

Cambridgeshire Green Infrastructure Strategy Appendix 1

Background and context

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1 Introduction

This appendix sets out the main documents which have influenced the development of the Green Infrastructure Strategy together with consideration of neighbouring authority strategies and plans.

2 Background documents

Green Infrastructure Guidance, Natural England, 2009

This document sets out the benefits and functions of Green Infrastructure and encourages a co-ordinated and consistent approach to Green Infrastructure planning. It states:

“Green Infrastructure is a strategically planned and delivered network comprising the broadest range of high quality green spaces and other environmental features. It should be designed and managed as a multi-functional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability. Its design and management should also respect and enhance the character and distinctiveness of an area with regard to habitats and landscape types.

Green Infrastructure includes established green spaces and new sites and should thread through and surround the built environment and connect the urban area to its wider rural hinterland. Consequently it needs to be delivered at all spatial scales from sub-regional to local neighbourhood levels, accommodating both accessible natural green spaces within local communities and often much larger sites in the urban fringe and wider countryside”.

Cambridgeshire Vision: County-wide Sustainable Community Strategy 2007 - 2021, Cambridgeshire Together, 2007

The Cambridgeshire Vision sets out the collective vision and priorities of partner organisations to ensure that public services meet the needs of the people of Cambridgeshire. It focuses on 5 key themes - growth, economic prosperity, environmental sustainability, equality and inclusion and safer and stronger communities.

Although there is no specific reference to Green Infrastructure, the Cambridgeshire Vision states that new development needs *“to provide infrastructure that encourages physical activity such as walking and cycling and environments that support social networks, which have a positive effect on mental and physical health”*.

Local Area Agreement 2008-2011

The Local Area Agreement (LAA) 2008-2011 is the three year delivery plan for the Cambridgeshire Vision as described above. The LAA established county-wide priority areas and targets, using indicators from the national indicator set. Those of relevance to Green Infrastructure include:

- NI 5 - Overall/general satisfaction with the local area;
- NI 186 - Per capita reduction in CO2 emissions;
- NI 188 - Adapting to climate change;
- NI 189 - Flood and coastal erosion risk management; and
- NI 197 - Improved local biodiversity.

Cambridgeshire Quality Charter for Growth, Cambridgeshire Horizons, 2008

The Charter for Growth sets out principles for achieving high quality housing growth under four broad themes - community, connectivity, climate and character. The role of Green Infrastructure in achieving high quality growth is highlighted by the following principles:

- There should be a mixture of formal and informal green space, and interconnectivity between new and existing Green Infrastructure;
- New developments should contribute to the wider environmental goals for the Cambridge area and enhance the feasibility of walking and cycling;
- Biodiversity and wildlife should be encouraged through a network of green spaces and Sustainable Urban Drainage Systems (SUDS); and
- The creation of good landscapes is as important as the creation of good townscapes. Different kinds of spaces should be provided to give character to the neighbourhoods and improve biodiversity.

Cambridgeshire and Peterborough Structure Plan 2003: Planning for Success, Cambridgeshire County Council and Peterborough City Council, 2003

After the approval of the East of England Plan in May 2008 all but 13 of the policies in the Plan have been superseded. Those policies of relevance to the Green Infrastructure Strategy include:

- P4/4 Water Based Recreation
- P9/2b Review of Green Belt Boundaries
- P9/2c Location and Phasing of Development Land to be released from the Green Belt
- P9/8 Infrastructure Provision

The Green Infrastructure Strategy will support the development agenda for Cambridgeshire, both within and outside the green belt, by providing sufficient infrastructure to contribute to the needs of the county's residents.

As of January 2011 the Communities of Local Government advised that the Localism Bill will result in any remaining Structure Plan policies being revoked, once the Bill comes into Act.

Cambridgeshire Integrated Development Programme, Cambridgeshire Horizons, 2009

The Integrated Development Programme (IDP) considers the goals for Cambridgeshire's growth agenda, including housing and employment, and identifies the individual strategic infrastructure projects needed to deliver them. The IDP's principle purpose is to set out infrastructure projects of sub-regional scale within Cambridgeshire. These projects are strategic in nature, having greater than district-level impact. The IDP acts as an evidence base for sub-regional infrastructure needs.

Green Infrastructure is considered to be one of the four key infrastructure needs for the County alongside water, energy and transport

Valuing Ecosystem Services in the East of England

This technical study was undertaken on behalf of The East of England Environment Forum, The East of England Regional Assembly and Government Office East. It assessed the value of some of the most important ecosystems services in the East of England. The study was based on five case study areas, including the Cambridgeshire Fens, and the results provide robust evidence establishing a better understanding of the value of some of the most important ecosystems services. The findings focus on different specific issues in the case study areas demonstrating how the ecosystems services approach can work in practice in a range of situations. The study aimed to ensure that mainstream planning and governance processes:

- Better reflect the links between ecosystems, human well-being and decision making;
- Better reflect the positive contribution that the region's natural assets provide (to the economy, socially and environmentally);
- Better understand how this could be applied through an Ecosystem Services Approach; and
- Identify which policy and funding decisions it should be applied to.

Landscape Institute Position statement, 2009

This position statement recognises Green Infrastructure as being an aspect of connected and multifunctional landscapes

Town & Country Planning Association Technical Advice Worksheet: The essential role of Green Infrastructure: eco-towns green infrastructure worksheet, September 2008

The TCPA recognises the essential role of Green Infrastructure in both the environmental sustainability and the long-term social and economic success of eco-towns.

Forest Research Report: Benefits of Green Infrastructure, October 2010

This report examines the importance of Green Infrastructure for delivering multifunctional benefits using an objectives-based approach. The report is structured around the objectives of climate change, health and well-being, economic growth and investment, land regeneration, wildlife and habitats, and stronger communities. Evidence and examples are provided of how Green Infrastructure has been applied to maximise benefits for each objective.

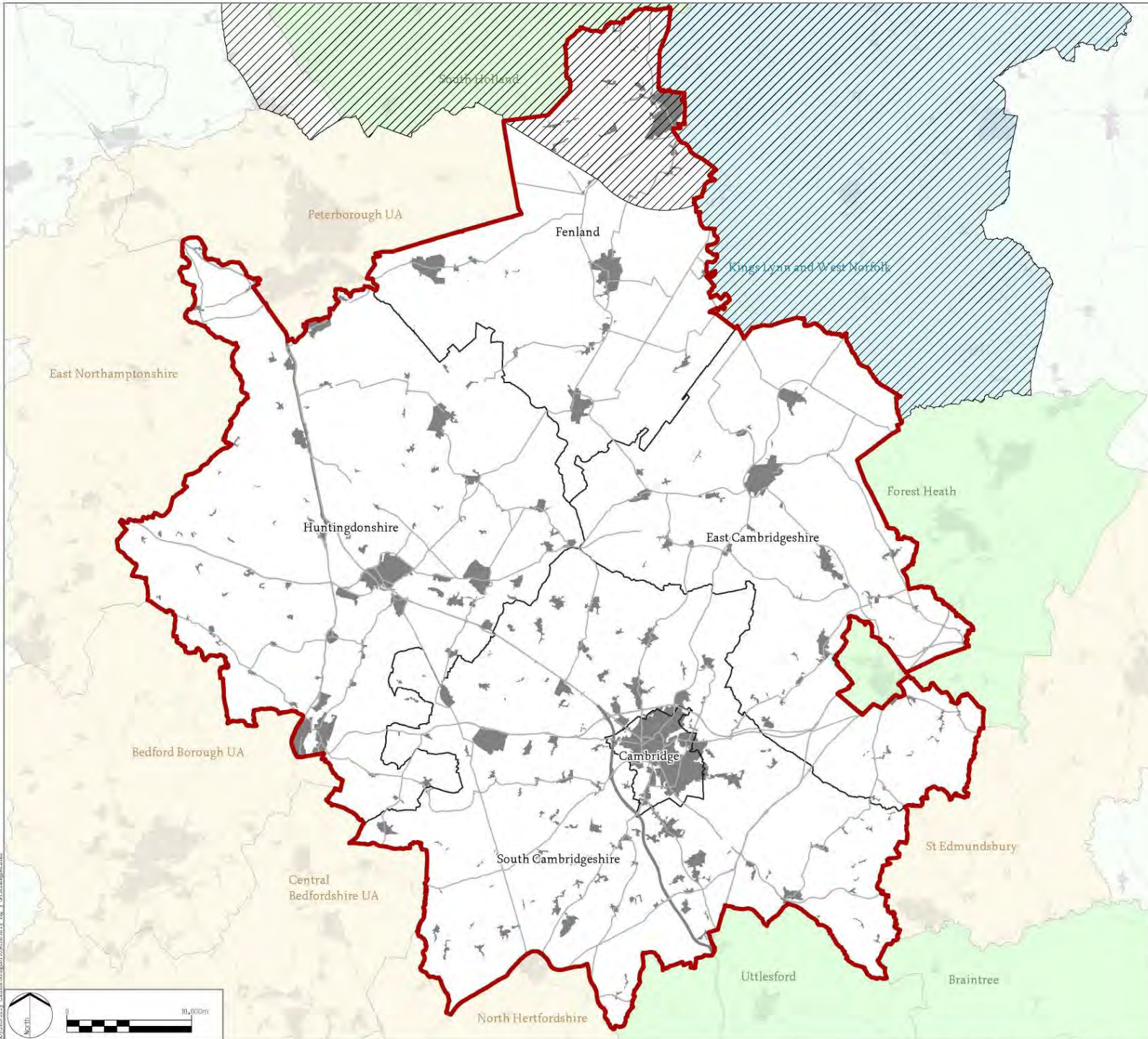
Planning Policy

National planning policy statements and guidance, and the adopted development plans of Local Planning Authorities are outlined in the Planning and Sustainable Growth Appendix 4.

3 Neighbouring Authority Strategies

A review of all neighbouring county, district and unitary authorities was undertaken to identify where Green Infrastructure strategies and studies have been completed or are in development. Figure 1.1 and text illustrates the coverage and status of Green Infrastructure Strategies in neighbouring authorities.

Figure 1.1 Status of Green Infrastructure studies/strategies in adjoining districts (next page)



LEGEND

-  Study Area Boundary
-  Existing GI Study/Strategy
-  Emerging GI Study/Strategy
-  No GI Study/Strategy
-  Wash Estuary GI Study Area Boundary

Note: Bedford Borough UA and Central Bedfordshire UA were formerly districts within Bedfordshire County.

The Bedfordshire and Luton Strategic Green Infrastructure Plan provides GI guidance for the (former) County, while the Mid Bedfordshire Green Infrastructure Plan provides GI guidance for the (former) District.

| REV. | DESCRIPTION | APP. DATE |
|------|-------------|-----------|
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LD A DESIGN

PROJECT TITLE
Cambridgeshire Green Infrastructure Review and Second Edition

DRAWING TITLE
Status of Green Infrastructure Studies/Strategies in Adjoining Districts

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Kings Lynn Growth Point Green Infrastructure Strategy Stage 1¹ - this identifies the strategic Green Infrastructure network of the Borough, together with the local Green Infrastructure networks for King's Lynn, Downham Market and Hunstanton. The Stage 1 report did not establish Green Infrastructure proposals although it did identify existing strategic Green Infrastructure corridors including:

- Peddars Way, a National Trail of 93 miles;
- River Nar and associated Nar Valley Way recreational route;
- River Great Ouse and associated Fen Rivers Way recreational route;
- River Nene and associated Nene Way recreational route;
- Little Ouse River, River Wissey, Middle Level Drain and Cut Off Channel, all linking to the River Great Ouse providing a network of waterways and recreational routes;
- Well Creek;
- The Wash and Norfolk Coast, comprising the North Norfolk AONB and Norfolk Heritage Coast;
- The Brecks, containing valuable heath and woodlands habitats; and
- The Ouse Washes, one of the largest area of washlands in the UK.

Following the completion of the Stage 1 report a Strategy, Action Plan and Business Plan² was developed to promote and support the delivery of Green Infrastructure in Kings Lynn and West Norfolk Borough. High priority projects included in the Action Plan included:

- Fens Waterway Link - Ouse to Nene (King's Lynn);
- Fens Waterways - Sea Lock at Great Ouse Relief Channel (King's Lynn);
- King's Lynn/Wash/Norfolk Coastal Path (King's Lynn);
- Brecks Regional Park (Borough Level);
- Countryside and Recreation Zone (King's Lynn);
- Gaywood Valley (Borough Level);
- Hardwick Industrial Estate (King's Lynn);
- Nar Riverside Park (King's Lynn);
- Waterfront Regeneration Area (King's Lynn);
- Wissey Living Landscapes (Downham Market);
- Allotments (Borough Level); and
- The development of SUDS (Borough Level).

A further 22 projects have been identified at King's Lynn, Downham Market and Hunstanton or at Borough level which are of medium and low priority.

St Edmundsbury Green Infrastructure Strategy³ - this considers existing and proposed Green Infrastructure in the borough, primarily as a response to future growth at Bury St. Edmunds. It establishes the baseline in terms of

¹ King's Lynn and West Norfolk Green Infrastructure Strategy - Stage 1 Report – Final for Approval, September 2009

² King's Lynn and West Norfolk Green Infrastructure Strategy - Stage 2 Final Report – May 2010

³ St Edmundsbury Green Infrastructure Strategy – Final Report, September 2009

environmental character and existing Green Infrastructure initiatives, along with need and demand analysis. It also sets out a vision for Green Infrastructure in the borough and a framework for delivery.

The Strategy identifies three types of proposed Green Infrastructure assets - Green Corridors, Green Infrastructure Projects and Action Zones. In relation to Cambridgeshire the Haverhill Action Zone, comprising the river valley and disused railway, and the Ancient Farmland Action Zone, characterised by ancient field boundaries, small settlements and village greens, ancient woods and medieval deer parks, adjoin South Cambridgeshire district.

The Strategy identifies a number of projects within the Haverhill Action Zone which are of relevance to the Cambridgeshire Strategy. These include:

- E.1: Improve and expand the Meldham Washlands site to provide a nature reserve;
- E.2: Improve 'gateways' into and out from Haverhill;
- E.4: Enhance woodland planting along the A1017 bypass road; and
- E.7: Advance landscape planting in relation to development sites in and around Haverhill.

In relation to its proposed corridors, the Stour Brook Valley Green Corridor extends from Haverhill, reconnecting the town to its river valley, with links to the Meldham Washlands and the Stour Valley Path. The corridor extends into South Cambridgeshire.

North Hertfordshire Green Infrastructure Plan⁴ - this provides a framework for the future growth of Stevenage and North Hertfordshire towns, planning for adequate and appropriate new green spaces and links. The Plan comprises strategic and local level green and blue links. The strategic tier identifies opportunities for radial connectors or spokes across the district, while the local tier outlines a 'green print' for individual settlements.

The strategic Green Infrastructure network is of most relevance identifying a series of projects within or near South Cambridgeshire district. These include:

- ST3 - Icknield Way enhancements and interpretation, to include upgrading of surface to cater for cyclists and horse riders;
- ST5 - Grassland restoration to the west and south west of Therfield Heath;
- ST6 - green link to the west of Royston, to connect the Icknield Way and Chain Walk; and
- ST8.3 - Peri-urban greenway for Royston to link existing green transport and enhance the urban rural fringe.

Hertfordshire are now in the process of preparing a 'Green Infrastructure Prospectus' for the county, and it is likely this document will support the findings and recommendations of the North Hertfordshire Green Infrastructure Plan.

⁴ North Hertfordshire District Green Infrastructure Plan - Final Report, August 2009

Bedfordshire and Luton Strategic Green Infrastructure Plan⁵ - this provides a strategic framework for the (former) county, within which Green Infrastructure can be identified, prioritised, extended and implemented in concert with planned growth. The Plan comprises a series of corridors, within which there are a series of proposals for the creation of new and enhancement of existing assets.

The Lower Great Ouse River Valley (corridor 3) extends from the centre of Bedford east towards St Neots. Existing Green Infrastructure assets within this corridor include the Ouse Valley Way, National Cycle Route 51, Bedford Park and Priory Country Park. Proposals include the Bedford River Valley Park, encompassing and extending the existing Priory Country Park eastwards along the River Great Ouse valley. The corridor also provides an opportunity to address the perceived deficiency in strategic accessible green space to the south of St Neots.

Mid Bedfordshire Green Infrastructure Plan⁶ - this builds upon proposals in the county-wide Green Infrastructure plan, providing guidance for the former Mid Bedfordshire district (now Central Bedfordshire UA). The Plan identifies a number of Action Areas, which include a number of specific projects. South Cambridgeshire district is adjacent to the Irwell Valley Action Plan Area, and the Southern Clay Ridge and Vale sub-action area identifies a series of Green Infrastructure Projects of relevance to this study, including:

- C3 - Rolling Arable farmland, an extension of an area of farmland stretching northeast through Cambridgeshire which is of national significance for farmland bird populations; and
- C4 - Potton Wood, a substantial block of ancient woodland with public access where there is potential for co-operative management and habitat linkages with similar woods in South Cambridgeshire.

This area is also described as the East Bedfordshire Arable Landscape Opportunity Area, characterised by the large-scale fields, dispersed blocks of woods and smaller settlements. It generally has an open, undeveloped quality, which extends into the Cambridgeshire countryside and the opportunity exists to enhance the traditional features and reinforce the pattern of the landscape.

Northamptonshire Green Infrastructure Strategy⁷ - this identifies areas for Green Infrastructure Investment across the county, illustrated by the identification of sub-regional and local Green Infrastructure corridors. It also identifies two networks, comprising biodiversity and sustainable movement, which identify opportunities for new and enhanced connectivity.

In relation to the biodiversity network, a number of woodland habitats/links are identified adjacent to Huntingdonshire district. The entire eastern edge

⁵ Bedfordshire and Luton Strategy Green Infrastructure Plan, February 2007

⁶ Mid Bedfordshire Green Infrastructure Plan, September 2008

⁷ <http://www.nrnpenvironmentalcharacter.org.uk/> - accessed September 2009

of Northamptonshire is identified as an opportunity for extensive landscape-scale biodiversity enhancements, which extend from the Whittlewood Forest into the Middle Nene Valley and on into Rockingham Forest. There are also several movement corridors identified between East Northamptonshire and Huntingdonshire, including the proposed Corby to Aldwinckle Green Way.

The biodiversity and sustainable movement networks, along with other Green Infrastructure assets and destinations, areas of settlement growth and key development projects define the sub-regional and local Green Infrastructure corridors. These include the Nene Valley (corridor 2) and Yardley, Salcey and Whittlewood Wooded Ridge (corridor 4), which broadly follow the eastern edge of Northamptonshire. From this extend several local corridors, providing connections and identifying Green Infrastructure opportunities between East Northamptonshire and Huntingdonshire, including:

- 21 - Thrapston to Bythorn;
- 26 - Achurch to Clopton; and
- 30 - Oundle to Great Gidding.

Peterborough's Green Grid Strategy⁸ seeks to identify gaps and opportunities in the ecological and recreational networks and ensure that the growth planned for Peterborough protects existing and provides for new Green Infrastructure. There is also a distinct emphasis on creating opportunities to attract tourism and visitors, with the Green Grid identifying both proposed projects and existing 'destinations'. The Green Grid seeks to identify three types of projects: corridors - providing a network of routes; sites - green hubs with the network of corridors; and wider area initiatives - designed to enhance landscape character or biodiversity interest.

In relation to Cambridgeshire, two Green Infrastructure corridors are of relevance, G3 & 5 - River Nene - Old Course/ Fen Edge route and G4 - Great Fen Project connections to Peterborough. Both of these corridors seek to promote landscape improvements and access routes from Peterborough to the foot of the clay escarpment and fens and beyond to the Great Fen. There are also several sites along the Peterborough/Cambridgeshire border, which the Strategy seeks to promote as 'destinations' and connect through the use of corridors. These 'destinations' include:

- A - Great Fen Project (within Huntingdonshire): extension of the existing Fenland habitats at Woodwalton and Holme Fen throughout the Great Fen Project area;
- C - South Peterborough Green Park Visitor Attraction: development of a regional resource that promotes the geological, biodiversity and economic history of the area;
- F - Crown Lakes Country Park: development of existing facilities and activities; and
- K - Normans Cross Napoleonic Prisoner of War Camp (partly within Huntingdonshire): development of Norman Cross as a centre to promote cultural history, arts facilities and open space.

⁸ Peterborough's Green Grid Strategy, May 2007

In addition to these projects, there are also two area wide initiatives of relevance:

- the 'South Peterborough Green Parks' which aims to protect, enhance and extend the mosaic of lakes, water features and woodland within the former brick pits to the south of Peterborough.
- All around Peterborough urban area where the landscape is identified as a priority for HLS and EWGS applications, which seek to achieve greater access to and multi-functionality of agricultural land through the take up of agri-environmental initiatives

The Wash Estuary Strategy Group (WESG) is a partnership which includes, amongst others: Lincolnshire County Council, South Holland District Council and King's Lynn & West Norfolk Borough Council. Their aim is "to promote the sustainable use of the area's resources while trying to maintain the balance that allows the local communities to prosper and safeguards the heritage, wildlife, land and seascape features for future generations."

WESG are currently producing a Green Infrastructure Masterplan for the Wash Area, which will help to deliver positive gains for wildlife, countryside access, maritime activities and the rural economy across The Wash. The study area extends across the Fens and the Green Infrastructure Masterplan will therefore need to work in partnership with the King's Lynn and West Norfolk Green Infrastructure Strategy and the Cambridgeshire Green Infrastructure Strategy in and around Wisbech.

Cambridgeshire Green Infrastructure Strategy Appendix 2

Progress with 2006 Strategy

Contents

- 1 Introduction
- 2 Corridors
- 3 Major Green Infrastructure Sites
- 4 Wider Area Initiatives

1 Introduction

This appendix reviews the progress made on 2006 Green Infrastructure Strategy which included a 'Spatial Structure' consisting of Corridors, Sites and Areas. Each of the elements of this original Spatial Structure is reviewed below, with progress summarised. Review of the progress made has fed into development of the new Strategic Network.

The key below will help identify the progress of each project in the following tables.

Key

- Red - No progress or the initiative has been stopped.
- Amber - Progress is being made with planning and developing the initiative, but action has not yet commenced 'on the ground'.
- Green - Initiative is delivering Green Infrastructure and is either under construction or has been completed.

2 Corridors

Corridors were defined in the 2006 strategy as:

“providing a network of routes combining both existing corridors that can be enhanced and a series of new green corridors”.

