040¹¹. Information from Defra regarding the location of live energy Crop Schemes indicates that the majority of uptake in the East of England Region has occurred in Cambridgeshire¹², mainly the Fenlands and Western Claylands National Character Areas.

Case Study

The County Farms Estate (CFE) consists of over 14,000 ha of land owned by Cambridgeshire County Council (CCC). This constitutes approximately 5% of the total area of Cambridgeshire, and as such, CCC is one of largest land owners in the county.

The majority of County Farms are located in the north east of the county, within the district of Fenland. There are also concentration of estate land around Newmarket, within East Cambridgeshire district; and to the north and south-west of the city of Cambridge, within South Cambridgeshire district.

The CFE is tenanted, providing an income for the County Council and providing opportunities for new entrants to farming. As well as financial benefits, the CFE has been used to improve access to the countryside with new bridleways and footpaths, to improve the landscape with new woods and hedges and to protect biodiversity and archaeology.

The Cambridgeshire County Farms Estate Objectives and Policies Statement¹³ establishes the guiding principles for the CFE and include, *et al*,

- *To promote environmental initiatives together with improved access to the Countryside, link with schools to provide a wide educational experience of farming and the countryside.*
- *To support rural development and economic regeneration by encouraging wider farm diversification; letting appropriate facilities for non-agricultural use and identifying land sales for social housing”.*

There are more than 40 Higher Level or Countryside Stewardship Schemes operating on the estate, many of which have been in place for almost 20 years. English Heritage has promoted the way the Council manages its archaeology as exemplary and Natural England has made an award to a tenant for his management of an SSSI. County Council staff have much experience of managing the Council’s estate for a broad range of targets in including commercial farming and care for the environment.

¹¹ Countryside Agency, The Future Character and Function of England’s Landscapes, 2006

¹² <http://www.defra.gov.uk/foodfarm/growing/crops/industrial/energy/opportunities/ee.htm>

¹³ <http://www.cambridgeshire.gov.uk/council/property/estate/farms>

Forestry and Woodland

In Cambridgeshire, as elsewhere in the U.K., trees and woodlands perform a number of functions; providing a recreational resource, biodiversity habitat, employment opportunities and a range of products for a multitude of purposes, including energy production. They make a vital contribution to landscape and townscape character and help mitigate the effects of climate change.

Woodland cover in the county, according to the Land Use Dataset extends to some 10,000 ha, representing 3% of land cover. This compares to 7% as a regional average¹⁴. Woodfuel East¹⁵ has also undertaken a review of woodland cover in the county, based on the National Inventory of Woodland and Trees. Their assessment identifies 12,325 ha of woodland in Cambridgeshire, representing 3.6% of land area. Further analysis indicates that there are 6,720 ha of woods larger than 2 ha in size and 5,065 ha below 2 ha in size.

Ancient woodlands are native woodlands with a continuous cover of tree species since at least 1600AD, and are recognised as having the highest cultural and environmental importance. Cambridgeshire's ancient woodlands are generally oak-ash woods on clay soils and ash-hazel-field maple on chalkier soils and both are associated with distinctive ground flora.

¹⁴ The East of England Regional Woodland Strategy Steering Group, Woodland For Life, The Regional Woodland Strategy for the East of England, 2003 East of England Regional Assembly and the Forestry Commission

¹⁵ Woodfuel East is the £ 4.8 million East of England regional wood fuel initiative. It is hosted by the Forestry Commission and supported under the Rural Development Programme for England (RDPE) by the East of England Development Agency (EEDA), Defra and the European Agricultural Fund for Rural Development.