The corridors were intended to provide linkages of biodiversity clusters or features and give enhanced public access, where possible, following existing Rights of Way. Table 2.1 provides an update on progress with corridor projects.

Table 2.1 Update on corridor projects from 2006 Strategy

| Green Corridor Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------------|--|--------|--|
| 1 | Ouse Valley Strategic Green Space Corridor | | Site management, community engagement and access/habitat improvements have been undertaken since 2006 and are continuing. |
| 2 | River Rhee Enhancement Project | | SCDC are currently considering means of delivery (funding and responsible body) with Haslingfield Parish Council and the Environment Agency. |
| 3 | River Granta Enhancement Project | | No progress |
| 4 | River Cam Enhancement Project | | River restoration project completed; new farmland in Higher Level Stewardship; Trumpington Meadows country park commenced; Byrons Pool LNR enhancements underway. Project completed October 2009 with subsequent monitoring and promotional work taking place. |

| Green Corridor Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------------|--|--------|--|
| 5 | Old West River - Earith to River Cam | | Not a current project for Cambridgeshire County Council Rights of Way & Access Team. Some progress made before funding was discontinued due to loss of Housing Growth Fund. |
| 6 | Cam Valley - Cambridge to Ely | | No progress at present time |
| 7 | River Lark Enhancement Project | | Not progressed - - see issues identified in conclusions to this section |
| 8 | Grafham Water to Abbots Ripton Corridor | | Not progressed - see issues identified in conclusions to this section |
| 9 | Fen Edge Project | | Not progressed -see issues identified in conclusions to this section |
| 10 | Guided Bus Route Green Corridor: Cycleway/Bridleway & Sculptural Trail | | Although already well used by cyclists, walkers and horse-riders, Cambridgeshire Guided Busway bridleway still not officially open. |
| 11 | North West Cambridgeshire Settlement link | | Not progressed - see issues identified in conclusions to this section |
| 12 | Northstowe, Cottenham to Old West River, Denny Abbey and Wicken Fen Corridor | | Cycle route on Wicken Vision project area is being constructed. Housing Growth Fund funding for Northstowe access project removed, which has impacted on delivery of Northstowe, Cottenham to Old West River, Denny Abbey part of corridor. |
| 13 | South Peterborough Green Park to Great Fen Link | | Natural England has provided funding to Huntingdonshire District Council/Cambridgeshire County Council to improve links. |

| Green Corridor Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------------|--|--------|---|
| 14 | Chatteris to Ely Green Corridor | Red | Not progressed - see issues identified in conclusions to this section |
| 15 | Chatteris to Somersham Biodiversity and Access Corridors | Green | Progress with Local Nature Reserve creation at Somersham. |
| 16 | Cambridge to St Neots Green Corridor | Red | Housing Growth Fund funding for St Neots access project removed. |
| 17 | Wicken to Chippenham and Thetford Forest Corridor | Red | Not progressed - see issues identified in conclusions to this section |
| 18 | Soham to River Lark Green Corridor | Red | Not progressed - see issues identified in conclusions to this section |
| 19 | Icknield Way Enhancement Corridor | Red | Not progressed - see issues identified in conclusions to this section |
| 20 | Barrington, Wimpole Hub and Forest of South Cambridgeshire to Greensand Ridge Corridor | Red | Not progressed - see issues identified in conclusions to this section |
| 21 | Cambourne, Wimpole Hub to Chalk Downs and Therfield Heath Corridor | Red | Not progressed - see issues identified in conclusions to this section |
| 22 | Land East of St Neots | Red | Housing Growth Fund funding for St Neots access project removed. |
| 23 | Cambridge Outer Orbital Green Corridor | Orange | Housing Growth Fund funding for Cambridge access project removed. |

| Green Corridor Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------------|--|--------|--|
| 24 | Fen Waterways Project | | Regional project in 6 phases; phases 5 and 6 are directly relevant to Cambridgeshire and Peterborough. To promote these phases, two studies (Bedford Waterspace Strategy and Peterborough Waterspace Strategy) are underway. Also currently developing plans for a River Cam Waterspace Strategy. Phase 1 (Lincolnshire) is complete and phases 2 and 3 (Lincolnshire) are well underway and the Spalding Waterspace Strategy addressing phase 4 is complete. Next steps required were outlined in 2003 Implementation Plan. |
| 25 | Waterway Link: Fen Waterway to Great Fen Project | | A scoping report for the Great Fen partnership by Royal Haskoning assessed the feasibility of a waterways link to the Great Fen and highlighted areas where structural improvements would be required to secure the link. No further progress to deliver a link has been made, although there is still a long-term desire to create this link. |
| 26 | Fleam Dyke | | Circular walk developed & promoted and management plan in operation, but no progress on the establishment of buffer habitats |

| Green Corridor Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------------|--|--------|--|
| 27 | Roman Road Route | | Circular walk developed and promoted and management plan in operation, but no progress on the establishment of buffer habitats due to ongoing work with adjacent landowners. Housing Growth Fund funding for Cambridge access project removed. |
| 28 | Devil Dyke Extension project | | Devil's Dyke management is continuing, but no progress to date on the establishment of habitat buffers due to ongoing work with adjacent landowners. |
| 29 | Huntingdon towards Peterborough Cycleway/Bridleway | | No progress at present time |
| 30 | Godmanchester to Cambourne Corridor | | Housing Growth Fund funding for this access project removed. |
| 31 | Ouse Valley to Cambourne Corridor | | Not progressed - see issues identified in conclusions to this section |

Conclusions

In the 2006 Strategy, many of the corridors were not well-defined either in regards to their position on the ground or their aims and objectives. Often corridors did not have a clear and single lead organisation identified, and it was subsequently difficult to establish or identify one. The location of some corridors did not always relate well to existing Green Infrastructure, land uses or ownership. The removal of previously-secured funding has had an impact on delivering some of the corridors associated with growth - particularly around Cambridge, St Neots and Northstowe. All these factors made delivering the corridors difficult.

More successful corridors were those that had a clear lead organisation or partnership group, were well-defined geographically and had a clear set of aims and objectives.

The review has changed the approach through the development of the Strategic Network and the Strategic Areas, which are based much more on the existing Green Infrastructure network and the opportunities that this presents for improving and creating corridors. The review has therefore built on the lessons learned from delivering the 2006 Strategy.

3 Major Green Infrastructure Sites

These projects on Major Green Infrastructure Sites comprised either new facilities and/or others that enhanced existing sites. Often these were located on Green Corridors with larger Sites forming key 'Green Hubs' or 'Landmark Projects'.

Figure 2.2 update on major Green Infrastructure site projects from 2006 Strategy

| Site/ Initiative | Name | Status | Comments and progress (December 2010) |
|---------------------|--|--------|---|
| A | Fen Drayton | | Site acquired by RSPB with CLG funding in 2007. Habitat management work advanced, car park and access much improved. |
| B | Houghton Meadows (Part of Ouse valley, Wet Woodland and Wet Marsh Project) | | Discussions with owners started and there may be potential to acquire land for conservation in the near future |
| C | Needingworth Hanson RSPB Wetland Project | | The first four phases have now been created (c.100ha) following mineral extraction and reeds planted. |
| D | Grafham Water Ancient and Semi Natural Woodland Link | | Some hedgerow linkages completed, but little progress in the past couple of years |
| E | Great Fen Project | | Masterplan completed, land in restoration, visitor facilities being investigated |
| F | Wicken Fen Vision | | Since 1999, there have been 8 separate conveyances adding 1,200ac to the land holding at Wicken Fen. This has been reverted to create habitat for fenland biodiversity. Grazed by in hand and farm tenant stock. The Trust has also created the Lodes Way cycle and footpath linking Wicken Fen, Anglesey Abbey and local villages. |

| Site/ Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------|---|--------|---|
| G | Gog Magog Countryside Project | | East Pit acquired and undergoing restoration by the Wildlife Trust. Cycleway to Wandlebury constructed |
| H | Ouse Washes Extensions | | Being delivered through the Environment Agency Ouse Washes habitat creation project EA have acquired a significant area of land adjacent to the Washes for wet grassland creation. Work should start 2011/12. Proposals for wet grassland creation following mineral extraction are included in Cambridgeshire & Peterborough Minerals and Waste Plan. |
| J | Bassingbourn Chalk Grassland Improvements | | Not progressed - see issues identified in conclusions to this section |
| K | Wimpole Hub Project | | Organic conversion in place. Discussions with British Cycling to develop cycle offer. |
| L | South Chatteris Country Park/Strategic Open Space | | The Local Development Plan is still being prepared and a final site has yet to be identified. An Area of Search close to or within the existing settlement boundary we will be used to identify the preferred location. Delivery by 2031. |
| M | Ely Country Park | | Ely Country Park phase 1 is being delivered, inc. landscape enhancement, recreation facilities and improved access to and across the site. Further works to improve the circulation of users are underway and will be completed in spring 2011. Additional habitat and landscape enhancements are also currently being undertaken to enhance the ecological and |

| Site/ Initiative | Name | Status | Comments on progress (December 2010) |
|---------------------|--|--------|--|
| | | | aesthetic value of Ely Country Park. |
| N | Regional Arboretum | | Not progressed - see issues identified in conclusions to this section |
| P | Rowing lake & Enhanced Public Access and Recreation | | No progress but creation of rowing lake is still an objective of the Cambridge Sports Lake Trust |
| Q | Land East of St Neots | | Not progressed - see issues identified in conclusions to this section |
| R | Barrington Chalk Grassland Improvements | | Not progressed - see issues identified in conclusions to this section |
| S | Northstowe: Landscape Buffer and Country park | | HGF funding for Northstowe access project removed. |
| T | North West of Huntingdon: Strategic Open Space Project | | The North West Huntingdon Project is dependant on the development at Northbridge progressing. The developers are currently discussing their plans with the planning department but the open space principles have been agreed. It will be a number of years before the development is completed. |
| U | Coton Countryside Reserve | | Phase 1 completed, site open and work continuing |
| V | Southern Fringe, Monsanto Site | | Trumpington Meadows country park creation has commenced |
| W | Cambridge East | | No progress but still included in Cambridge East Area Action Plan. |
| X | NIAB | | Development has commenced. |
| Y | Southern Fringe/Addenbrooke's | | Planning policy documents are in place. |

Conclusions

Many of the major Green Infrastructure Sites identified in the 2006 Strategy have progressed well and have made significant contributions to Green Infrastructure in Cambridgeshire.

Projects that have not progressed have been affected by a variety of reasons, including:

- The slowdown in growth and development as a result of the recession
- The curtailment of external funding sources
- Awaiting the completion of relevant planning and policy documents
- The lack of a clear lead organisation and/or aims and objectives, and land use and landownership issues

The review has revisited these projects in light of the Strategic Network and identified those that will and are delivering the Network and will contribute to the four Strategy objectives. There will also be projects that will operate at a more local level, which will help deliver the objectives for the Strategy and contribute to the delivery of the Strategic Network.

4 Wider Area Initiatives

Wider Area Initiatives were a means of enhancing local landscape character and biodiversity interest over a large area.

Figure 2.3 update on wider area initiative projects from 2006 Strategy

| Site/ Initiative | Name | Status | Comments and progress (December 2010) |
|---------------------|---|--------|--|
| I | Forest of South Cambridgeshire | Green | Renamed West Cambridgeshire Hundreds. Partnership of 20 landowners delivering environmental enhancements |
| II | South East Cambridgeshire Claylands | Red | Not progressed - see issues identified in conclusions to this section |
| III | West Cambridgeshire Claylands | Red | Not progressed - see issues identified in conclusions to this section |
| IV | South East Cambridgeshire Claylands | Red | Not progressed - see issues identified in conclusions to this section |
| V | Heath Protection and Restoration Project (West) | Red | Not progressed - see issues identified in conclusions to this section |
| VI | Heath Protection and Restoration Project (East) | Red | Not progressed - see issues identified in conclusions to this section |

Conclusions

In the 2006 Strategy, the wide-ranging nature of the Area Initiatives and the lack of clear lead organisations and well-defined aims and objectives (apart from the Forest of South Cambridgeshire) meant that developing the Initiatives proved difficult.

Strategic Areas and Target Areas have now been developed as part of the Strategic Network of Green Infrastructure. These operate at a landscape scale, similar to the Area Initiatives, but are more focused providing greater clarity in terms of objectives as well as deliverability.

Cambridgeshire Green Infrastructure Strategy Appendix 3

Results of 1st round consultation

Contents

1 Results of 1st round consultation

A review of the 2010 consultation is available on Cambridgeshire Horizons website:

<http://www.cambridgeshirehorizons.co.uk/greenvision/default.aspx>

Cambridgeshire Green infrastructure Strategy Appendix 4

Planning and Sustainable Growth

Contents

- 1 Introduction
- 2 Growing Cambridgeshire
- 3 Baseline Information
- 4 What this baseline information tells us
- 5 Spatial analysis
- 6 Issues and Opportunities

1 Introduction

This technical appendix sets out the context for proposed growth in Cambridgeshire. The proposed growth has provided the impetus to complete the Green Infrastructure Strategy. Presented as “Baseline Information”, this appendix contains an assessment of various policy statements that are relevant to growth in Cambridgeshire and Green Infrastructure, from the national to local level. This includes the local authorities’ planning policies.

2 Growing Cambridgeshire

This section summarises proposals and strategies for housing growth and development in Cambridgeshire, including major settlement locations and housing trajectories.

The vision for the Cambridge Sub-Region, stemming from the 2003 Cambridgeshire and Peterborough Structure Plan, is:

“...to continue to develop as a centre of excellence and world leader in higher education and research, fostering the dynamism, prosperity and further expansion of the knowledge-based economy spreading outwards from Cambridge. The historic character and setting of Cambridge should be protected and enhanced, together with the character and setting of the market towns and other settlements and the important environmental qualities of the surrounding area”.

The current spatial strategy for the sub-region (Figure 4.1) is strongly influenced by the City of Cambridge, which accounts for nearly 20% of the total population of around 600,000. Cambridge plays an important regional role and is of national and international importance for its outstanding historic character, as a centre of learning and research, and because of its emergence as an internationally significant cluster for high technology industries. It lies at the heart of the Cambridge Sub-region, which includes Cambridge and the ring of market towns.

The northern part of Cambridgeshire is primarily influenced by Peterborough, which lies just outside the county boundary. The larger market towns of

Wisbech and March are the main focus for economic and social life within this area of Cambridgeshire. The vision for Peterborough and North Cambridgeshire stemming from the 2003 Cambridgeshire and Peterborough Structure Plan, is:

“to create a vibrant area that offers the highest possible quality of life for all who live, work or visit by providing good housing in safe and pleasant surroundings, a strong economy with a diversity of job opportunities and a range of easily accessible services to meet all needs.”

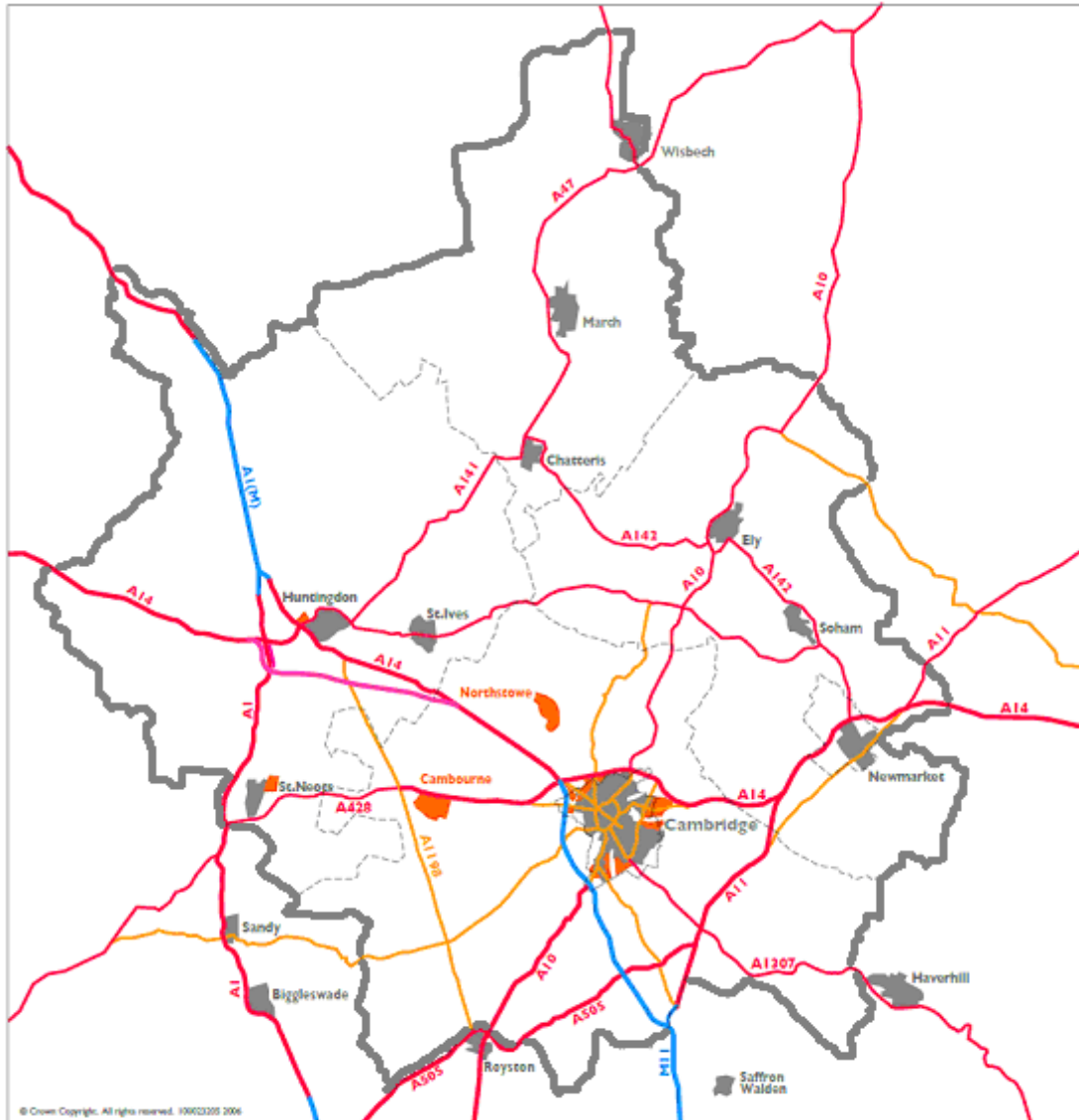


Figure 4.1 Major settlement locations in Cambridgeshire.

Cambridgeshire district housing trajectories were updated and included in Local Development Framework Annual Monitoring Reports in December 2010. The trajectories illustrate when new housing development is expected to be

completed looking ahead, typically over a 15 year period. They were prepared in consultation with developers, based on predictions of delivery. A summary trajectory for Cambridgeshire is included at Figure 4.2, showing each district's part of overall anticipated delivery to 2025/26 (based on 2010 trajectories). The Green Infrastructure Strategy addresses the delivery of Green Infrastructure up to 2031, in tandem with emerging planning timeframes for Local Development Frameworks.

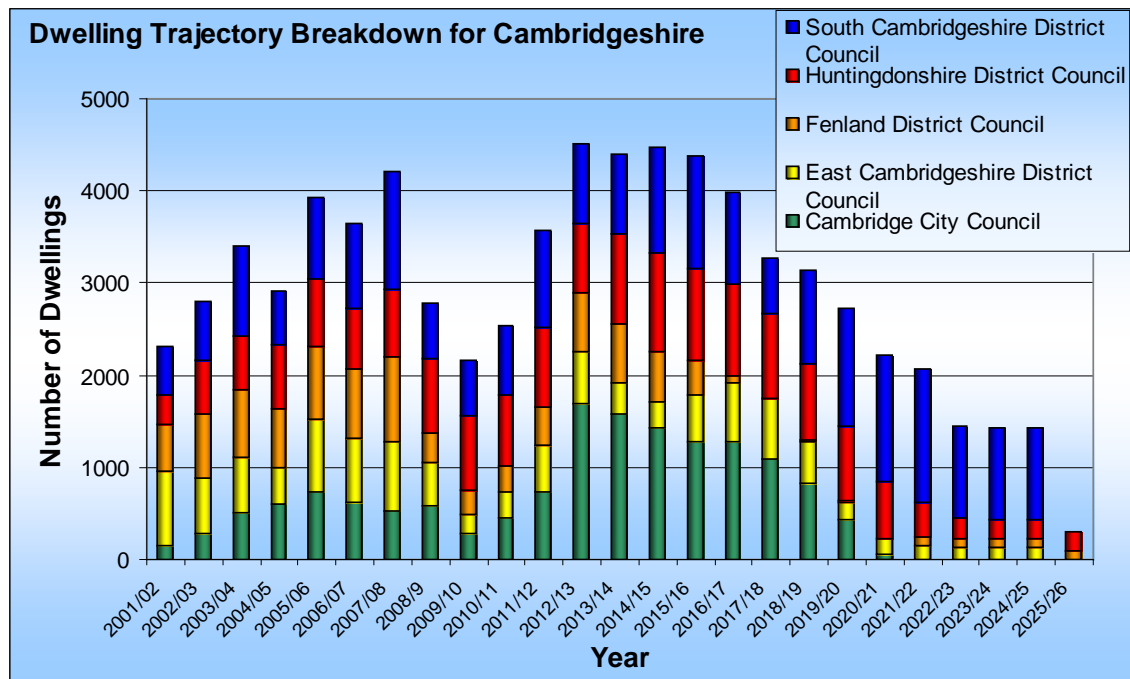


Figure 4.2 Dwelling trajectory for Cambridgeshire 2001 - 2026 (source: Cambridgeshire County Council, 2010)

The East of England Plan currently provides the Regional Strategy for the county. The strategy in the East of England Plan is for 73,300 new homes in the period 2001 to 2021, of which around 28,000 have already been built. The Coalition Government intends that regional plans will be abolished through the Localism Bill. Notwithstanding, the local authorities in the County have all adopted a Joint Interim Planning Statement that confirms their commitment to the strategy for planning in the County, including the provision of housing.

The Joint Interim Planning Statement adopted by the Cambridgeshire authorities sets out the authorities' position following the Government's stated intention to abolish Regional Strategies and the effects of the recession on the delivery of key development sites.

"The Cambridgeshire authorities remain committed to the strategy for planning in the County, including the provision of housing, as originally established by the Structure Plan and as now partially set out in saved Structure Plan policies and as reflected by the policies and site proposals in the Cambridge Local Plan

and District Councils' Development Plan Documents and developing strategies for market towns.

The key objective of the strategy is to locate homes in and close to Cambridge, following a comprehensive review of the Cambridge Green Belt, and to other main centres of employment, while avoiding dispersed development which increases unsustainable travel and makes access to services and community facilities difficult. Further sustainable locations for growth focus mainly on Cambridgeshire's market towns.

This strategy makes provision for development:

- Within Cambridge or as sustainable extensions to the urban area, subject to environmental capacity and compatibility with Green Belt objectives.
- at the new town of Northstowe, linked to the guided Busway;
- within, or as sustainable extensions to, the market towns of Wisbech, March, Ely, Huntingdon and St Neots, subject to the potential for regeneration and the provision of essential infrastructure and public transport improvements¹; and
- within, or as extensions to, other market towns, where development would increase the towns' sustainability and self-containment, improvements to infrastructure and services are planned or will be provided and high quality public transport provision can reduce the impacts of out-commuting."

Table 4.1, prepared in September 2009, shows the housing targets included in adopted Development Plans. As Local Development Frameworks are at different stages of preparation, the timescales attached to these targets vary. The housing targets as set out in the RSS have been incorporated into the Core Strategies for East Cambridgeshire, Huntingdonshire and South Cambridgeshire District Councils.

¹ Huntingdon and St Neots in this policy refers to the Spatial Planning Areas as defined in the adopted Huntingdonshire Core Strategy

Table 4.1 Housing targets included in adopted Development Plans in Cambridgeshire (September 2009).

| Local Planning Authority | Total to Build (Adopted Local Plan/Core Strategy) | Already Built (31 March 2010) | Still to Build (31 March 2010) |
|---------------------------------------|---|-------------------------------|--------------------------------|
| Cambridge City Council | 12,500 (1999-2016) | 4,724 (1999 - 2010) | 7,776 |
| East Cambridgeshire District Council | 10,320 (2001-2025) | 5,317 (2001 - 2010) | 5,013 |
| Fenland District Council | 9,220 (1990-2001)* | 5,595 (2001 - 2010) | - |
| Huntingdonshire District Council | 14,000 (2001-2026) | 5,928 (2001-2010) | 8,073 |
| South Cambridgeshire District Council | 20,000 (1999-2016) | 8,627 (1999 - 2010) | 11,373 |

* Fenland DC is currently working on their emerging Core Strategy, based on the scale of growth set out in East of England Plan.

3 Baseline Information

Planning Policy and Guidance

European Landscape Convention

<http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>

Under this Defra and Natural England supervise the development of landscape policy in the UK. Green Infrastructure has a role in protecting, managing and promoting the value of (all) landscapes.

National Policy and Guidance

National policy for planning and the environment is set out in Planning Policy Statements (PPSs) and Planning Policy Guidance (PPG). The Government announced in December 2010 that these documents are to be replaced in due course by a National Planning Framework which would be used to enable the

delivery of the Government's Objectives for the Planning System. Current policy which is relevant to green infrastructure includes:

Planning Policy Statement (PPS) 1: Delivering Sustainable Development - this sets out the overarching planning policies on the delivery of sustainable development through the planning system. Although it does not specifically reference Green Infrastructure, it requires planning authorities to ensure that development integrates urban form and the natural environment and creates and sustains an appropriate mix of uses, including green space.

Planning Policy Statement: Climate Change - Supplement to PPS 1 - this supplement to PPS1 sets out how planning should contribute to reducing emissions and stabilising climate change. In particular, it states that when selecting land for development planning authorities should take into account; "...the contribution to be made from existing and new opportunities for open space and green infrastructure to urban cooling, sustainable drainage systems, and conserving and enhancing biodiversity".

Planning Policy Statement: Eco Towns - Supplement to PPS 1 - although there are currently no short-listed eco-towns in Cambridgeshire, and the standards set out in this supplement are more demanding than would normally be required for new development, it provides a useful overview of the role of Green Infrastructure: "Forty per cent of the eco-town's total area should be allocated to green space, of which at least half should be public and consist of a network of well managed, high quality green/open spaces which are linked to the wider countryside. Planning applications should demonstrate a range of types of green space, for example community forests, wetland areas and public parks. The space should be multi-functional, e.g. accessible for play and recreation, walking or cycling safely, and support wildlife, urban cooling and flood management. Particular attention should be given to land to allow the local production of food from community, allotment and/or commercial gardens".

Planning Policy Guidance (PPG) 2: Green Belts - this defines the role of green belts. The fundamental aim of green belt policy is to protect the countryside by preventing urban sprawl and encouraging sustainable patterns of urban development and the Green Infrastructure Strategy may help deliver these objectives.

Planning Policy Statement (PPS) 5: Planning for the Historic Environment - this sets out the Government's planning policies on the conservation of the historic environment.

Planning Policy Statement (PPS) 7: Sustainable Development in Rural Areas - this sets out the Government's planning policies for rural areas. A key objective is to raise the quality of life and the environment in rural areas

through good quality, sustainable development that respects the local distinctiveness and the intrinsic qualities of the countryside.

Planning Policy Statement (PPS) 9: Biological and Geological Conservation - this highlights the role that functioning ecosystems can have in promoting sustainable development and contributing to rural renewal and urban renaissance.

Planning Policy Statement (PPS) 12: Local Spatial Planning - this highlights the importance of spatial planning in ensuring the necessary social, physical and Green Infrastructure is delivered. It defines GI as; "a network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities".

Planning Policy Guidance (PPG) 17: Open Space, Sport and Recreation - this highlights the requirement to undertake open space audits and strategies which can inform provision at both the strategic and local scale. PPG17 doesn't mention Green Infrastructure specifically as the term 'Green Infrastructure' had not emerged when PPG17 was written.

Planning Policy Statement (PPS) 25: Development and Flood Risk - this refers to making the most of the benefits of Green Infrastructure for flood storage, conveyance and sustainable urban drainage systems (SUDS) and re-creating functional flood plains and setting back flood defences.

Consultation paper on a new Planning Policy Statement: Planning for a Natural and Healthy Environment, 2010 - this draft PPS, which was subject to public consultation in March 2010, was intended to replace the existing content of PPS 7 in relation to landscape, PPS 9 and PPG 17. Significantly it includes a requirement for Local Development Frameworks to; "set out a strategic approach for the creation, protection and management of networks of green infrastructure". It requires Local Planning Authorities to prepare and keep up-to-date an assessment of existing and future need of communities for both open space and green infrastructure. It also requires Local Development Frameworks to identify where new or improved links to rights of way should be provided for walkers, cyclists and horse riders and that existing rights of way should be protected and enhanced.

Consultation paper on a new Planning Policy Statement: Planning for a Low Carbon Future in a Changing Environment, 2010 - this Draft PPS sets out an expectation that Green Infrastructure provided as part of Local Development Frameworks will contribute to the objective of adapting to climate change by optimising its benefits urban cooling, local flood risk management and access to shady outdoor space.

Housing Growth and Green Infrastructure, Natural England, 2008 - this document sets out Natural England's expectations for protecting the environment whilst accommodating future growth. It makes several references to Green Infrastructure including:

"The quality of much new housing is mediocre and needs to be substantially improved, both in terms of design quality and resource efficiency. The provision of multi-functional green infrastructure as an integral part of all new development can considerably enhance the quality of development and deliver a wide range of benefits for people and the natural environment.

We believe...That the provision of green infrastructure should be an integral part of the creation of sustainable communities throughout England.

We call...for Networks of multi-functional green infrastructure providing a wide range of environmental and quality of life benefits to be identified in regional and local plans and designed into all major development and regeneration schemes from the outset".

Climate Change Adaptation by Design - A Guide for Sustainable Communities, TCPA, 2007 - this document outlines the role of the planning system, communities and other Stakeholders in ensuring development considers adaptation options. Green Infrastructure is regarded as mechanism for managing climate change:

"Built environment professionals should aim for integration of water, open space and built form through green space and blue space strategies, developed as part of a masterplan. This should consider a number of climate risk management options (bearing in mind the potential conflicts between options and with GHG mitigation efforts), including:

- High quality green space, made up of a linked network of well-irrigated open spaces that can be used by a range of people (a 'green grid'), which has additional ecological, recreational and flood storage benefits. Green infrastructure in urban areas includes open spaces, woodlands, street trees, fields, parks, outdoor sports facilities, community gardens, village greens, private gardens, and green or living roofs and walls. It will also be important to consider subsidence risk, availability of water, longer growing seasons and changing species suitability under climate change.
- Bluespace, such as open bodies of water, including rivers, lakes and urban canals".

The UK Government Sustainable Development Strategy, DEFRA, 2005 - this report outlines the principles and priorities for helping to deliver a better quality of life through sustainable development. Although there is no specific reference to Green Infrastructure, central to the Sustainable Development

Strategy is the need to respond to the challenges of climate change, protect natural resources and enhance the environment. Furthermore it highlights the importance of green space and biodiversity networks to standard of living and quality of life.

Green Spaces, Better Places - Final Report of the Urban Green Spaces Taskforce, Department of Transport, Local Government and the Regions, 2005 - whilst this report does not refer to green infrastructure, it identifies the importance of urban parks and green spaces in “regenerating towns and cities, improving the health and wellbeing of local people and providing educational opportunities for children and communities”.

The Countryside in and Around Towns: A vision for connecting town and country in the pursuit of sustainable development, Groundwork and the Countryside Agency, 2005 - this document sets out the (former) Countryside Agency and Groundwork’s vision for the countryside in and around towns, and how these can be used to produce; “truly sustainable, multi-functional landscapes that are visually pleasing, environmentally vibrant, functionally productive and socially useful and accessible” including

- bridge to the countryside;
- gateway to the town;
- classroom;
- recycling and renewable energy centre; and
- engine for regeneration.

Biodiversity by Design - A Guide for Sustainable Communities, TCPA, 2004 - this provides guidance on how to maximise the opportunities for biodiversity in the planning and design process through the provision of Green Infrastructure stating that; “Green Infrastructure is defined as the Sub-regional network of protected sites, nature reserves, green spaces and greenway linkages. Green Infrastructure should provide (where possible) multi-functional uses, i.e., wildlife, recreational and cultural experience, as well as delivering ecological services, such as flood protection and microclimate control. It should also operate at all spatial scales from urban centres through to open countryside”. The First Cambridgeshire Green Infrastructure Strategy adopted this definition.

Biodiversity Action Plans (BAP) - This is a strategy prepared for a local area aimed at conserving and enhancing biological diversity. The plans outline the necessary action for the next 10 years to preserve and enhance biodiversity in farmland, woodland, wetland, grassland and urban areas.

Conservation Area Appraisals - Planning authorities have a duty to protect and enhance the character and appearance of conservation areas and to prepare and publish proposals for doing so. The purpose of a conservation area appraisal is to define what is important about its character and appearance and to identify its important characteristics. It is also a vital tool

to enable the active management of the conservation area. It identifies the area's special features, including Green Infrastructure, and changing needs through a process which includes researching its historical development, carrying out a detailed townscape analysis and preparing a character assessment.

Regional Strategies, Guidance and Studies

The Regional Social Strategy: A strategy to achieve a fair and inclusive society in the East of England, EERA, ODPM and EEDA, 2007 - this sets out a vision and actions for achieving a fair and inclusive society for the East of England. Although it does not specifically mention Green Infrastructure, the report highlights the importance of the physical environment to an individual's health and sense of well-being.

Our environment, our future: The Regional Environment Strategy for the East of England, ERRA and EEEF, 2003 - this provides a summary of the current state of the environment, a description of the environmental challenges facing the region and a series of aims for responding these challenges. There is no specific reference to Green Infrastructure, however, the delivery and implementation of a Green Infrastructure Strategy will help deliver the following aims:

- Policy SA1: Accommodate population and economic growth whilst protecting and enhancing the environment;
- SA4: Reducing the vulnerability to the region to climate change;
- SA8: Promote the environmental economy;
- SA10: Maintain and enhance landscape and townscape character;
- SA11: Enhance biodiversity;
- SA12: Conserve and enhance the historic environment; and
- SA14: Increase the understanding and ownership of environmental issues.

Woodland for life: The Regional Woodland Strategy for the East of England, EERA and the Forestry Commission, 2003 - this provides a vision for the woodland in the East of England and sets out the benefits that trees and woodlands bring to the people who live and work in the region. The benefits of woodlands are discussed under key themes, including quality of life, spatial planning, economic development, renewable energy, education and learning and natural environment.

East of England Plan Regional Spatial Strategy The Revision to the Regional Spatial Strategy (RSS) for the East of England, Go-East, 2008 - The Coalition Government moved swiftly to revoke RSSs including the East of England Plan in 2010, although they remain part of the Development Plan following a successful high court challenge.. However it is important to note that the Coalition Government remains committed to housing targets being set at the local level as part of which to RSSs will be repealed through the

forthcoming Localism Bill which was published in draft in December 2010. The East of England Plan (the Regional Spatial Strategy), set the this context for the level of housing proposed for Cambridgeshire Development Plans and which has been taken account of as part of this Green Infrastructure Strategy.

The RSS (2008) set out the intention that Cambridgeshire should provide at least 73,300 net additional dwellings over the plan period (2001-2021). The county figure was distributed across the five districts, with the scale of planned growth greatest in South Cambridgeshire (+23,500) and least in East Cambridgeshire (+8,600). The figure for Cambridgeshire as a whole was just under 15% of the regional total.

The RSS also provided a jobs growth target for the county: an increment of 75,000 jobs by 2021. The regional target was for 452,000 additional jobs and hence the intention was that Cambridgeshire should contribute around 17% of the total. In the published RSS, the jobs target was not apportioned between districts; however it was linked into the Employment Land Reviews prepared by each Cambridgeshire district.

County Policies and Studies

The Cambridgeshire Development Study, SQW Consulting, WSP, Pegasus Planning Group and Cambridge Econometrics, 2009 - this was commissioned on behalf of the Cambridgeshire local authorities to consider sustainable growth in Cambridgeshire and formulate an appropriate consultation response to The East of England Plan 2031. The study states that whilst there is potential for new growth, there is concern as to whether the county can accommodate growth beyond that already allocated in the Regional Spatial Strategy. Reference is made to the need for additional green infrastructure for all of the Growth Scenarios which were considered as part of the Study.

The Cambridgeshire and Peterborough Structure Plan 2003: Planning for Success, Cambridgeshire County Council and Peterborough City Council, 2003 - after the approval of the East of England Plan in May 2008 all but 13 of the policies in the Plan have been superseded. Those policies of relevance to the Green Infrastructure Strategy include:

- P4/4 Water Based Recreation
- P9/2b Review of Green Belt Boundaries
- P9/2c Location and Phasing of Development Land to be released from the Green Belt
- P9/8 Infrastructure Provision

The Green Infrastructure Strategy will support the development agenda for Cambridgeshire, both within and outside the Green Belt, by providing sufficient infrastructure to contribute to the needs of the county's residents.

Cambridgeshire and Peterborough Waste Local Plan, Cambridgeshire County Council and Peterborough City Council, 2003 and Cambridgeshire Aggregates (Minerals) Local Plan, Cambridgeshire County Council, 1991 The County Council's mineral and waste local plans do not refer to Green Infrastructure, however, both plans contain policies which seek to protect landscape, biodiversity, heritage assets through restoration and after-care. Policy CALP17 of the Aggregates (Minerals) Local Plan has been used to secure the provision of significant amounts of green infrastructure as part of the restoration proposals for mineral workings where there has been clear community benefits e.g. Needingworth quarry.

Cambridgeshire and Peterborough Minerals and Waste Local Development Framework- Submission, February 2010 Cambridgeshire County Council and Peterborough City Council have consulted on the Cambridgeshire and Peterborough Minerals and Waste Submission Plan together with a number of Supplementary Planning Documents. Policy CS1 - Strategic Objectives for Sustainable Minerals Development states that a strategic objective of the Core Strategy is; "to maximise community and biodiversity benefits including additional green infrastructure through appropriate afteruses following mineral extraction, particularly in the Earith/Mepal area".

Policy CS27 - Restoration and After Care of Workings. Sets out the criteria against which restoration proposals will be assessed. It states that restoration proposals will be considered on a case-by-case basis but; "schemes must reflect the strategic and local objectives for countryside enhancement and green infrastructure including those set out in Local Development Frameworks and the Green Infrastructure Strategies for Cambridgeshire and Peterborough".

Policy CS3 - Strategic Vision and Objectives for Block Fen / Langwood Fen. The draft Block Fen/Langwood Fen Master Plan Supplementary Planning Document (SPD) published in February 2010 sets out the long-term vision for the Block Fen and establishes the use of the site for extraction, disposal and after-use. Mineral extraction followed by appropriate restoration is regarded as offering opportunities to create water bodies, thereby managing flood risk and providing formal recreational opportunities. It is also proposed to create a significant amount of new lowland wet grassland through restoration using inert waste and peat soils.

The Refresh of Cambridgeshire's Programme of Development for Housing Growth Funding (2009 - 2011) "sets out the shared goals of Cambridgeshire's local authorities, Cambridgeshire Horizons and key Stakeholders to deliver our housing targets whilst ensuring new development meets the highest standard of quality and minimises carbon impacts". It describes in detail the major areas of development in Cambridgeshire which are allocated in the Local Authorities Statutory Plans, the projects needed to help deliver new homes and how these will be funded. It also identifies the strategic projects that have sub-regional

significance, including transport, sport facilities and Green Infrastructure. Major developments identified by the POD include:

- Northstowe;
- Cambridge Southern Fringe;
- Cambridge North West;
- Cambridge East; and
- Cambridge Northern Fringe East.

Integrated Plan: Creating communities where people want to live and work, now and in the future, Cambridgeshire County Council, 2009 - this sets out the county council's commitment to provide high quality and cost effective public services that reflect the needs of the people of Cambridgeshire. Although there is no specific reference to Green Infrastructure, relevant policies include:

- Creating healthy and attractive surroundings for communities;
- Improving access to services by public transport, walking and cycling; and
- Developing ways of helping people to stay healthy and active.

Cambridgeshire Quality Charter for Growth, Cambridgeshire Horizons, 2008 - this sets out principles for achieving high quality housing growth under four broad themes; community, connectivity, climate and character. The role of Green Infrastructure in achieving high quality growth is highlighted by the following principles:

- There should be a mixture of formal and informal green space, and interconnectivity between new and existing Green Infrastructure;
- New developments should contribute to the wider environmental goals for the Cambridge area and enhance the feasibility of walking and cycling;
- Biodiversity and wildlife should be encouraged through a network of green spaces and Sustainable Urban Drainage Systems (SUDS); and
- The creation of good landscapes is as important as the creation of good townscapes. Different kinds of spaces should be provided to give character to the neighbourhoods and improve biodiversity.

Cambridgeshire Vision: Countywide Sustainable Community Strategy 2007 - 2021, Cambridgeshire Together, 2007 - this sets out the collective vision and priorities of partner organisations to ensure that public services meet the needs of the people of Cambridgeshire. It focuses on 5 key themes; growth, economic prosperity, environmental sustainability, equality and inclusion and safer and stronger communities. Although there is no specific reference to Green Infrastructure, the Cambridgeshire Vision states that new development needs; "to provide infrastructure that encourages physical activity such as walking and cycling and environments that support social networks, which have a positive effect on mental and physical health".

The Local Area Agreement (LAA) 2008-2011 is the three year delivery plan for the Cambridgeshire Vision described above. The LAA establishes county-

wide priority areas and targets, using indicators from the national indicator set. Those of relevance to Green Infrastructure include:

- NI 5 - Overall/general satisfaction with the local area;
- NI 188 - Adapting to climate change; and
- NI 197 - Improved local biodiversity.

Cambridgeshire Corporate Asset Plan 2006 - 2011, Cambridgeshire County Council, 2006 The county council's property portfolio consist of over 600 assets varying from schools to farm estates, and the Corporate Asset Management Plan is aimed at ensuring efficient, effective and sustainable use of land and buildings. As a major land owner, the county council has the ability to influence the provision of Green Infrastructure. Indeed, the strategic objective 'Building Cambridgeshire Communities' seeks to:

- "Conserve and enhance Cambridgeshire's landscape and biodiversity;
- Develop a Rights of Way improvement plan; and
- Increase access to green space, the countryside and rights of way".

Local Planning Policy

Infrastructure planning and provision

Green Infrastructure together with a range of requirements for additional infrastructure and community facilities is referred to in a number of adopted and emerging Cambridgeshire Development Plan Documents and developer contributions will be required for implementation. For example:

- Policy S4 (Developer Contributions) and relevant supporting text of the adopted East Cambridgeshire Core Strategy.
- Policy CS10 (Contributions to infrastructure requirements) of the adopted Huntingdonshire Core Strategy and policy D7 (Green Space, Play and Sport Facilities Contributions) of Development Management Policies Proposed Submission 2010
- Policy DP/4 (Infrastructure and New Developments) and relevant supporting text of the South Cambridgeshire District Council Development Control policies - adopted July 2007

Cambridge

Cambridge Local Plan, Adopted 2006 - under the Planning and Compulsory Purchase Act 2004, Cambridge City Council is required to replace the Cambridge Local Plan 2006 with a Local Development Framework (LDF), and work is progressing in this respect. However, until the documents comprising the LDF are prepared and their policies come into force, the Act makes provision for Councils to retain their Local Plan policies by application to the Secretary of State. Cambridge City Council has made this application and a

number of policies remain in force. There are no policies relating directly to Green Infrastructure, however a number relate to the protection and enhancement of character, open space and nature conservation. These include:

- Policy 3/2 Setting of the City
- Policy 3/3 Safeguarding Environmental Character
- Policy 3/8 Open Space and Recreation Provision Through New Development
- Policy 4/2 Protection of Open Space
- Policy 4/3 Safeguarding Features of Amenity or Nature Conservation Value
- Policy 4/6 Protection of Sites of Local Nature Conservation Importance

Cambridge City Core Strategy - Issues & Options 2007 - Cambridge City Council has consulted on their Core Strategy Issues and options and are currently preparing the informal Preferred Options Report. They are also in the process of reviewing the City's Open Space and Recreation Strategy. This work will form part of the evidence base for the development of the Council's Development Plan Documents, and may inform the implementation and delivery of the GI Strategy at the district level. The proposed vision for Cambridge is a city that:

- respects its environmental limits and adapts to the challenges of climate change;
- is successful, combining a high level of prosperity with socially mixed, healthy, safe and inclusive communities;
- is attractive, with a high quality natural and built environment;
- is compact, with a thriving historic city centre and a framework of attractive green spaces;
- excels as a world leader in higher education, research and the knowledge-based economy; and
- Functions as the heart of the Sub-region meeting the service and recreational needs of the city and surrounding area.