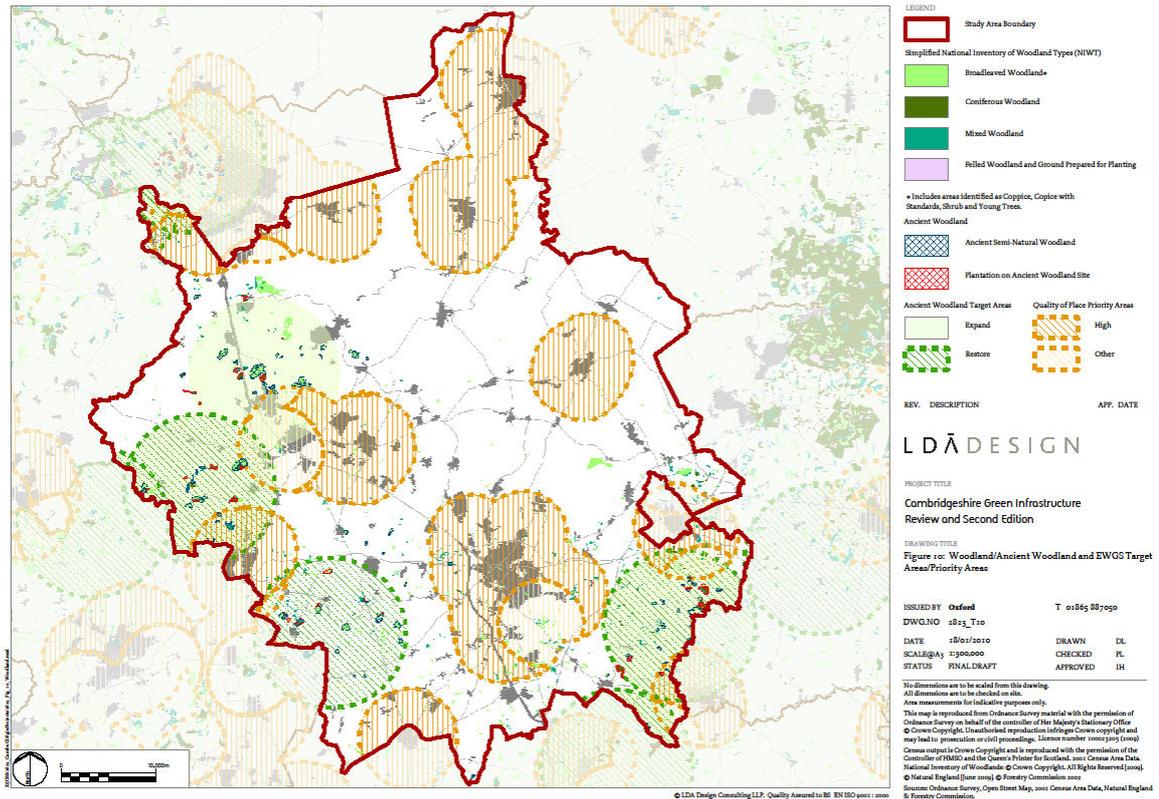


Figure 14.6 Distribution of woodland types in Cambridgeshire.

Figure 14.6 illustrates the distribution of various types of woodland in Cambridgeshire and is based on the National Inventory of Woodland Types (NIWT). Target areas for the protection and enhancement of Ancient Woodland are also illustrated, which are derived from the English Woodland Grant Scheme (EWGS) and Quality of Place priority areas are also shown.

Schemes

The **English Woodland Grant Scheme (EWGS)**¹⁶ is the Forestry Commission's suite of grants designed to develop the co-ordinated delivery of public benefits from England's woodlands. The aims of the EWGS are to sustain and increase the public benefits given by existing woodlands and help create new woodlands to deliver additional public benefit.

Various grants are available under the EWGS and include a range of payments for the management of existing woodlands and the creation of new woodlands. Within the scheme, additional contributions are available for regionally focussed grants, namely:

- **Quality of Place Areas:** Based on analysis of population numbers, deprivation indices and existing woodland access provision.

¹⁶ www.forestry.gov.uk/ewgs

- Native Woodland Expansion Areas: Based on the distribution of Ancient Semi Natural Woodlands (ASNW) and Plantations on Ancient Woodland Sites (PAWS).

Areas of the region have been mapped (see spatial analysis) and these provide opportunities for additional contributions (for creating woodland there is a possible extra contribution of £2,000 per hectare) for appropriate works for initiatives lying in these 'cluster areas'.

Woodfuel East would like to increase the output of woodlands in the East of England region by 50% to produce an additional 110,000 green tonnes of timber per annum and to bring an additional 15,000 ha of woodland into management by 2013. Although there are no sub-regional targets, when the regional target is broken down by woodland area in each of the 6 counties in the region it indicates that Cambridgeshire might be able to produce an additional 9,746 green tonnes of timber from around 1,329 ha of currently unmanaged or under managed woodland by 2013. This equates to around 27.5 GWh of energy which could save around 8,235 tonnes of CO₂ if displacing oil fired heating systems. These figures are only indicative and should be treated with caution as woodlands in Cambridgeshire are often small and contain mainly broadleaved species¹⁷.

6 What this information tells us

By far the most prominent agricultural land use according to the LUD is field cropping which means that agriculture will continue to have a role to play in supporting the rural economy and impacting on the county's environment.

Variations in agricultural land use and farming practices influence not only landscape character and quality but also biodiversity especially where modern agriculture is based on intensive practices to increase efficiency¹⁸ concentrating on a small number of products. However, the implementation of sustainable farming practices and effective land management can make a positive contribution to the state of the environment and long-term health of soils. Since the introduction of agri-environment schemes, such as Environmental Stewardship, farmers and other land owners are able to manage their land in environmentally friendly ways.

Of particular importance in the county are the ancient woodlands of southern and western Cambridgeshire.