In relation to the landscape structure, the Core Strategy seeks to enhance and protect Cambridge's landscape setting, including:

- the network of central parks and commons;
- the river valley and green corridors that penetrate the city;
- the open countryside close to the historic city centre to the south and west, and
- The landscape setting of the city.

North West Cambridge Area Action Plan, Adopted 2009 - Cambridge City Council and South Cambridgeshire District Council have jointly prepared the North West Cambridge Area Action Plan, which seeks to create a new University quarter. Policy NW1 describes the vision for this area. Policies relevant to the Green Infrastructure Strategy include:

- NW4 Site and Setting, which seeks to create a high quality built edge to the urban area and provide an appropriate setting to Cambridge;

- NW23 Open Space and Recreation Provision, which seeks to provide open space and links to the countryside;
- NW29 Strategic Landscaping, which seeks to encourage appropriate planting, including woodland, trees and hedgerows; and
- NW31 Infrastructure, which seeks to create appropriate physical and social infrastructure, including open space and provision for pedestrians and cyclists.

Cambridge East Area Action Plan, Adopted 2008 - Cambridge City Council and South Cambridgeshire District Council have jointly prepared the Cambridge East Area Action Plan, which identifies the site for a sustainable new urban quarter of approximately 10,000 to 12,000 dwellings. Policy CE/1 describes the vision for Cambridge East. In relation to Green Infrastructure, Policy CE/4 the Setting of Cambridge East describes the creation of a 'green corridor':

"A green corridor will be retained through the new urban quarter connecting the green spaces of Cambridge to the surrounding countryside, linking from Coldham's Common to a new country park located to the east of Airport Way and south of Newmarket Road, and also to the National Trust's Wicken Fen Vision. The green corridor will have width of about 300m, and be significantly narrower only where particular justification is provided and the green corridor function is not inhibited. It will open up to a greater width at the Teversham end of the corridor, where an informal countryside character will be provided to help to maintain the individual identity of the village.

It will have landscaping and biodiversity value and also perform a recreational function for both informal recreation and children's play.

The green corridor will have a high degree of public access compatible with its function in serving the needs of the development and the uses of Green Belt land.

Road, public transport, footpath, cycleway and bridleway crossings across the green corridor will be well designed to limit any safety implications and be low key in character or designed as a landscape feature in order to limit adverse effects on the landscape. This may involve the use of cuttings, bridges across water features and tunnelling. Any roads crossing the green corridor must be in a north-south direction only".

In addition, CE/21 Countryside Recreation seeks to create a new country park on land north of Teversham and create links with new and existing rights of way. Other policies of relevance include:

- CE/14 Landscaping within Cambridge East, which seeks to create a series of green fingers will be created into and through the urban area, which will offer landscape and biodiversity value as well as recreational use;

- CE/15 Linking Cambridge East to its Surroundings, which seeks to link the landscape areas and green fingers within Cambridge East to the green areas on the periphery of the urban quarter and the wider countryside to create a comprehensive green network; and
- CE/17 Existing Biodiversity Features, which seeks to retain existing features, whilst creating new assets with proposed green fingers and the county park (see above);
- CE/19 Built Heritage, which seeks to identify which buildings and structures should be retained for their heritage value, and establish the extent and character of their settings;
- CE/20 Public Open Space and Sports Provision, which seeks to ensure there is adequate open space to enable residents lead a healthy lifestyle; and
- CE/33 Infrastructure Provision, which seeks contributions to necessary infrastructure, including open space, landscaping and biodiversity.

Southern Fringe Area Development Framework, Approved 2006 Cambridge City Council has prepared the 'Southern Fringe Area Development Framework', a non-statutory planning guidance which will help to direct future development. While there is no specific reference to Green Infrastructure, the plan proposes to retain and enhance the strategic green corridor adjacent to the London to Cambridge railway line.

East Cambridgeshire

East Cambridgeshire Core Strategy, Adopted 2009 The vision for East Cambridgeshire is, by 2025, to have; "retained its distinct identity as a predominantly rural area of villages and market towns whilst accommodating the development of new homes and jobs required as part of being a major growth area. The district will have taken advantage of the economic vitality of the Cambridge sub-region, and have a diverse and thriving economy, with vibrant and attractive towns and villages which act as employment and service centres for their surrounding rural areas. More residents will have a high quality of life, with increased access to affordable housing, a wider range of local better skilled jobs, and good quality services and facilities".

In relation to Green Infrastructure, Policy CS6 seeks to protect and enhance the natural and built environment, and the local distinctiveness of the district. The policy refers to Strategic Areas of Green Space Enhancement, where it will be particularly important to improve biodiversity and landscape value. These areas reflect the target areas for habitat creation in the Cambridgeshire and Peterborough Structure Plan (2003) and the priority areas for strategic Green Infrastructure creation identified in the First Green Infrastructure Strategy (2006).

Policy CS7: Infrastructure sets out key requirements for infrastructure and community services. This includes the provision of a Country Park in Ely and public realm enhancements in the Market Towns.

Policy CS8: Access describes the need to improve accessibility for the whole community and reduce the need to travel by car. This includes the creation of attractive environments which are accessible and provide opportunities for cycling and walking.

Ely Masterplan: Devising a City for Everyone, Adopted February 2010 This refers to development of recreational and biodiversity linkages from Ely to the wider rural area as part the establishment of a 'joined up' Green Infrastructure network. Including the phased development of a Country Park to serve Ely and implementation of the Green Corridors identified in the First Green infrastructure Strategy.

Soham Masterplan Vision: Reshaping Soham a 21st Century Market Town, Adopted May 2010 - this refers to the establishment of a Green Infrastructure network for Soham that supports existing green corridors and provide additional local corridors which extend throughout Soham and connect to the 'Wicken - Chippenham' and 'River Lark' Green Infrastructure Corridors.

Draft Littleport Masterplan, January 2011 - this refers to the creation of additional 'green fingers' and new and improved green spaces within Littleport to provide improved access to the countryside and an integrated network of green spaces.

Fenland

Fenland District Local Plan, Adopted 1993 The majority of policies in this local plan are saved until they are replaced by policies in forthcoming Development Plan Documents. Although there is no reference to Green Infrastructure, the plan seeks to conserve and enhance the character and quality of the unique Fen countryside, including important landscape, wildlife and heritage features.

Fenland District Core Strategy and Development Policies, Preferred Options 2, 2007 The vision for Fenland is a; "district where there is a high quality of life for all, now and in the future and that Fenland is known as a great place to live, work, learn and visit". This will be achieved by, among other actions, securing significant infrastructure provision in association with major development proposals and ensuring that growth and development does not compromise the natural and built environment or the quality and character of the Fens.

In relation to Green Infrastructure, the Core Strategy states that Fenland district has no strategic areas of public open space, and country parks should be promoted for March, Chatteris and Wisbech. In addition, there are aspirations to enhance and extend the existing network of rights of way, including the consideration of gaps in the network, and protect and enhance landscape character and biodiversity value.

Huntingdonshire

Huntingdonshire Core Strategy Adopted 2009 The Spatial vision for Huntingdonshire states: *"In 2026 Huntingdonshire will have retained its distinct identity as a predominantly rural area with vibrant villages and market towns. Residents will be happier, healthier and more active and will enjoy an improved quality of life with improved access to a wider range of local jobs, housing, high quality services and facilities and green infrastructure"*. Policy CS9 specifically relates to Green Infrastructure stating that the Council will actively support Green Infrastructure projects which demonstrate increased access for quiet recreation and increased provision for biodiversity. Areas of Strategic Green Space Enhancement are identified as follows:

- The Great Fen area with links to the Peterborough Green Parks, Ramsey and Huntingdon;
- The Grafham Water / Brampton Woodlands area with links to Huntingdon and St Neots; and
- The Great Ouse Valley area with links between St Neots and Earith.

The policy continues to say that;

"...within these areas and along the corridors coordinated action will be taken via consultation with statutory and other agencies to:

- safeguard existing and potential sites of nature conservation value, including ancient woodlands and historic landscape features;
- create new wildlife habitats to increase biodiversity;
- contribute to diversification of the local economy and tourist development through enhancement of existing and provision of new facilities;
- create appropriate access for a wide range of users to enjoy the countryside; and
- Contribute where possible to enhanced flood protection.

It is particularly important that resources are concentrated in these areas in the early part of the plan period in order to create opportunities for additional outdoor recreation facilities for the growth in population expected and the early creation of new green corridors.

In the longer term the enhancement of the following green corridors will provide additional corridors and connections with key areas across Cambridgeshire and Peterborough and enhancement of a coherent network:

- Grafham Water area with the Great Fen Project area;
- The Great Fen project area with the Hanson RSBP Wetland Project and South Peterborough Green Park;
- The Great Ouse and the East of St Neots area with the proposed Forest of South Cambridgeshire". (Now known as the West Cambridgeshire Hundreds)"

*Huntingdonshire Development Management Policies: Proposed Submission, 2010*__three proposed policies have specific significance for Green Infrastructure:

E1 Development Context

E6 Great Fen and E7 Protection of Open Space

Huntingdon West Area Action Plan, Proposed Submission 2009 (as amended by Schedule of Changes 2010) the vision states that; "it is intended that by 2026 Huntingdon West will be a vibrant quarter of the town, enjoyed by residents, workers and visitors. Huntingdon West will have a distinctive identity with a series of innovative exemplar development that interconnect providing a transformed community with opportunities for living, working and leisure".

"Hinchingsbrooke Country Park will be enhanced and enlarged to provide a major community and recreational and biodiversity resource and this together with other green space, including Views Common, will link Huntingdon West to strategic open space around the town and strengthen the habitat network for wildlife".

In relation to Green Infrastructure one of the objectives of the AAP seeks to "facilitate healthy and active lifestyles by contributing to a network of improved and new high quality green spaces which link to strategic green spaces and routes around the area, including an improved Hinchingsbrooke Country Park and View Common".

Huntingdonshire Local Plan, Adopted 1995 The majority of policies in the local plan are saved until they are replaced by policies in forthcoming Development Plan Documents. Some of the policies have been superseded by the Huntingdonshire Local Plan Alteration (Adopted 2002), however, none of these of these directly relate to the provision of Green Infrastructure.

Relevant saved policies in the local plan include R13, supporting the provision of facilities for informal countryside recreation, particularly the promotion of Grafham Water as a major destination; and R15, improving access to the countryside. The environment chapter further affords protection to the

countryside, with policies to conserve and enhance features of amenity, landscape, wildlife, archaeological and historic importance.

South Cambridgeshire

South Cambridgeshire Core Strategy - Adopted 2007 - this set out the vision and over-arching policies for South Cambridgeshire. It states:

“The vision for South Cambridgeshire is that it will contribute to satisfying the development needs of the Cambridge Sub-Region rather than those generated by pressures to the south, or elsewhere, while preserving and enhancing its rich built and natural heritage and distinctive character. The district will plan for enhanced infrastructure to meet the needs of the expanded population. It will continue to provide an attractive rural hinterland and setting for the historic city of Cambridge. Those parts closer to Cambridge will be protected by a Green Belt. It will prosper in its own right as a rural district that makes up the largest part of the Cambridge Sub-Region. It will continue to develop as part of the home of the largest cluster of research and development activity in Europe whilst maintaining and where possible improving the character, environment, economy and social fabric of its villages and countryside”.

With regard to the Green Infrastructure Policy ST/1 Green Belt states that regard should be given to the special character of Cambridge and its setting, including,

- A soft green edge to the city;
- Green corridors penetrating into the city; and
- A landscape which retains a strong rural character.

Biodiversity Supplementary Planning Document - Adopted 2009 - this expands on district-wide policies, ensuring that biodiversity is adequately protected and enhanced throughout the development process.

In relation to Green Infrastructure, the SPD identifies the role of Green Infrastructure in contributing to the network of wildlife corridors. The SPD also identifies ‘Countryside Enhancement Areas’ where significant projects, such as the West Cambridgeshire Hundreds Project, “will provide significant areas of land for both people and biodiversity, thus meeting the aim of green infrastructure provision”.

North West Cambridge Area Action Plan, Adopted 2009 and Cambridge East Area Action Plan, Adopted 2008 - this joint plan is covered above under Cambridge City.

Cambridge Southern Fringe Area Action Plan - Adopted 2008 Policy CSF/1 describes the vision for the Cambridge Southern Fringe:

“Cambridge Southern Fringe will be a modern, high quality, vibrant, innovative and distinctive urban extension of Trumpington, which will complement and enhance the character of the city. Development will secure a Countryside Enhancement Strategy comprising landscape, biodiversity and public access enhancements in the surrounding countryside, which will complement the existing landscape character of the area and protect and enhance the setting of Cambridge.

As with the aspirations for Cambridge East, the AAP seeks to create a series of green fingers, which link the urban area and the wider countryside, providing a range of landscape, biodiversity and recreational benefits. Furthermore, Policy CSF/5 describes the components for a Countryside Enhancement Strategy, which includes the “creation of a country park, comprising new meadow grassland, to the east of the River Cam, both north and south of the M11, from Grantchester Road to Hauxton Mill”.

Policy CSF/5 specifies the details of the ‘Countryside Enhancement Strategy’, which will comprise the creation of a country park, new footpaths, cycle paths and bridleways, and measures to protect and enhance wildlife habitats, including managing public access to the river banks.

Policy CFS/14 is also of relevance describing how the development will be linked to its surroundings. In relation to Green Infrastructure; “green fingers will be designed to connect to each other and to other green areas on the periphery of the urban extension including the green corridor along the River Cam, the country park and the wider countryside beyond to create a comprehensive green and landscaped network”.

Northstowe Area Action Plan - Adopted 2007 Policy NS/1 describes the vision for Vision for Northstowe:

“Northstowe will be a sustainable and vibrant new community that is inclusive and diverse with its own distinctive local identity which is founded on best practice urban design principles, drawing on the traditions of fen-edge market towns, which encourages the high quality traditions and innovation that are characteristic of the Cambridge Sub-Region”.

In relation to Green Infrastructure, Policy NS/4 requires green separation between Northstowe and existing communities, containing playing fields, allotments and cemeteries with public access, and as described by Policy NS/14 and NS/15, a series of Green Corridors will be created into and through the urban area and will connect to the green areas on the periphery of the town and the wider countryside beyond.

Policy NS/13 sets out proposals for the Eastern Water Park, a landscaped water park designed to create a landscape buffer to the countryside, create wildlife

habitats and attenuate surface water. In addition, Policy NS/17 sets out proposals for the Southern Parkland Country Park, a landscape between Northstowe and Oakington to provide a substantial resource of trees, grassland and other areas of semi-natural vegetation.

Policy NS/25 highlights the importance of strategic landscaping, and its role in the early establishment of woodland, tree and hedgerow planting, and to ensure the green separation of Oakington and Longstanton.

Land Use Data Area Calculations

The Cambridgeshire Land Use Analysis (LUA), completed in November 2010 is a comprehensive overview of land use types in the county. Statistical analysis of the data provides a guide to the various land use types across the county and the spatial coverage and extent of these uses. Table 4.3 gives some selected outputs from this analysis.

Table 4.3 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 |
| Land Use Category | Total Hectares | % of total area of land in Cambridgeshire |
| Unknown or Unclassified | 2,023 | 0.66 |
| County Total | 306,904 | 100 |

4 What this baseline information tells us

The assessment included here tells us that Green Infrastructure, whether comprising formal or informal areas, is valued and planning policies seek to protect and enhance these. The Green Infrastructure Strategy presents an opportunity to enhance the quality and multi-functionality of urban green spaces and the interpretation and enjoyment of the heritage of settlements. New residential, mixed use and to some extent commercial or industrial development both increases demand on existing Green Infrastructure and

presents opportunities for new provision, creating a sense of place, providing opportunities for recreation, establishing links to urban centres and the rural hinterland, and off-setting carbon emissions.

Green Infrastructure, whether comprising formal or informal areas, is valued and planning policies seek to protect and enhance these.

In terms of population, Cambridgeshire is one of the fastest growing counties in England² with Cambridge and South Cambridgeshire the focus for housing growth. However, the attractiveness of the surrounding market towns and villages has led to strong housing demand in parts of East Cambridgeshire and Huntingdonshire.

The 2003 Cambridgeshire and Peterborough Structure Plan sets out the approach to deliver development in and around existing settlements, particularly the larger ones. Large scale development is proposed in and on the edge of Cambridge at North West Cambridge, Cambridge Northern Fringe East, Cambridge Southern Fringe and Cambridge East. Details of these schemes are included in the corresponding Area Action Plans. Outside of the city of Cambridge, the main area of growth is at the new town of Northstowe, which adjoins Oakington and Longstanton, within South Cambridgeshire.

Elsewhere growth is targeted at market towns, and the key development areas are:

- East Cambridgeshire - majority of housing growth to be located at Ely, Soham and Littleport.
- Fenland - growth directed to the larger towns of March and Wisbech, with some development at Chatteris and Whittlesey.
- Huntingdonshire - majority of housing growth to be located at Huntingdon, St Neots and St Ives.

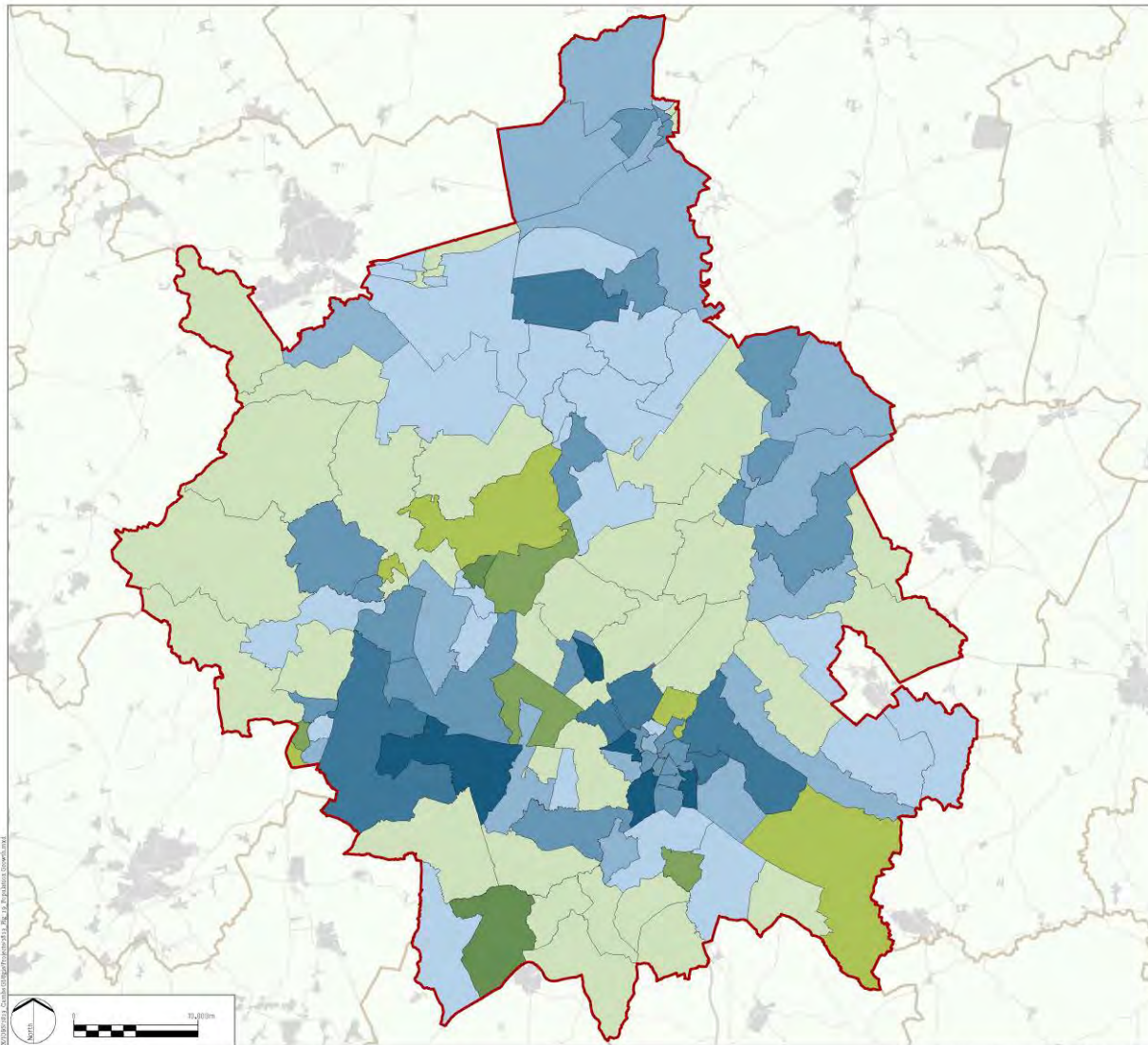
Due to continued development in Cambridgeshire, there is a growing need for minerals which will generally be met through continued working/extensions of existing sites. Minerals and waste sites across the county provide opportunities for future Green Infrastructure provision in the long-term as part of restoration. Sites are generally located within central Cambridgeshire, with a number of sites around Huntingdon, St Ives and Chatteris.

² ARUP, Regional Scale Settlement Study, January 2009

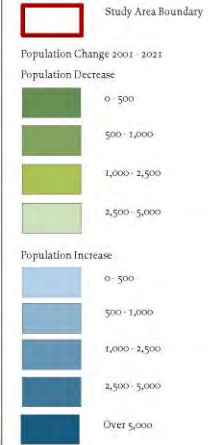
Population Growth

Figure 4.3 details of population growth in Cambridgeshire between 2001 and 2021. This takes into account both natural population growth and growth that will result from new developments as detailed in Section 2 of this appendix. As populations who will use Green Infrastructure increase so Green Infrastructure will need to be improved or developed to meet this need and to protect valuable habitats and species from any detrimental impacts.

Figure 4.3 Population growth in Cambridgeshire 2001 - 2021. (Next page)



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For ward details refer to Figure 4.