Good land management is a way of delivering and improving Green Infrastructure across the wider landscape of Cambridgeshire, and not just within specific Green Infrastructure sites and areas.

¹⁷ Email from Philip Potter (Woodfuel East), 22 October 2009. Note: The figures quoted are indicative and should be treated with caution as woodlands in Cambridgeshire are often small and contain mainly broadleaved species. The estimates presented could be further reduced by poor access, low stocking density and ground conditions that make them difficult to work as well as other factors.

¹⁸ Natural England, State of the Natural Environment, 2008

7 Issues and opportunities

Agriculture

Land owners and managers can support and develop Green Infrastructure through appropriate land management. This also maintains and improves environmental quality and the environmental resources that underpin economic, social and cultural growth.

Whilst the GI Strategy has limited opportunities to influence agriculture, opportunities exist for land owners to realise GI objectives whilst supporting agricultural businesses. Environmental Stewardship represents a mechanism through which to deliver the GI Strategy. In particular this will be relevant to enhancing habitat networks and contributing to footpath networks in rural areas, perhaps through the provision of permissive paths. Particular emphasis should be given to supporting Natural England's targeting of the East Anglian Chalk National Character Area for HLS take-up and recognising the significant contribution that appropriate farm/land management can have to enhancing biodiversity, landscape character, the historic environment and access.

The proximity of productive agricultural land around the county's principal settlements suggests that local food initiatives may be a viable option for land owners. For instance, sizable portions of the County Farms Estate ¹⁹(CFE) are located close to urban areas, and may provide a significant opportunity for the creation of local food cooperatives, farm shops, community gardens and allotments.

As one of the largest landowners in the County, the CFE also presents (subject to location) an opportunity to help deliver larger scale projects or area wide initiatives.

There is likely to be a continued growth in farm diversification and establishment of new businesses and enterprises, that may realise leisure and tourism opportunities in rural areas. Whilst this will lead to changes in land-use and increased development and visitor pressure in rural areas it may help reverse the decline in the rural economy and address the relatively high levels of deprivation in rural parts of Cambridgeshire, and notably in Fenland District.

Diversification into energy crops may also provide employment opportunities and boost the rural economy, and the GI Strategy presents an opportunity to identify the most suitable locations for this activity. However, GI may also have a role in mitigating the effects of large scale monocultures and associated infrastructure on landscape and biodiversity character.

¹⁹ The County Farms Estate (CFE) consists of over 14,000 ha of land owned by Cambridgeshire County Council (CCC). This constitutes approximately 5% of the total area of Cambridgeshire, and as such, CCC is one of largest land owners in the county

Forestry and Woodland

Woodland has an important role in habitat enhancement and connectivity, provision of access to nature and is a factor contributing to landscape character and perceptions of landscape quality and intactness. Woodland can also help provide an attractive setting for new development and revitalise derelict and degraded landscape. As such woodland management and creation will be considered an important element in GI Strategies concerning the planning of new development and landscape restoration.

Woodland management and creation is regarded as an important priority for GI, with a particular focus on supporting Forestry Commission goals of increasing the area of woodland that is in favourable management in the county, and in particular the objectives of the English Woodland Grant Scheme (EWGS) Ancient Woodland and Quality of Place target areas.

Woodland will have an increasingly important role in climate change mitigation and adaptation in the future through pollution reduction, helping stabilise the amount of carbon dioxide in the atmosphere (carbon capture) and Habitat Banking. In addition, woodland has a role in providing alternative land use in areas rendered unsuitable for productive agriculture. Floodplain and riverside woodlands also have potential for stabilising river banks and reducing peak river flows. Riparian woodland also provides wildlife corridors which may expedite the redistribution of native species as climate change progresses. However, in some areas of the region, the combined effects of rising temperature, falling summer rainfall, lower relative humidity and longer growing season is likely to make water an increasingly scarce resource. As a consequence woodland planting may be limited by its increased water usage compared to other land uses²⁰. The GI Strategy will support the increased provision of woodland planting to address the effects of climate change. Woodland will also have an increasing role as a source of renewable energy. As such the GI Strategy will support Woodfuel East's targets for wood fuel and energy generation.

Forest Research into the effects of climate change on woodland in the East of England also supports the role of urban woodland in urban areas, highlighting its cooling effect, its contribution to the visual environment and its ability to reduce levels of some airborne pollutants. GI can help to support increased woodland planting and street tree provision in built up areas. However, when planning for new woodlands, careful consideration should be given to locations of heritage value, as planting may be detrimental to historic landscape character and/or archaeological assets.

²⁰ Mark Broadmeadow, A Review of Climate Change Implications for Trees and Woodland in the East of England, Forest Research, The Forestry Commission, 2002