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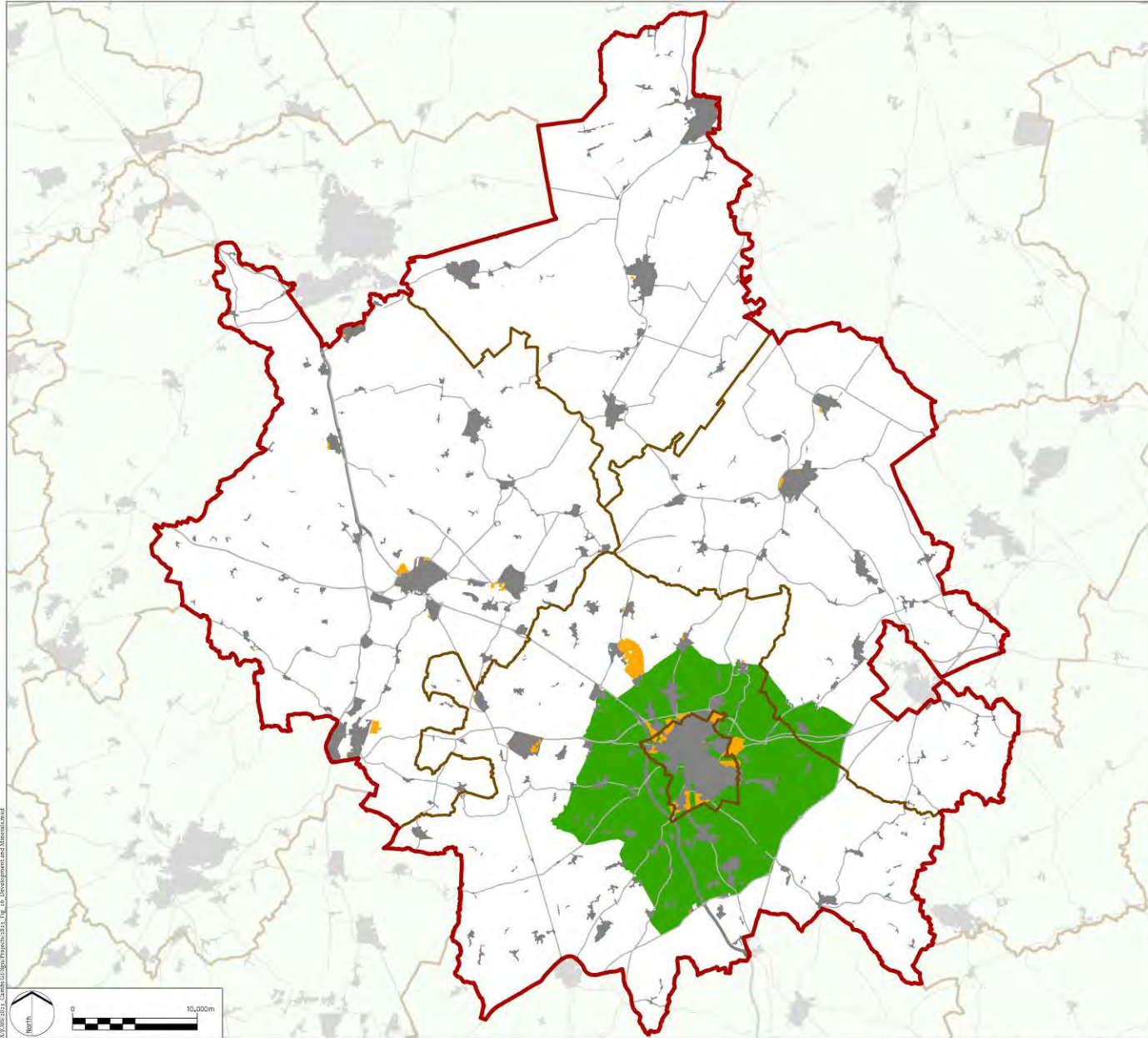
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Major Development Sites

Figure 4.4 details major development sites across Cambridgeshire of 100 dwellings or more, using data supplied by the Cambridgeshire County Council Research and Monitoring team around July 2010. Development sites are predominantly located around the fringes of Cambridge and the market towns, Cambourne and at the proposed new settlement of Northstowe. Development offers opportunities for providing new or improving existing Green Infrastructure for health, wellbeing and a range of other services, including flood alleviation and food production.

Figure 4.4 Major development sites across Cambridgeshire of 100 dwellings or more (Next page)



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- Study Area Boundary
- Green Belt
- Major Development Sites*

* Major Development Sites are correct as of September 2010 and comprises locations/sites:

- Allocated in Local Plan or LDF
- With Outline Planning Permission
- With Unimplemented Full Planning Permission
- Under Construction
- Completed between 01 July and 30 September 2010
- Where residential development sites are 100 dwellings or more

NB: Please refer to Cambridge Insert Plan for further detail of settlement boundaries and major developments in and around Cambridge.

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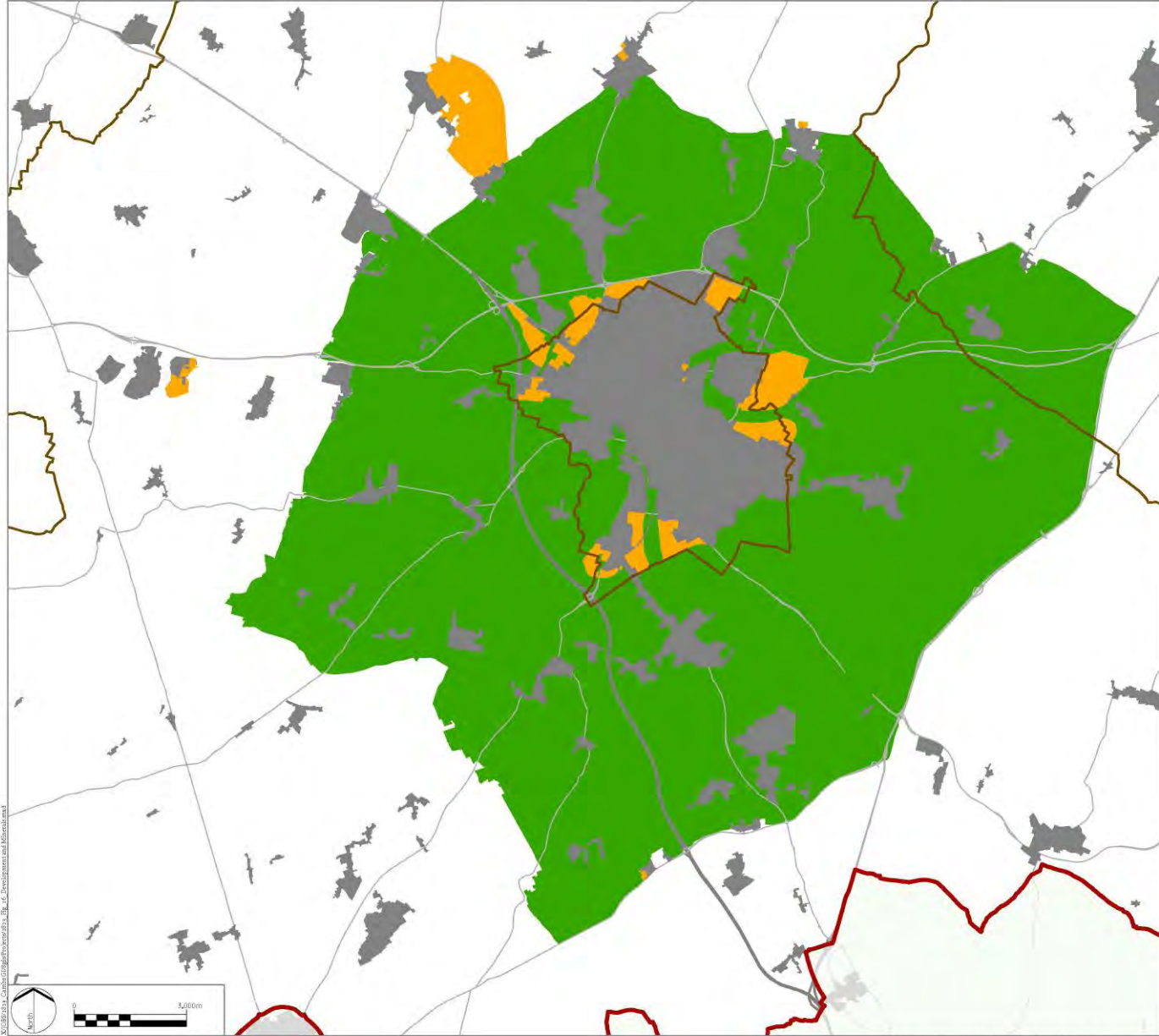
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Major Development Sites - Cambridge Insert

Figure 4.5 provides more geographic detail on development sites around Cambridge and shows the boundary of the Cambridge Green Belt.

Note: The white areas within the Cambridge Green Belt represent locations that may or may not be designated as Green Belt. As part of the consultation these areas will be examined and coloured accordingly.

Figure 4.5 Major development sites of 100 dwellings or more around Cambridge (Next page).



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LEGEND

- Study Area Boundary
- Green Belt
- Major Development Sites

* Major Development Sites are correct as of September 2 and comprises locations/sites

- Allocated in Local Plan or LDF
- With Outline Planning Permission
- With Unimplemented Full Planning Permission
- Under Construction
- Completed between 01 July and 30 September 2
- Where residential development sites are 100 dwellings or more

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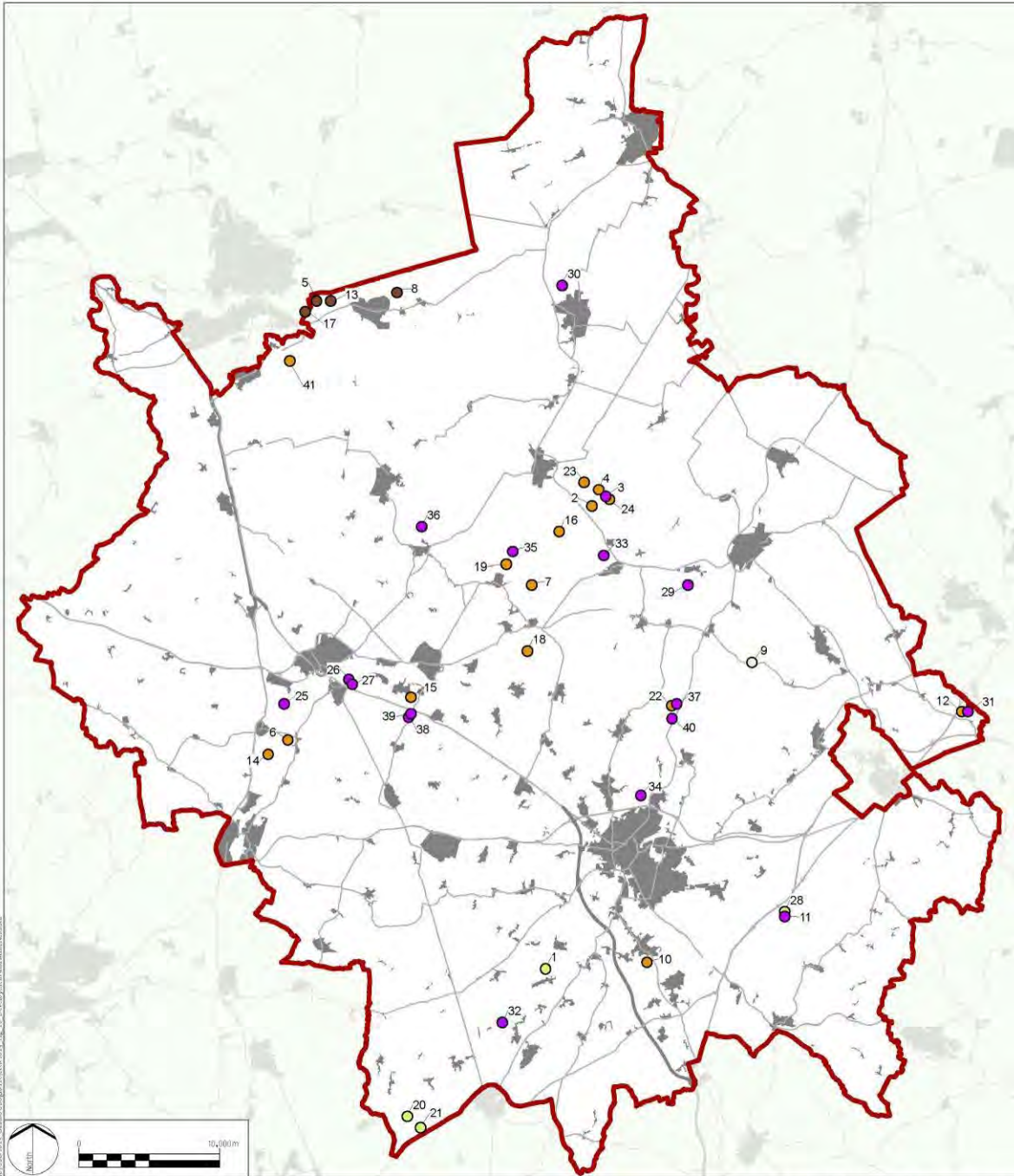
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Minerals and Waste Sites

Figure 4.6 details mineral extraction sites and landfill sites in Cambridgeshire (as at November 2010). Restoration of minerals and landfill sites can create valuable Green Infrastructure sites for local communities and wildlife and can provide opportunities for tourism.

Figure 4.6 Mineral extraction sites and landfill sites in Cambridgeshire (Next page)



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- Study Area Boundary
- Extraction Sites (refer to table for details)
- Chalk Extraction
- Clay Extraction
- Limestone Extraction
- Sand and Gravel Extraction
- Landfill Sites
- Landfill

- 1 Barrington Cement Works - Chalk Extraction (Mineral) - Inactive
- 2 Block Fen, Mepal (Lafarge) - Sand & Gravel Extraction (Mineral) - Active
- 3 Block Fen, Mepal (Aggregate Industries) - Sand & Gravel Extraction (Mineral) - Active
- 4 Block Fen (Hanson) - Sand & Gravel Extraction (Mineral) - To commence
- 5 Bradley Fen, Whittlesey - Clay & Shale (Mineral) - Active
- 6 Buckden Quarry - Sand & Gravel Extraction (Mineral) - Restored
- 7 Colne Fen, Colne - Sand & Gravel Extraction (Mineral) - Active
- 8 Decoy Farm, Eastrea - Clay & Shale (Mineral) - Restored
- 9 Dimmocks Cote, Wicken - Limestone (Mineral) - Active
- 10 Dernford Farm, Duxford - Sand & Gravel Extraction (Mineral) - Active
- 11 Great Wilbraham Chalk Pit - Chalk Extraction (Mineral) - Active
- 12 Kennett - Sand & Gravel Extraction (Mineral) - Restored
- 13 King's Dyke, Whittlesey - Clay & Shale (Mineral) - Active
- 14 Little Paxton - Sand & Gravel Extraction (Mineral) - Active
- 15 Marsh Lane, Hemingford Grey - Sand & Gravel Extraction (Mineral) - Inactive
- 16 Mepal (Sutton Gault) - Sand & Gravel Extraction (Mineral) - Active
- 17 Must Farm, Whittlesey - Clay & Shale (Mineral) - Active
- 18 Needingworth - Sand & Gravel Extraction (Mineral) - Active
- 19 Somersham - Sand & Gravel Extraction (Mineral) - Active
- 20 Plantation Quarry, Steeple Morden - Chalk Extraction (Mineral) - Active
- 21 Station Quarry, Steeple Morden - Chalk Extraction (Mineral) - Active
- 22 Gottenham/Landbeach - Sand & Gravel Extraction (Mineral) - Active
- 23 Langwood Farm West - Sand & Gravel Extraction (Mineral) - To commence
- 24 Block Fen, Mepal (Mick George Ltd) - Landfill - Inert (Waste) - Active
- 25 Buckden Landfill - Landfill - Non-Hazardous (Waste) - Active
- 26 Cow Lane, Godmanchester (SITA) - Landfill - Non-Hazardous (Waste) - Inactive
- 27 Cow Lane, Godmanchester (M. Dickerson) - Landfill - Inert (Waste) - To commence
- 28 Great Wilbraham Chalk Pit (LOC Holeworks) - Landfill - Inert (Waste) - Active
- 29 Grunty Fen - Landfill - Non-Hazardous (Waste) - Inactive
- 30 March - Landfill - Non-Hazardous (Waste) - Active
- 31 Kennett - Landfill - Non-Hazardous (Waste) - Restored
- 32 Meldreth - Landfill - Inert (Waste) - Restored
- 33 Mepal Airfield - Landfill - Inert (Waste) - Inactive
- 34 Milton - Landfill - Non-Hazardous (Waste) - Active
- 35 Somersham - Landfill - Non-Hazardous (Waste) - Restored
- 36 Warboys - Landfill - Non-Hazardous (Waste) - Active
- 37 Waterbeach - Landfill, Composting (Waste) - Active
- 38 Woolpack Farm - Landfill - Inert (Waste) - Active
- 39 Woolpack Farm, Hilton Road - Landfill - Inert (Waste) - Inactive
- 40 Waterbeach (Donarbon) - Landfill (Waste) - Active
- 41 Float Fish Farm - Sand and Gravel Extraction (Mineral) - Active

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Existing Development

The Green Infrastructure Strategy presents an opportunity to enhance the quality and multi-functionality of urban green spaces and the interpretation and enjoyment of the heritage of settlements. In particular, parks and intensively managed areas such as cemeteries and sports pitches present a significant opportunity to enhance urban biodiversity habitat through revised management regimes. Opportunities for urban green spaces to have enhanced educational benefit also exist, possibly through low key interpretation covering cultural heritage and biodiversity themes. Any proposals should be coordinated with existing plans and policies, such as Conservation Area Appraisals and Biodiversity Action Plans.

Green Infrastructure has the potential to enhance rural-urban landscapes which are often under conflicting pressure for new development, provision of recreational assets and acting as an attractive setting for new and existing development.

The value of a park or green space within urban areas increases when it is connected to other similar assets in close proximity as part of a network. The GI Strategy should seek to identify opportunities for linking existing green spaces through a strategic network of pedestrian routes and streetscapes.

New development

New residential, mixed use and to some extent commercial or industrial development both increases demand on existing GI and presents opportunities for new provision, creating a sense of place, providing opportunities for recreation, establishing links to urban centres and the rural hinterland, and off-setting carbon emissions.

Some of the Green Infrastructure projects identified in this Strategy are being developed in response to growth. New development presents an opportunity for the provision of new Green Infrastructure. Coordination of development Masterplans in line with recommendations and guidance in the GI Strategy will ensure new GI can deliver maximum benefit through planning, design and management.

The Green Infrastructure Strategy has a role in the coordination and delivery of development Masterplans. This will be essential to ensure that development delivers maximum benefit across the full range of GI objectives, whether

through on-site or off-site provision. For example, the provision of parks and open spaces to meet minimum standards set by local authorities, may benefit from being located alongside existing semi natural habitats such as woodland and river corridors to create a single large open space within the heart of new development. Green Infrastructure can also accommodate enhanced access networks and also provide the route for communications infrastructure, Sustainable Drainage Systems and utilities, adding significantly to the multi-functionality of green spaces.

A deficiency of open space has been identified in a number of areas across Cambridgeshire. GI provision as part of development Masterplans can help increase the amount of accessible green space, for both existing and future residents, whilst also seeking to improve access to the rural hinterland.

The scale of development planned in the county in the Strategy period will inevitably result in the loss of, and mitigation for, some landscape and environmental features. It is also expected that some development proposals will, for various reasons, not be able to meet on-site all of the necessary obligations in terms of GI-related features, therefore requiring some form of off-site mitigation. The combination of these increasing demands for off-site mitigation may create the opportunity to encourage the supply of GI projects in appropriate locations across the county to meet demand.

The mechanism for 'habitat/environmental banking' is one way in which off-site mitigation can be achieved. The concept is common in parts of the USA, and is being explored in the UK context by DEFRA and Natural England under the title 'biodiversity off-setting'³. This mechanism seeks to encourage the supply of GI mitigation projects through a financial incentive. This financial contribution is provided by those developments required to mitigate their impact. Whilst it is not thought possible to replicate all of the legal and financial mechanisms used elsewhere, it may be possible to use existing means to bring about the same outcomes. This could be investigated further as the Strategy progresses and as both potential demand and supply are quantified and located.

Growth and Green Infrastructure Opportunities.

Enhance the quality and multi-functionality of urban green spaces.

Enhance rural-urban landscapes which are often under conflicting pressure.

Identify opportunities for linking existing green spaces through a strategic network of pedestrian routes and streetscapes.

³ Defra, An introductory guide to valuing ecosystem services, 2007

New residential, mixed use and to some extent commercial or industrial development presents opportunities for new Green Infrastructure provision - creating a sense of place, providing opportunities for recreation, establishing links to urban centres and the rural hinterland, and off-setting carbon emissions.

Having a role in the coordination and delivery of development Masterplans - ensuring that developments deliver maximum benefit and multi-functionality across the full range of GI objectives, whether through on-site or off-site provision.

Increasing demands for off-site mitigation may create opportunities to encourage the supply of GI projects in appropriate locations across the county - including through the mechanism of 'habitat/environmental banking'.

Minerals and Landfill

The extraction industry provides continuing economic and social benefits and post-extraction restoration provides opportunities for landscape enhancement, biodiversity enhancement and provision of access and recreation opportunities.

In particular many mineral extraction sites are located within river valleys where sand and gravel can be worked. Restoration of such sites has the opportunity to restore traditional riparian features, such as water meadows and ponds, and strengthen habitat connectivity. There is a strong precedent for restoration of former sand and gravel extraction sites for GI benefit throughout the county, and notably along the River Great Ouse.

Some mineral extraction sites are also located in agricultural landscapes, such as the Block Fen, near Chatteris. Restoration of such sites typically provides opportunities to create new water bodies, which can be used for habitat enhancement, water storage and recreation and leisure activities.

Waste management provides an opportunity to create new GI provision. The Forest Research group⁴, funded by the Department of Communities and Local Government (CLG), has completed a 10 year research project that shows restoring landfill sites by turning them into green space such as woodland, parkland or farmland is achievable.

⁴ <http://www.forestresearch.gov.uk/>

Minerals and Landfill and Green Infrastructure Opportunities

Opportunities exist around landscape enhancement, biodiversity enhancement and provision of access and recreation opportunities through restoration of Mineral extraction sites to Green Infrastructure.

Opportunities exist around restoring landfill sites into Green Infrastructure such as woodland, parkland or farmland.

Cambridgeshire Green Infrastructure Strategy Appendix 5

Biodiversity

Contents

- 1 **Baseline information**
 - National policies and strategies
 - Regional and Local Policies and Strategies
 - Nature Conservation Designations
 - Natural Areas & Broad Habitat Types
 - Species Information
 - Biodiversity Partnership 50 year Vision Map
 - Wildlife Trust's Living Landscapes
 - Other Strategies, Schemes & Action Plans
- 2 **Spatial analysis**
- 3 **Green Infrastructure and Biodiversity Opportunities**

This section identifies the baseline datasets and relevant policies for the Biodiversity Theme, which is an important component of Green Infrastructure in Cambridgeshire. These are drawn together to identify the general and spatial issues that relate to this Theme. Conclusions are then made about how the issues can be mapped and overlaid to highlight the opportunities that exist for the Biodiversity Green Infrastructure Theme.

This map of Biodiversity opportunities was then combined with the other six Themes, as well as other important issues and assets in Cambridgeshire, to inform and develop the Strategic Network of Green Infrastructure.

Definition

Biodiversity is the term given to the variety of life on Earth, including wildlife and habitats, and the natural patterns formed as a result. The definition of biodiversity used in this strategy is taken from the Convention on Biological Diversity (CBD), signed in 1992:

"The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." - CBD Article 2. UNEP 1992

1 Baseline information and datasets, including relevant policies

National Policies and Strategies

Planning Policy Statements

A number of Planning Policy Statements, including PPS1 and PPS9, make reference to the importance of Green Infrastructure for the protection and enhancement of biodiversity and habitats. Also see Appendix 4 Planning and Growth for other Planning Policy Statements and guidance relating to Green Infrastructure.

Planning Policy Statement: Climate Change - Supplement to PPS 1 - this supplement to PPS1 sets out how planning should contribute to reducing emissions and stabilising climate change. In particular, it states that when selecting land for development planning authorities should take into account *"the contribution to be made from existing and new opportunities for open space and green infrastructure to urban cooling, sustainable drainage systems, and conserving and enhancing biodiversity"*.

Planning Policy Statement (PPS) 9: Biological and Geological Conservation - this highlights the role that functioning ecosystems can have in promoting sustainable development and contributing to rural renewal and urban renaissance.

The UK Government Sustainable Development Strategy, DEFRA, 2005

This report outlines the principles and priorities for helping to deliver a better quality of life through sustainable development. Although there is no specific reference to Green Infrastructure, central to the Sustainable Development Strategy is the need to respond to the challenges of climate change, protect natural resources and enhance the environment. Furthermore it highlights the importance of green space and biodiversity networks to standard of living and quality of life.

The EU Habitats Directive

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is based on the Natura 2000 network of protected sites and the strict system of species protection. The directive protects over 1,000 animals and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

Water Framework Directive

The Water Framework Directive (WFD) is European legislation which takes an approach to managing water known as River Basin Management Planning, which looks at the water within the wider ecosystem and takes into account the movement of water through the water cycle. The WFD will help to

improve and protect inland and coastal waters; drive wiser, sustainable use of water as a natural resource; and create better habitats for wildlife that live in and around water.

UK Biodiversity Action Plans (BAP)

The UK BAP is the UK Government's response to the Convention on Biological Diversity. The Convention called for the development and enforcement of national strategies and associated action plans to identify, conserve and protect existing biological diversity, and to enhance it wherever possible. The UKBAP describes the biological resources of the UK and provides detailed plans for conservation of these resources, at national and devolved levels. Action plans for the most threatened species and habitats have been set out to aid recovery, and reporting rounds show that the UKBAP has contributed to the UK's progress towards the significant reduction of biodiversity loss called for by the Convention.

Natural Environment and Rural Communities (NERC) Act 2006 Section 40

This Act relates to the duty to conserve biodiversity and includes biodiversity enhancement. This duty requires local authorities to have regard, where appropriate, to biodiversity across *all* their functions.

Tree Preservation Orders

Town and Country Planning Act 1990 and the subsequent Town and Country Planning (Trees) Regulations 1999 give Local Planning Authorities specific powers to protect certain trees by making tree preservation orders (TPOs). The purpose of a Tree Preservation Order (TPO) is to protect trees which make a significant contribution to their local surroundings. Special provisions also apply to trees within conservation areas designated by local planning authorities.

Hedgerow Regulations 1997

Following the widespread loss of hedgerows in the second half of the twentieth century, the government introduced the Hedgerow Regulations in 1997. These require a person to give the local planning authority six weeks notice of their intention to remove any hedge on or bordering agricultural land, forestry, commons, greens or nature reserves, stating their reasons. Hedges between domestic dwellings are not included.

If a hedge is judged to be 'important' by the necessary historical, landscape or biological criteria, the local authority may serve a *Hedgerow Retention Notice*, thereby protecting the hedge from removal.

Regional and Local Policies and Strategies

Our environment, our future: The Regional Environment Strategy for the East of England, ERRA and EEEF, 2003

This provides a summary of the current state of the environment, a description of the environmental challenges facing the region and a series of aims for responding to these challenges. There is no specific reference to

Green Infrastructure, however, the delivery and implementation of a Green Infrastructure Strategy will help deliver the following aims:

- Policy SA1: Accommodate population and economic growth whilst protecting and enhancing the environment;
- SA4: Reducing the vulnerability to the region to climate change;
- SA8: Promote the environmental economy;
- SA10: Maintain and enhance landscape and townscape character;
- SA11: Enhance biodiversity;
- SA12: Conserve and enhance the historic environment; and
- SA14: Increase the understanding and ownership of environmental issues.

Biodiversity Action Plans for Cambridgeshire and Peterborough

A strategy prepared for a local area aimed at conserving and enhancing biological diversity. The plans outline the necessary action for the next 10 years to preserve and enhance biodiversity in farmland, woodland, wetland, grassland and urban areas.

Woodland for life: The Regional Woodland Strategy for the East of England, EERA and the Forestry Commission, 2003

This provides a vision for the woodland in the East of England and sets out the benefits that trees and woodlands bring to the people who live and work in the region. The benefits of woodlands are discussed under key themes, including quality of life, spatial planning, economic development, renewable energy, education and learning and natural environment.

Cambridgeshire Vision: Countywide Sustainable Community Strategy 2007 - 2021, Cambridgeshire Together, 2007

This sets out the collective vision and priorities of partner organisations to ensure that public services meet the needs of the people of Cambridgeshire. It focuses on 5 key themes; growth, economic prosperity, environmental sustainability, equality and inclusion and safer and stronger communities. Although there is no specific reference to Green Infrastructure, the Cambridgeshire Vision states that new development needs *“to provide infrastructure that encourages physical activity such as walking and cycling and environments that support social networks, which have a positive effect on mental and physical health”*.

Cambridgeshire Local Area Agreement (LAA) 2008-2011

The LAA is the three year delivery plan for the Cambridgeshire Vision described above. The LAA establishes county-wide priority areas and targets, using indicators from the national indicator set. Those of relevance to Green Infrastructure include:

- NI 5 - Overall/general satisfaction with the local area;
- NI 188 - Adapting to climate change; and
- NI 197 - Improved local biodiversity.

Cambridge Local Plan, Adopted 2006 and the Cambridge City Council Nature Conservation Strategy 2006

Under the Planning and Compulsory Purchase Act 2004, Cambridge City Council is required to replace the Cambridge Local Plan 2006 with a Local

Development Framework (LDF), and work is progressing in this respect. However, until the documents comprising the LDF are prepared and their policies come into force, the Act makes provision for Councils to retain their Local Plan policies by application to the Secretary of State. Cambridge City Council has made this application and a number of policies remain in force. There are no policies relating directly to Green Infrastructure, however a number relate to the protection and enhancement of open space and nature conservation. These include:

- Policy 4/2 Protection of Open Space
- Policy 4/3 Safeguarding Features of Amenity or Nature Conservation Value
- Policy 4/6 Protection of Sites of Local Nature Conservation Importance

The Nature Conservation Strategy for the City was adopted in 2006 and is a material consideration in relevant planning applications.

East Cambridgeshire Core Strategy, Adopted 2009

In relation to Green Infrastructure, Policy CS6 seeks to protect and enhance the natural and built environment, and the local distinctiveness of East Cambridgeshire. The policy refers to Strategic Areas of Green Space Enhancement, where it will be particularly important to improve biodiversity and landscape value. These areas reflect the target areas for habitat creation in the Cambridgeshire and Peterborough Structure Plan (2003) and the priority areas for strategic Green Infrastructure creation identified in the First Green Infrastructure Strategy (2006).

Fenland District Core Strategy and Development Policies, Preferred Options 2, 2007

In relation to Green Infrastructure, the Core Strategy states that Fenland district has no strategic areas of public open space, and country parks should be promoted for March, Chatteris and Wisbech. In addition, there are aspirations to enhance and extend the existing network of rights of way, including the consideration of gaps in the network, and to protect and enhance landscape character and biodiversity value.

Huntingdonshire Core Strategy, Adopted 2009

The Spatial vision for Huntingdonshire states: *"In 2026 Huntingdonshire will have retained its distinct identity as a predominantly rural area with vibrant villages and market towns. Residents will be happier, healthier and more active and will enjoy an improved quality of life with improved access to a wider range of local jobs, housing, high quality services and facilities and green infrastructure"*. Policy CS9 specifically relates to Green Infrastructure stating that the Council will actively support Green Infrastructure projects which demonstrate increased access for quiet recreation and increased provision for biodiversity. Areas of Strategic Green Space Enhancement are identified as follows:

- The Great Fen area with links to the Peterborough Green Parks, Ramsey and Huntingdon;
- The Grafham Water / Brampton Woodlands area with links to Huntingdon and St Neots; and

- The Great Ouse Valley area with links between St Neots and Earith.

The policy continues to say that “within these areas and along the corridors coordinated action will be taken via consultation with statutory and other agencies to:

- safeguard existing and potential sites of nature conservation value, including ancient woodlands and historic landscape features;
- create new wildlife habitats to increase biodiversity;
- contribute to diversification of the local economy and tourist development through enhancement of existing and provision of new facilities;
- create appropriate access for a wide range of users to enjoy the countryside; and
- Contribute where possible to enhanced flood protection.

It is particularly important that resources are concentrated in these areas in the early part of the plan period in order to create opportunities for additional outdoor recreation facilities for the growth in population expected and the early creation of new green corridors.

In the longer term the enhancement of the following green corridors will provide additional corridors and connections with key areas across Cambridgeshire and Peterborough and enhancement of a coherent network:

- Grafham Water area with the Great Fen Project area;
- The Great Fen project area with the Hanson RSBP Wetland Project and South Peterborough Green Park;
- The Great Ouse and the East of St Neots area with the proposed Forest of South Cambridgeshire”. (Now known as the West Cambridgeshire Hundreds)

South Cambridgeshire Core Strategy - Adopted 2007 and Biodiversity Supplementary Planning Document - Adopted 2009

The Core Strategy sets out the vision and over-arching policies for South Cambridgeshire. With regard to the Green Infrastructure Policy ST/1 Green Belt states that regard should be given to the special character of Cambridge and its setting.

The Development Control Policies DPD (2007) includes a number of policies relevant to aspects of Green Infrastructure, in particular including:

- GB/5 Recreation in the Green Belt
- SF/9 Protection of Existing Recreation Areas
- SF/12 The River Cam
- NE/4 Landscape Character Areas
- NE/5 Countryside Enhancement Areas
- NE/6 Biodiversity
- NE/7 Sites of Biodiversity or Geological Importance
- CH/1 Historic Landscapes

The Biodiversity SPD expands on district-wide policies, ensuring that biodiversity is adequately protected and enhanced throughout the development process.

In relation to Green Infrastructure, the SPD identifies the role of Green Infrastructure in contributing to the network of wildlife corridors. The SPD also identifies 'Countryside Enhancement Areas' where significant projects, *such as the West Cambridgeshire Hundreds Project*, "will provide significant areas of land for both people and biodiversity, thus meeting the aim of green infrastructure provision".

Nature Conservation Designations

Many sites of nature conservation value in Cambridgeshire are protected through legislation on a statutory basis. Other sites have local policy protection due their local contribution to the landscape, historical, geological and/or ecological importance of the area. If these are included in a statutory planning policy document they gain protection on the basis of the policy applying to them.

International / European Sites

The most important sites for wildlife are those identified through international conventions and European Directives. These have statutory protection and many have more than one nature conservation designation. Five international (Ramsar) wildlife sites are found in Cambridgeshire (excluding Peterborough). A small number of European wildlife sites have also been designated within the county, comprising 2 Special Protection Areas and 6 Special Areas of Conservation (see Table 1). Examples include the Ouse and Nene Washes, Wicken Fen and Devil's Dyke.

When comparing Cambridgeshire (excluding Peterborough) to other counties within the East of England, the county supports more international / European sites than Hertfordshire, but significantly fewer sites than Norfolk and Suffolk (see Table 1).

International / European sites cover less than 2% of Cambridgeshire, which is much lower than the national average and significantly lower than Norfolk (see Table 2).

Sites of National Importance

Sites of Special Scientific Interest (SSSIs) are a representative suite of sites with statutory protection of national importance for their nature conservation, geological or geomorphologic interest. Some are also designated as sites of international importance. There are 87 SSSIs in Cambridgeshire (excluding Peterborough), which account for 2% of the total number of SSSIs in England. Cambridgeshire supports fewer SSSIs than Suffolk and Norfolk but more SSSIs than Hertfordshire (see Table 1).

SSSIs cover approximately 2.4% of Cambridgeshire (excluding Peterborough). This is significantly lower than the average across England and coverage

across Suffolk (approximately 8%) but greater than coverage of SSSIs across Hertfordshire (see Table 2).

Some of these sites are also designated National Nature Reserves (NNRs), to protect biodiversity, geodiversity, and provide opportunities for recreation and education. There are 6 NNRs in Cambridgeshire, which are as follows:

- Chippenham Fen
- Holme Fen
- Monk's Wood
- Wicken Fen
- Woodwalton Fen
- Upwood Meadows

Natural England have a Public Service Agreement (PSA) target for 95% of SSSI land to be in 'favourable' or 'recovering' condition by 2010. Nationally, this target has been met. However, only 62% of SSSI land in Cambridgeshire (including Peterborough) meets the required condition. This is significantly lower than other counties in the East of England, which have over 90% of their SSSI land in favourable / recovering condition (see Table 3).

Sites of Local Importance

The network of sites with local biodiversity interest contributes greatly to the quality of life and the well-being of local communities. Sites of local importance include:

- Local Nature Reserves (LNRs). LNRs are places for people and wildlife that have features of special wildlife interest. They are established by Local Authorities under the provisions of the National Parks and Access to the Countryside Act 1949 on land normally owned by a local authority. There are currently over 20 LNRs (see Figure 5.5) in Cambridgeshire, and their number is likely to increase. LNRs may also have more than one designation, for example County Wildlife Site.
- County Wildlife Sites (CWS). CWS are sites of wildlife value in a County context. These non-statutory sites have some protection through development plan policies. Sympathetic management by landowners and managers helps to ensure their wildlife interest is retained. There are 364 CWS in Cambridgeshire (excluding Peterborough) and many contain priority habitats and species. One of the County Wildlife Sites is designated as a Regionally Important Geological and Geomorphological Site (RIGS).
- In addition, City Wildlife Sites are designated by Cambridge City Council to protect sites of local importance. The criteria for their designation are set at a lower level than for CWS. There are 51 City Wildlife Sites in Cambridge.
- Protected Road Verges (PRVs). PRVs are stretches of road verge that have been selected for protection and special management because of their wildlife interest. Many contain the last remnants of important

habitats such as neutral or chalk grassland and provide a refuge to some scarce and rare species. There are 68 PRVs in Cambridgeshire, some of which are part of SSSIs or CWS.

Cambridgeshire (excluding Peterborough) supports only 1% of England's local wildlife sites. Cambridgeshire has less than half the number of local wildlife sites than Hertfordshire and less than a quarter of the sites in Suffolk (see Table 1).

Local wildlife sites cover less than 2% of Cambridgeshire (excluding Peterborough), which is less than the national average and other East of England counties (see Table 2).

The condition of Cambridgeshire local wildlife sites has continued to improve over the past few years. The percentage of sites in positive conservation management has increased from 38% in 2008 to 47% by March 2010, with 65% of sites expected to be in positive conservation management by March 2011.

The percentage of Cambridgeshire's local wildlife sites currently in positive conservation management is greater than the national average (41%) and neighbouring counties of Hertfordshire. Although Norfolk and Suffolk have higher percentages of sites in positive conservation management than Cambridgeshire (see Table 4).

Table 1: Number of Designated Sites situated within Cambridgeshire, surrounding counties and across England

| | Cambridgeshire (excluding Peterborough) ¹ | Hertfordshire ² | Norfolk ³ | Suffolk ⁴ | England ⁵ |
|--------------------------------------|--|----------------------------|----------------------|----------------------|-----------------------|
| Ramsar | 5 | 1 | 8 | 6 | 70 +3 proposed |
| Special Protection Areas | 2 | 1 | 7 | 7 | 83 +2 pSPAs |
| Special Areas of Conservation | 6 | 2 | 12 | 11 | 240 + 11 cSAC/pSAC |
| Sites of Special Scientific Interest | 87 | 43 | 166 | 149 | 4118 |
| National Nature Reserve | 6 | 1 | 20 | 9 | 224 |
| Local Nature Reserves | 21 | 33-38 | 28 | 36 | 1400 |
| Local Wildlife Sites | 415 | 1975 | 1277 | 924 | 38000 |

¹ Annual Monitoring Information for Cambridgeshire County Council - Reporting Year 2009/10 (Cambridgeshire and Peterborough Environmental Records Centre, Nov 2010); LNR – Our Natural Environment Report 2010 (CPBRC & Cambridgeshire & Peterborough Biological Partnership, 2010)

² Hertfordshire County Council, Dec 2010 (County Wildlife Site information taken from 2009)

³ Norfolk Biodiversity Information Service, Dec 2010; NNR - Natural England website (accessed 20 Dec 2010); LWS – NI 197 Report 2009/10, Norfolk County Council

⁴ Suffolk Biological Records Centre, March/April 2010; LWS – County Wildlife Sites, Suffolk Biological Records Centre, Dec 2010

⁵ Ramsar – JNCC, Aug 2007; SPA & SAC – JNCC, Aug 2010; NNR and LNR - Natural England website (accessed 16 Dec 2010); SSSI – Natural England, Dec 2010; LWS (including geological sites) – Natural England, Oct 2010

Table 2: Area (hectares) and % coverage of Designated Sites situated within Cambridgeshire, surrounding counties and across England

| | Cambs (exc. Peterborough) ⁶ | | Hertfordshire ⁷ | | Norfolk ⁸ | | Suffolk ⁹ | | England ¹⁰ | |
|--------------------------------------|--|---------------------------------------|----------------------------|--------|----------------------|--------|----------------------|--------|-----------------------|-------------------|
| | Area (ha) | % land | Area (ha) | % land | Area (ha) | % land | Area (ha) | % land | Area (ha) | % land |
| Ramsar | 3668 | 1.2% | 189 | 0.1% | 79420 | 14.4% | 8368 | 2.2% | 392696 | 3.0% |
| Special Protection Areas | 3093 | 1.0% | 189 | 0.1% | 105152 | 19.1% | 27404 | 7.1% | 745542 | 5.6% |
| Special Areas of Conservation | 1093 | 0.4% | 988 | 0.6% | 124654 | 22.7% | 6385 | 1.7% | 1013012 | 7.6% |
| Sites of Special Scientific Interest | 7259 | 2.4% | 2211 | 1.3% | | | 31326 | 8.1% | 1081777 | 8.1% |
| National Nature Reserve | 1004 | 0.3% | 237 | 0.1% | | | 2589 | 0.7% | 96663 | 0.7% |
| Local Nature Reserves | 167 | 0.1% | 1029 (based on 33 LNRs) | 0.6% | | | 463 | 0.1% | 37768 | 0.3% |
| Local Wildlife Sites | 5896 +268 km linear sites | 1.9% ⁺ (exc. linear sites) | 13815 | 8.4% | 14143 | 2.6% | 19688 | 5.1% | 500000 ⁺ | 3.8% ⁺ |
| Region ¹¹ | 305401 | - | 164306 | - | 549834 | - | 385359 | - | 13293767 | - |

⁶ Annual Monitoring Information for Cambridgeshire County Council - Reporting Year 2009/10 (Cambridgeshire and Peterborough Environmental Records Centre, Nov 2010); LNR – Our Natural Environment Report 2010 (CPBRC & Cambridgeshire & Peterborough Biological Partnership, 2010)

⁷ Hertfordshire County Council, Dec 2010 (County Wildlife Site information taken from 2009)

⁸ Norfolk County Council, Dec 2010; LWS – NI 197 Report 2009/10, Norfolk County Council

⁹ Suffolk Biological Records Centre, March/April 2010; LWS – County Wildlife Sites, Suffolk Biological Records Centre, Dec 2010

¹⁰ LWS (including geological sites) – Natural England, Oct 2010; Other sites – Natural England datasets for England (Version 1/11/10); % coverage – Natural England website (accessed 16 Dec 2010)

¹¹ Area measurement (realm boundary) for electoral and administrative areas have been created by the Office for National Statistics using Ordnance Survey [and Land & Property Services] material. © Crown Copyright. All rights reserved [Dec 2009]

Table 3: Percentage of SSSI land (SSSI units) in Cambridgeshire, surrounding counties and across England by November 2010¹²

| | Cambridgeshire (including Peterborough) | Hertfordshire | Norfolk | Suffolk | England |
|---|---|---------------|---------|---------|---------|
| Area favourable / unfavorable recovering (meeting PSA target) | 62.2% | 93.4% | 93.2% | 90.8% | 95.0% |
| Area unfavourable no change / unfavourable declining | 37.7% | 6.6% | 6.8% | 9.1% | 5.0% |
| Area destroyed / part destroyed | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% |

Table 4: Number of Local Wildlife Sites, including number in Positive Conservation Management (PCM), reported for National Indicator 197 within Cambridgeshire, surrounding counties and across England

| | Cambridgeshire (excluding Peterborough) ¹³ | Hertfordshire ¹⁴ | Norfolk ¹⁵ | Suffolk ¹⁶ | England ¹⁷ |
|--------------------------------|---|-----------------------------|-----------------------|-----------------------|-----------------------|
| Number of Local Wildlife Sites | 414 | 1760 | 1273 | 922 | 38000 |
| Number of Sites in PCM | 195 | 347 | 707 | 455 | - |
| % PCM | 47% (March 2010) | 20% (2010) | 56% (2009/10) | 49% (Nov 2010) | 41% (June 2010) |

Natural Areas (as defined by Natural England)

Natural Areas are sub-divisions of England, each with a characteristic association of wildlife and natural features. Each Natural Area has a unique identity resulting from the interaction of wildlife, landform, geology, land use and human impact.

Natural Areas have been formally defined as:

“...biogeographic zones which reflect the geological foundation, the natural systems and processes and the wildlife in different parts of England, and provide a framework for setting objectives for nature conservation”¹⁸.

¹² Natural England SSSI conditions report, compiled 1st November 2010

¹³ Annual Monitoring Information for Cambridgeshire County Council - Reporting Year 2009/10 (Cambridgeshire and Peterborough Environmental Records Centre, Nov 2010)

¹⁴ Significance of and support for Local Wildlife Sites in the East of England (East of England Wildlife Trusts, Aug 2010)

¹⁵ LWS – NI 197 Report 2009/10, Norfolk County Council

¹⁶ Suffolk County Council, Nov 2010

¹⁷ No. sites – Defra, Oct 2010; %PCM – Defra, June 2010

Cambridgeshire contains six Natural Areas. The two most extensive are the Fens and the West Anglian Plain which occupy much of the west and north of the county. The East Anglian Plain and East Anglian Chalk extend across the more elevated landscapes in the south of Cambridgeshire. Areas of the Breckland and Bedfordshire Greensand Ridge Natural Areas are also evident, albeit limited to small areas on the fringes of the county.

A summary of the key features for Natural Areas described in the East of England Natural Area Profile¹⁹ is presented below and their locations indicated in Figure 5.4. However, it should be noted that these descriptions are not a reflection of quality nor do they account for the influence of settlements and infrastructure.

The Fens

| Earth Heritage | Freshwater | Bog, Fen and Swamp | Lowland Grassland and Heath |
|--|---|--|---|
| <ul style="list-style-type: none"> ▪ Upper Jurassic clays and associated deposits with important fossil faunas. ▪ Upper Jurassic fossil-rich limestones including coral reefs and associated deposits at Upware. ▪ Complex sequences of Holocene deposits representing varied environments and recording recent sea level and climatic changes. | <ul style="list-style-type: none"> ▪ Large, slow-flowing rivers and drains. ▪ Ditches and drains with wet grasslands, some botanical significance, e.g. Ouse Washes. ▪ Ponds and borrow pits (some mesotrophic standing waters). ▪ Many flooded gravel pits (some mesotrophic standing waters). | <ul style="list-style-type: none"> ▪ Small, scattered areas of relict fen. ▪ Purple moor-grass and rush pastures. ▪ Small areas of marsh, fen-sedge swamp and reedbed habitats. | <ul style="list-style-type: none"> ▪ Wet neutral grassland including washlands and floodplain grazing marsh. ▪ Ditches and drains within wet grassland, some of botanical significance, e.g. Ouse Washes. ▪ Some improved neutral grassland. |

¹⁸ Biodiversity: The UK Steering Group Report, HMSO, 1995

¹⁹ English Nature, Natural Areas in the East of England Region, 1999

West Anglian Plain

| Earth Heritage | Woodland |
|--|---|
| <ul style="list-style-type: none"> • Formerly economically important ironstone deposits. • Middle Jurassic limestones and clays showing a great variety of environments. • Oxford Clay exposures in brickpits of importance for palaeontology and stratigraphy at the junction of the Oxford and Ampthill clays with rich faunas. • Fossil-rich limestones and clays at the junction of the Oxford and Ampthill clays with rich faunas. • Exposures of well known fossiliferous Cambridge Greensand (Cretaceous) with diverse faunas including reptile bones. • Quaternary glacial deposits. • Quaternary river terrace gravels with important fossil faunas. | <ul style="list-style-type: none"> • Lowland oak and mixed deciduous woods. • Numerous ancient coppice woods. |

East Anglian Plain

| Earth Heritage | Freshwater | Bog, Fen and Swamp | Woodland |
|---|---|---|---|
| <ul style="list-style-type: none"> • Late Cretaceous fossiliferous chalk. • Quaternary stratigraphy - includes glacial and interglacial deposits. • Quaternary river gravel deposits, including cold-climate mammal remains. | <ul style="list-style-type: none"> • Long stretches of slow-flowing rivers and drains. • Series of flooded gravel pits and reservoirs. • Small ponds and shallow lakes; many of which are eutrophic standing waters. | <ul style="list-style-type: none"> • Series of spring-fed valley fens in headwater rivers. • Some areas of purple moor grass and rush pastures. | <ul style="list-style-type: none"> • Numerous ancient lowland oak and mixed deciduous woods. • Hornbeam woods at northern edge of their range. • Ancient lowland wood pasture and parkland with veteran trees. |

East Anglian Chalk

| Freshwater | Lowland Grassland and Heath |
|--|---|
| <ul style="list-style-type: none"> • Chalk spring, ditch, stream and river habitats are significant for invertebrates and particular plant species. • Watercourses home to number of animals including otter, water vole and white-clawed crayfish. • Old pollarded crack and white willows significant feature of almost all riversides. | <ul style="list-style-type: none"> • Remnants of once extensive chalk grassland, notably on road-side verges and ancient linear earthworks. • Downland turf characterised by varied, low growing, fine leaved grasses and wild flowers. • Mosaic pattern of calcareous and acidic grasslands towards the Breckland Natural Area. • Mesotrophic grassland on unimproved soils along the fen edge and roadside verges. • Marshy grassland meadows on scatter of sites along the chalk spring line. |

Breckland

| Freshwater | Bog, Fen and Swamp | Lowland Grassland and Heath |
|--|--|--|
| <ul style="list-style-type: none"> • Network of chalk streams. • Unique series of aquifer-fed naturally fluctuating water bodies. • Some large gravel pits. • Extensive series of pingos²⁰. | <ul style="list-style-type: none"> • Spring-fed valleys fens in headwaters and tributaries of rivers. • Some reedbeds along riversides and on margin of lakes. | <ul style="list-style-type: none"> • Extensive areas of dry lowland heathland. • Significant areas of lowland calcareous grassland and lowland dry acid grassland. • Inland sand dunes with grassland vegetation. |

²⁰ A dome-shaped mound consisting of a layer of soil over a large core of ice, occurring in permafrost areas. Oxford English Dictionary 2010 [Oxford University Press](#)

Bedfordshire Greensand Ridge

| Farmland | Ancient woodland and parkland | Lowland Grassland and Heath | Wetland and wet woodland |
|---|--|--|---|
| <ul style="list-style-type: none"> • Hedgerows, mature trees, ponds, small watercourses and rough grassland (e.g. road verge and alongside tracks) • Farmland is home to a wide range of species, including farmland birds and rare arable weeds. | <ul style="list-style-type: none"> • Boulder clay woodland, characteristic of the clay wolds of Bedfordshire • Woodlands of acid, well drained soils are found in the Lower Greensands. • Plant communities typical of acid soils found in the woodland • Woodland supports a variety of rare fungus, as well as rare plants (e.g. Oxlip) are found in this habitat. • Old trees of ornamental parkland supports specialists of old, veteran trees (e.g. bats and deadwood invertebrates) | <ul style="list-style-type: none"> • Heathland established on outcrops • Remnants of acid grassland on free draining soils, notably at Maulden Heath and Woburn Park. • Mosaic of heathland and acid grassland, as well as bracken, gorse and broom | <ul style="list-style-type: none"> • Acidic waters from aquifers create complex of acidic mire, marsh and wet woodland • Marsh and fen on calcareous soils, including fen meadow remnants at 1 or 2 sites • Habitat supports rich assemblage of specialist flora and fauna, including sedges, lower plants and invertebrates |

Broad Habitat Types

No audit of the habitats present within Cambridgeshire has been completed but five broad habitat types have been identified by the Cambridgeshire and Peterborough Biodiversity Partnership as targets for protection and enhancement.²¹ An estimation of the extent of local Biodiversity Action Plan (BAP) grassland and woodland habitats across the county was produced as part of the Biodiversity Action Plan review in 2008/9. BAP grassland and woodland covers approximately 0.33% and 1.25% of Cambridgeshire (excluding Peterborough), respectively (see Table 5 below).

²¹ <http://www.cambridgeshire.gov.uk/environment/natureconservation/action/partnership/baps/>

Table 5: Estimates of Grassland and Woodland Biodiversity Action Plan Habitats in Cambridgeshire (excluding Peterborough)²²

| BAP habitat | Cambridgeshire (exc. Peterborough) | |
|----------------------------|------------------------------------|-----------------|
| | Area (hectares) | % of total area |
| Chalk/Limestone grassland | 640 | 0.21 |
| Neutral Grassland | 310 | 0.10 |
| Acid Grassland | 40 | 0.01 |
| Grassland total | 990 | 0.33 |
| Woodland | 2550 | 0.84 |
| Wet Woodland | 80 | 0.03 |
| Veteran trees and Parkland | 1180 | 0.39 |
| Woodland total | 3810 | 1.25 |

The five broad habitat areas identified are:-

Farmland

The farmed environment is the dominant land use in Cambridgeshire and as a result the futures of many species of plant and animal are inextricably linked to the way that farmland is managed.

Grasslands

Species-rich meadows and pastures are now very rare in the county due to more intensified agriculture and the loss of the land to development. Dry meadows and pastures are found on limestone and chalk outcrops, the Brecks and on neutral soils in the county. Many of the remaining grasslands of wildlife interest are now found on road verges and disused railways.

Wetlands

Rivers and wetlands have always been an important feature of Cambridgeshire. However, over the last fifty years, factors such as changing agricultural practices, water pollution, engineered flood defences and navigation structures and management have led to loss or decline of wetland species and habitats. For example the total area of wet grazing marsh has been drastically reduced by improved drainage, while water vole populations have suffered dramatic decreases with the introduction of mink and removal of suitable habitat areas. Cambridgeshire's washlands, originally created for flood defence, are now of international importance for birds, as well as for harbouring rare wetland plants.

Woodland

²² Cambridgeshire and Peterborough Biological Records Centre and Cambridgeshire and Peterborough Biodiversity Partnership (2010) *Our Natural Environment 2010*

Cambridgeshire is one of the least wooded areas in the UK. As such wooded habitats play a vital role in the county as important wildlife habitats and landscape features. The priority task is to conserve the surviving sites and ensure that they are appropriately managed. It is also important to increase the area of woodland cover in the county. There is an increasing awareness about the importance of very old trees and the role they play in wooded habitats, especially parklands. For example, the elm droves of East Cambridgeshire and Huntingdonshire are the only UK habitats for the White Spotted Pinion moth. Such habitats are now increasingly rare and efforts must be made to conserve such features.

Cities, Towns and Villages

Urban and peri-urban landscapes are also important for wildlife, providing a refuge for some of the species and habitats that are under pressure in rural areas. Urban and rural environments also host buildings and other structures (such as churchyards for lichens) which can be of importance to wildlife. Habitat creation on existing open space and also through development could increase the number of areas of wildlife friendly habitat.

Species Information

Many species, such as Large Copper Butterfly, have already been lost from Cambridgeshire and some of those that remain are declining, such as farmland birds. The county is also a national stronghold for some rare species, such as White-spotted Pinion moth, which underwent rapid decline as a result of Dutch elm disease during the 1970s. However, there are some success stories where species decline has been reversed, for example Otter.

Farmland Birds

There has been a significant decline in farmland bird populations in the last 25 years across the UK and Cambridgeshire. This is the result of a complex interplay of changes in the agricultural landscape, intensification of agricultural practices and growth of development and associated infrastructure, combined with climate change and changing migration patterns. Environmental Stewardship Schemes such as higher Level Stewardship (HLS)²³ provide funding to farmers and other land managers in England to deliver effective environmental management that will help to reverse this decline.

A number of farmland birds, including Skylark and Yellow Wagtail, have been listed as UK priority species for conservation (UK Biodiversity Action Plan) and

²³ HLS offers more specialist management to ensure the recovery of the most vulnerable range-restricted farmland birds

included within the red list of the Birds of Conservation Concern in UK²⁴ due to the severity of their population decline.

For example, the Skylark, a resident of the farmed landscape, has seen its population decrease nationally by 17% and regionally by 26%. The population of Yellow Wagtail, a summer migrant to the UK, has decreased by 41% regionally and 48% nationally.²⁵

Otter

The Otter is listed as a UK priority species for conservation (UK Biodiversity Action Plan) and local Biodiversity Action Plan species. The Otter was formerly widespread throughout the UK but underwent rapid decline in numbers in the 1950s to 1970s. However, there are clear signs that the Otter is recovering within Cambridgeshire.

Surveys of bridge sites in Cambridgeshire have found an expansion in the Otter population since 1992. Sites showing evidence of usage by Otters have increased from 1.1% in 1992 to 26.3% in 2007. The Cam and Great Ouse appear to have the best Otter populations in the local area.²⁶ The increase in Otter populations is reflected both within the Anglian region and nationally (see Table 5).

The recovery of the Otter population is attributed to the ban of pesticides linked to Otter extinctions (1960s-70s), legal protection for Otter (1978) and significant improvements in water quality since the 1970s.

Table 6: Percentage of sites showing evidence of Otters during the Environment Agency's 5 monitoring surveys for Anglian region and across England²⁷

| Survey date | 1977-79 | 1984-86 | 1991-94 | 2002-02 | 2009-10 |
|----------------|---------|---------|---------|---------|---------|
| Anglian region | 3% | 1% | 8% | 27% | 56% |
| England | 6% | 10% | 23% | 36% | 59% |

White-spotted Pinion Moth

The White-spotted Pinion moth is a UK priority species for conservation (UK Biodiversity Action Plan). Nationally, the moth has seen a 90% decline in its UK population and contraction of its range to Cambridgeshire, Bedfordshire and

²⁴ Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 102, pp296–341.

²⁵ Cambridgeshire and Peterborough Biological Records Centre and Cambridgeshire and Peterborough Biodiversity Partnership (2010) *Our Natural Environment 2010*

²⁶ Cambridgeshire and Peterborough Biological Records Centre and Cambridgeshire and Peterborough Biodiversity Partnership (2010) *Our Natural Environment 2010*

²⁷ Environment Agency (2010) *Fifth Otter Survey of England 2009-10 – Full Technical Report*. Environment Agency, Bristol

Essex.²⁸ However, Cambridgeshire is the national stronghold for the White-spotted Pinion moth, with the population considered to be stable.²⁹

The national decline of the White-spotted Pinion moth is most likely due to the large-scale loss of elms (larval food plant) as a result of Dutch Elm disease. Small areas of mature elm trees have survived within Cambridgeshire, which has contributed to the survival of this species within the county. The long-term survival of this species will depend on the retention of, and planting of, elms resilient to Dutch Elm Disease.

Biodiversity Partnership 50 Year Vision Map³⁰

The Biodiversity Partnership for Cambridgeshire and Peterborough has produced a 50 year wildlife vision to show how they hope the county will look in 2050. This groundbreaking and bold vision was the first of its kind in Britain.

The 50 Year Vision Map aims to show what members of the biodiversity partnership in the county are working towards and has had input from organisations such as Natural England. The map seeks to identify where habitat fragmentation can be reversed and where opportunities to link habitats exist to allow species to move in response to climate change at a broad scale. The Vision identifies the following four targets for habitat creation:

- Chalk and Limestone Grassland.
- Wetland habitats including Meadows.
- Acid Grassland and Heath.
- Woodlands and Hedgerows.

The Wildlife Trust's Living Landscapes

In response to the threat that climate change represents to plants and animals, The Wildlife Trust published in 2009 '*A living landscape: A call to restore the UK's battered ecosystems, for wildlife and people*'.³¹ This report captures a new and ambitious approach to conservation and enhancement of landscapes and ecosystems.

The Wildlife Trust is identifying key areas to protect for wildlife by enlarging, improving and joining them up. There are currently over 100 Living Landscapes schemes around the U.K. Five major schemes have been identified within

²⁸ Cambridgeshire and Peterborough Biodiversity Partnership (2010) Update 2010 newsletter

²⁹ Personal communication with Sharon Hearle, Butterfly Conservation (Dec, 2010)

³⁰http://www.cambridgeshire.gov.uk/environment/natureconservation/action/partnership/publications/vision_map.htm

³¹ <http://www.wildlifetrusts.org/index.php?section=environment:livinglandscapes>

Cambridgeshire. Living Landscapes projects in and around Cambridgeshire are illustrated on figure 5.6. A brief description of the Cambridgeshire schemes follows:

The West Cambridgeshire Hundreds Living Landscape Scheme

This aims to enhance biodiversity through the better management, expansion and linkage of habitats, concentrating on the ancient woodlands and hedgerow network across the area. It aims to do this by working in partnership with local landowners to identify opportunities for environmental enhancements and co-ordinating action across property boundaries to increase landscape connectivity over a large area and to accomplish greater success than could be realised by landowners working independently. It is a joint project between local landowners, the Wildlife Trust, Woodland Trust, National Trust, Forestry Commission, Natural England and the Farming and Wildlife Advisory Group (FWAG).

The Gog Magogs Living Landscape Scheme

This aims to create an inter-connected network of species-rich chalk grassland and other habitats south of Cambridge and to create a large and accessible Green Infrastructure resource for the expanding population of Cambridge. It will work through a mixture of land acquisition to expand existing nature reserves and working with farmers to identify opportunities for habitat linkages and promoting agri-environment schemes to secure these enhancements. This is being promoted by a partnership involving the Wildlife Trust, Cambridge Past, Present and Future, and the Magog Trust.

The Ouse Valley Living Landscape Scheme

This aims to create a network of species-rich flood meadows, floodplain grazing marsh and wet woodland along the Ouse Valley from St Neots to the Ouse Washes. The main approaches are through the expansion and management of existing nature reserves, targeted advice to owners of County Wildlife Sites, seed harvesting of species-rich meadows to aid the restoration of improved meadows and the creation of wet grassland for breeding and wintering water birds. This is a partnership project between the Wildlife Trust, Huntingdonshire District Council, FWAG (Farming and Wildlife Advisory Group), Forestry Commission and the Environment Agency.

The Great Fen Living Landscapes Scheme

This will restore 3700 ha of fenland habitat between Huntingdon and Peterborough, by connecting two vitally important existing National Nature Reserves, Holme Fen and Woodwalton Fen. This will provide a haven for wildlife and create a massive green space for people, opening new opportunities for business, education and recreation. The project is a

partnership between the Environment Agency, Huntingdonshire District Council, Middle Level Commissioners³², Natural England and the Wildlife Trust.

Nene Valley Living Landscapes Scheme

In the next 20 years, The Wildlife Trust's plan for the Nene Valley is, initially, to buffer and extend existing reserves and, eventually, to link them together through habitat restoration and creation. In this process, facilities for visitors will be improved and environmental education and outdoor learning will support the growth of healthy, environmentally aware communities. In addition to acquiring land, the Wildlife Trust will work with farmers and landowners to support more wildlife friendly land use and with local authorities, development agencies and developers to achieve a valley with naturally functioning interlinked wetlands, rich in wildlife for the enjoyment of everyone. The Wildlife Trust has started to develop a joint initiative with Northamptonshire and Cambridgeshire in partnership with the Environment Agency and Nene Park Trust.

Other Strategies, Schemes and Action Plans

Defra Strategy for England's Trees, Woods and Forests 2007

The Government's Strategy for England Trees, Woods and Forests highlights the contribution that trees make to social, environmental and economic objectives today and sets out a vision for their future role. The goal is that by 2020 more woods will be brought into sustainable woodland management supplying raw materials for use in construction and for woodfuel, and there will be a healthier landscape for wildlife and an increase in people visiting woodlands. The Strategy covers the full spectrum - from extensive forests to street trees and hedgerows.

English Woodland Grant Scheme (EWGS)

The English Woodland Grant Scheme (EWGS) provides grant support for landowners wanting to create new woodland and carry out sustainable woodland management, particularly where it protects and enhances the woodland's environmental or social value (<http://www.forestry.gov.uk/ewgs>). Target areas are identified (see figure 5.3).

Cambridgeshire Biodiversity Action Plans (BAPS), mostly updated in 2009

³² The Middle Level Commissioners are a statutory corporation created under the Middle Level Acts 1810-74 and operating also under the Land Drainage Act 1991, the Flood and Water Management Act 2010 and the Nene Navigation Act 1753. The Commissioners' primary functions comprise the provision of flood defence and water level management to the Middle Level area, and as navigation authority for the navigable waters of the Middle Level system. The Commissioners have also certain conservation duties to fulfill when undertaking their functions. The Middle Level Commissioners consist of representatives from both the agricultural and non-agricultural sectors. Occupiers of agricultural property receive a rate demand direct from the Commissioners.

Cambridgeshire is covered by 42 BAPS, identifying more than 400 individual actions to enhance biodiversity across the County in the five broad habitat types, identified by the Cambridgeshire and Peterborough Biodiversity Partnership,.

– *Farmland (6 BAPs)*

- Actions for Farmland include Arable land, Arable field margins, Hedgerows, Skylark, Grey partridge and Brown hare
 - *Grassland (5 BAPs)*
- Actions for dry grasslands include neutral, acid and chalk grassland, grassland, Stone curlew and Pasque flower
 - *Wetlands (15 BAPs)*
- Actions for Wetlands include Reedbeds, Ponds-Lakes and Reservoirs, Fenland Drainage Ditches, Fens, Rivers and Streams and Floodplain Grazing Marsh, Mineral Restoration Sites, Water Vole, Otter, Bittern, White-clawed Crayfish, Ribbon-leaved Water Plantain, Desmoulin's Whorl Snail, Glutinous Snail, Shining Ram's Horn Snail
 - *Woodland (6 BAPs)*
- Actions for Woodland include Wet woodland, Woodland, Veteran trees and parkland, Traditional orchards, Black hairstreak butterfly, Dormouse
 - *Cities, Towns and Villages (10 BAPs)*
- Actions for Urban Areas include Urban Umbrella BAP, Allotments, Burial Grounds, Domestic Gardens, Managed Greenspaces, Brownfield sites and built environment, Urban Forest, Great crested newt, Pipistrelle bat and Song thrush

2 Spatial analysis

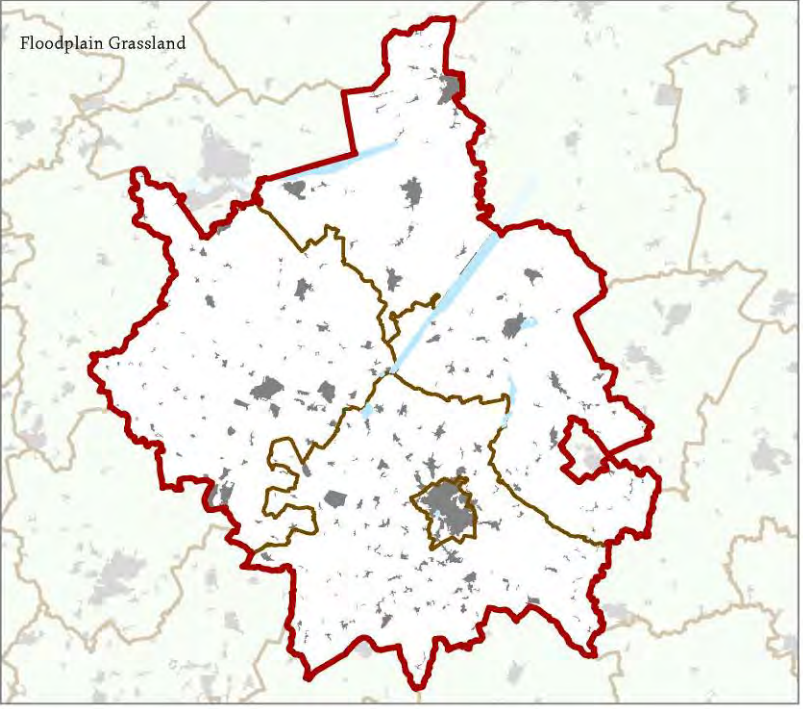
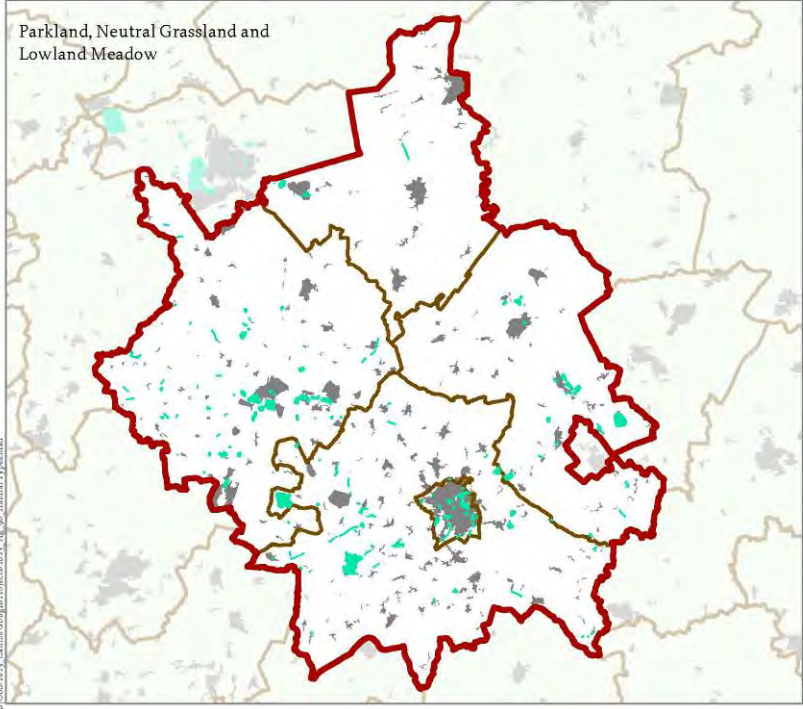
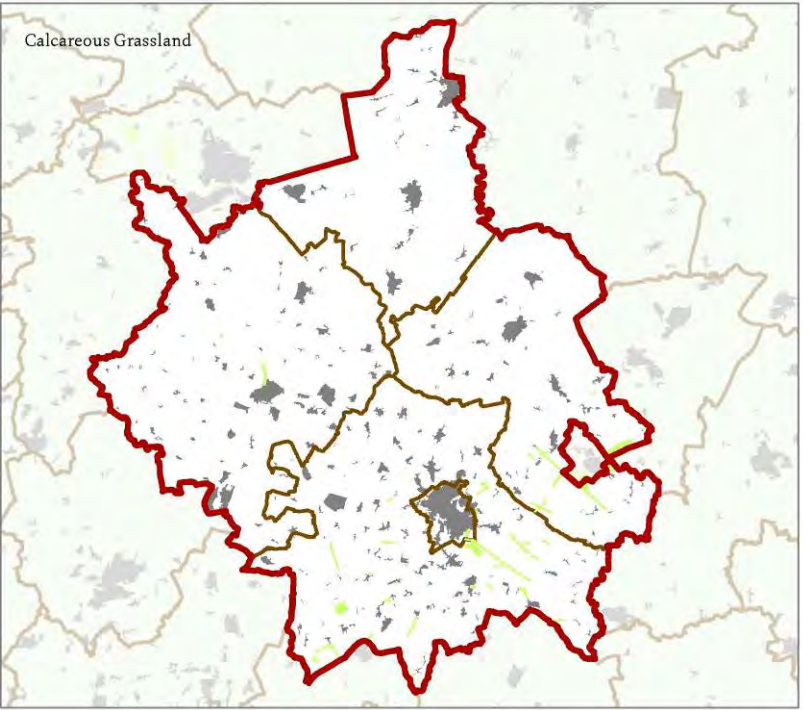
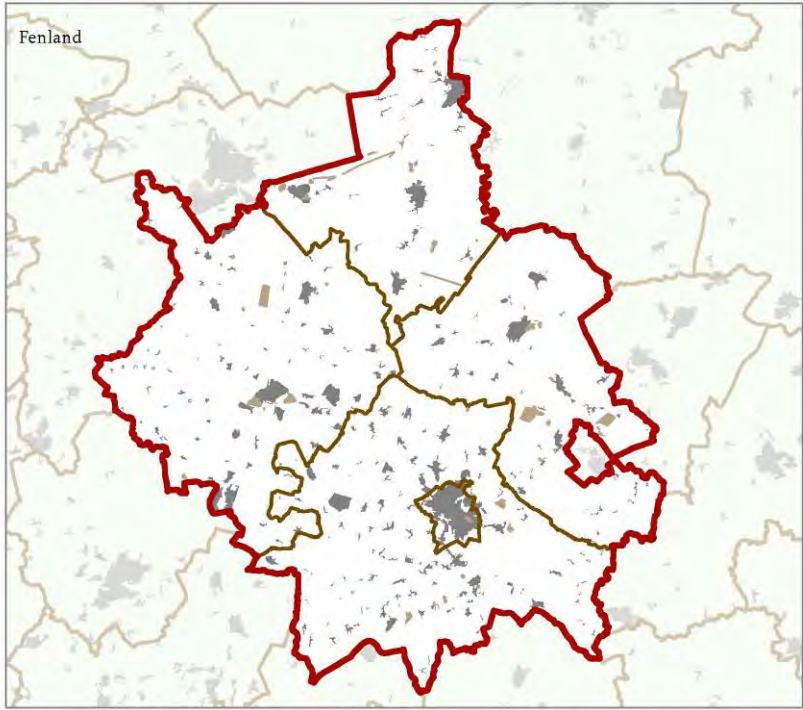
The Biodiversity Theme map was developed by taking into account the decline in biodiversity and pressures on habitats and species in Cambridgeshire, and the following baseline maps and information.






Principle Habitat Types: Figures 5.1 and 5.2 illustrate the distribution of Cambridgeshire's principal habitat types, which are based on existing designated sites and their principle habitat type. These highlight where there

are clusters or groups of similar habitats, which can be protected and expanded, or new habitats can be created in the gaps. The habitat types are:

- Open Water and Drainage ditches
- Woodland and Trees
- Wet Woodland and Trees
- Hedges and Farmland
- Fenland
- Calcareous Grassland
- Parkland/Neutral Grassland and Lowland Meadow
- Floodplain Grassland

Figure 5.1 & 5.2 Principle habitat types (Next page)



- LEGEND
-  Study Area Boundary
 - Principal Habitat Types**
 -  Fenland
 -  Calcareous Grassland
 -  Parkland, Neutral Grassland and Lowland Meadow
 -  Floodplain Grassland



REV. DESCRIPTION

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PROJECT TITLE
Cambridgeshire Green Infrastructure Review and Second Edition

DRAWING TITLE
Principal Habitat Types (2)

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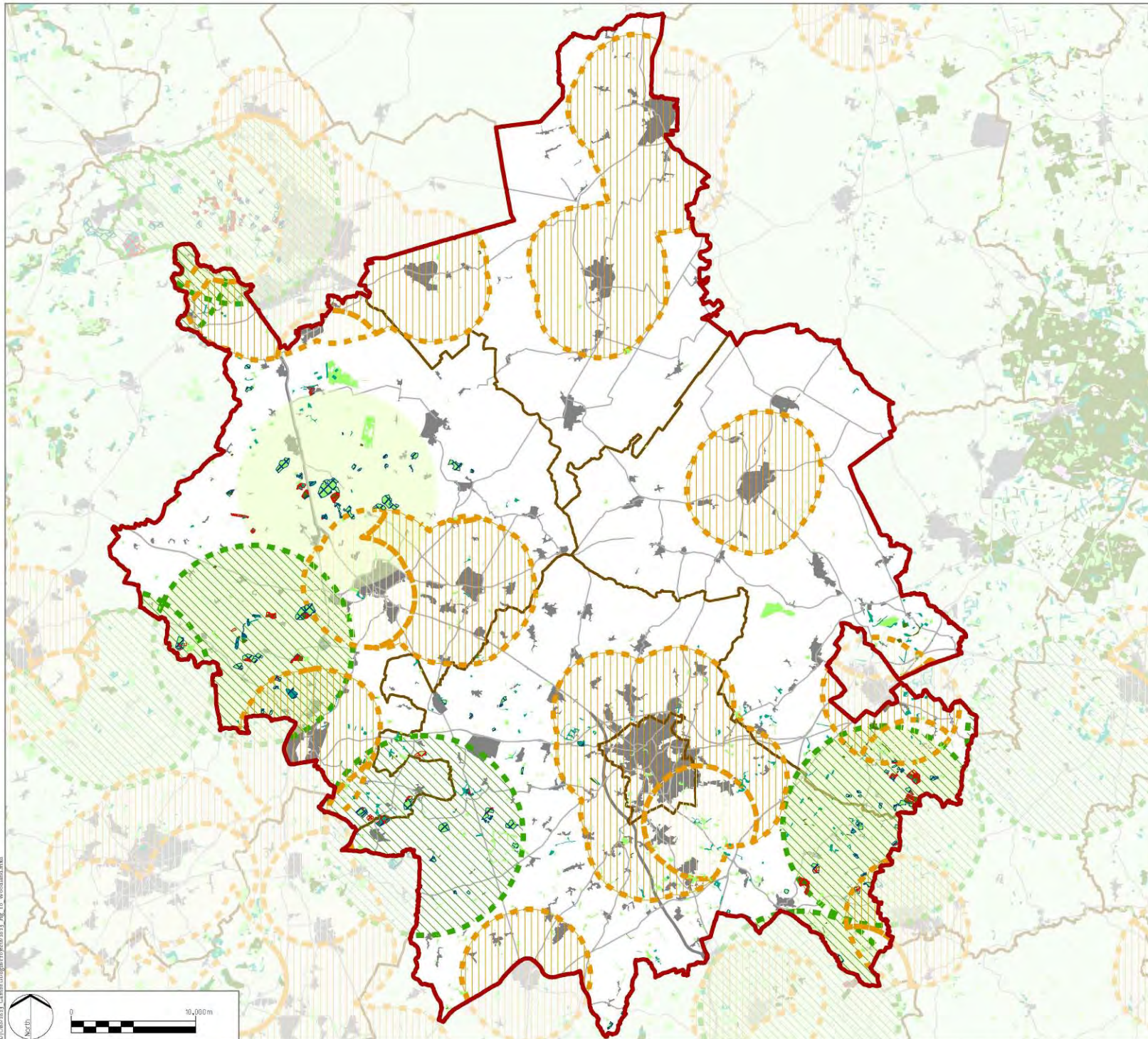
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Woodland/Ancient Woodland and English Woodland Grant Scheme³³ (EWGS)

Target Areas/Priority Areas: The below map shows existing areas of woodland and ancient woodland; and target areas for woodland creation through the EWGS. Ancient woodlands are extremely important for nature conservation because the well developed plant and animal populations they support cannot be re-created in new woodlands. They provide rich habitat and support species such as Oxlip, Bluebell, Wood Anemone, Yellow Archangel, Herb Paris and Early Purple Orchid. Rides and transition habitat on the edges of woodlands are also important, when appropriately managed.

Figure 5.3 Woodland/Ancient Woodland and EWGS Target Areas/Priority Areas (Next page)

³³ The English Woodland Grant Scheme (EWGS) provides grant support for landowners wanting to create new woodland and carry out sustainable woodland management, particularly where it protects and enhances the woodland's environmental or social value. <http://www.forestry.gov.uk/ewgs>



LEGEND

- Study Area Boundary
- Simplified National Inventory of Woodland Types (NIWT)**
- Broadleaved Woodland*
- Coniferous Woodland
- Mixed Woodland
- Felled Woodland and Ground Prepared for Plantation

* Includes areas identified as Coppice, Coppice with Standards, Shrub and Young Trees.

Ancient Woodland

- Ancient Semi-Natural Woodland
- Plantation on Ancient Woodland Site

Ancient Woodland Target Areas

- Expand
- Restore

Quality of Place Priority Areas

- High
- Other

| REV. | DESCRIPTION | APP. D |
|------|-------------|--------|
|------|-------------|--------|

LDĀ DESIGN

PROJECT TITLE
 Cambridgeshire Green Infrastructure Review and Second Edition

DRAWING TITLE
 Distribution of Woodland/Ancient Woodland and EWGS Target Areas/Priority Areas

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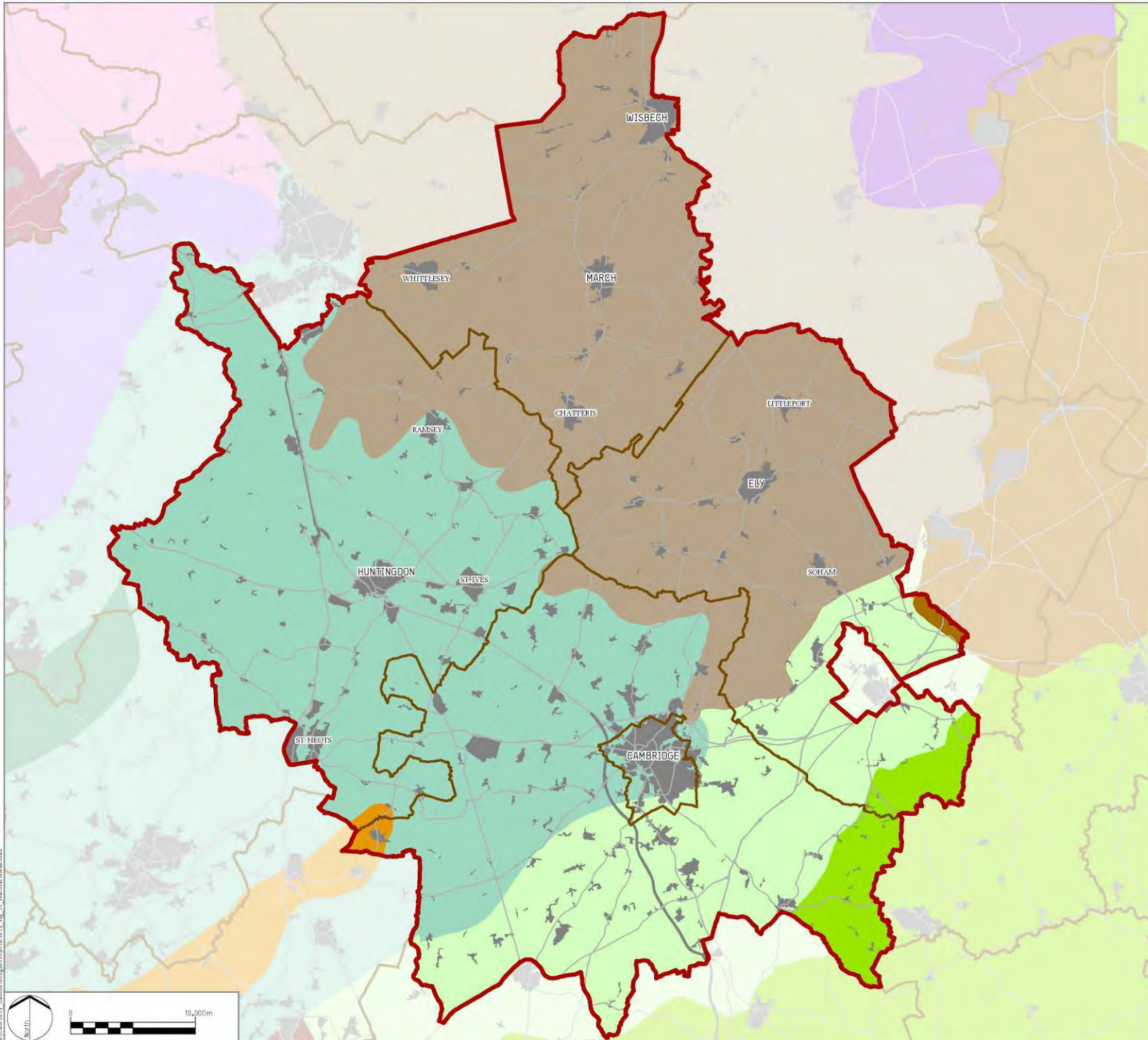
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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Natural England, Forestry Commission.

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Natural Areas: This map illustrates the extent of different Natural Areas in the County. Natural Areas influence the different habitats that exist within them and so they provide a broader context for the range and distribution of habitats across Cambridgeshire.

Figure 5.4 Natural Areas (Next page)



LEGEND

- Study Area Boundary
- Natural Areas
- The Fens
- West Anglian Plain
- Bedfordshire Greensand Ridge
- East Anglian Chalk
- East Anglian Plain
- Breckland

REV. DESCRIPTION

LDĀ DESIGN

PROJECT TITLE

Cambridgeshire Green Infrastructure Review and Second Edition

DRAWING TITLE

Natural Areas in Cambridgeshire

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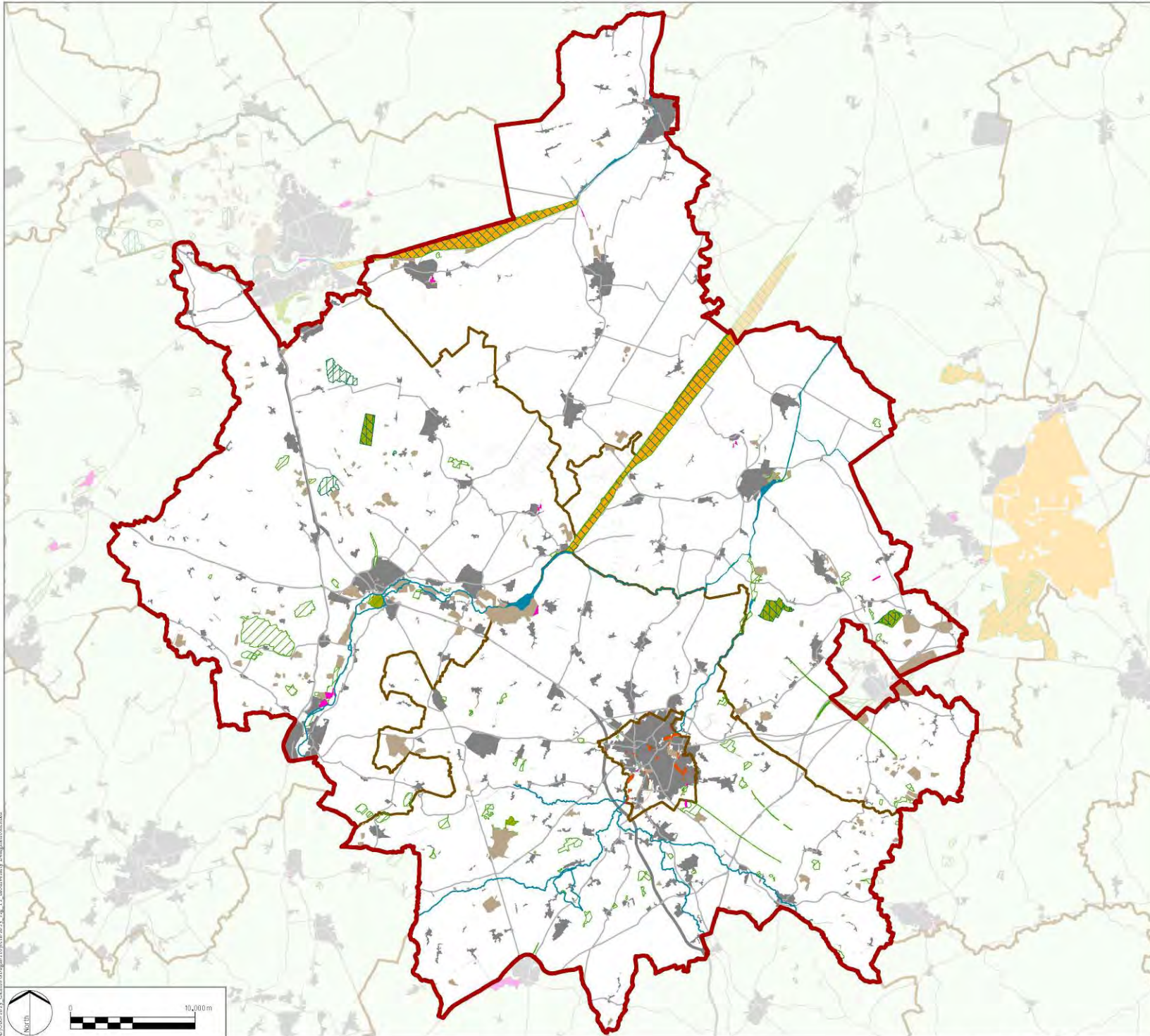
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

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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data &

Nature Conservation Designations: This map illustrates statutory and non-statutory (such as County Wildlife Sites) designated sites. These sites are internationally, nationally and locally important for their habitats and species. Designated sites are protected under law and are often publicly accessible and have wider educational benefits. As such, they form a key component of Green Infrastructure in Cambridgeshire.

Figure 5.5 Nature conservation designations (Next page)



- LEGEND**
-  Study Area Boundary
 - International/ European Designations**
 -  RAMSAR Site
 -  Special Area of Conservation (SAC)
 -  Special Protection Area (SPA)
 - National Designations**
 -  Site of Special Scientific Interest (SSSI)
 - Local Designations**
 -  County Wildlife Site (CWS)
 -  River County Wildlife Site (RCWS)
 -  Local Nature Reserve (LNR)
 -  City Wildlife Site (Cambridge Only)

Note: Data correct to Summer 2009. Due to scale of mapping, data shown is for illustrative purposes only.

For details, reference should be made to the relevant Local Planning Authority Local Wildlife Trust or Natural England for up-to-date information.

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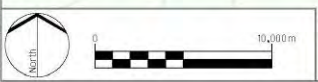
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Nature Conservation Designations

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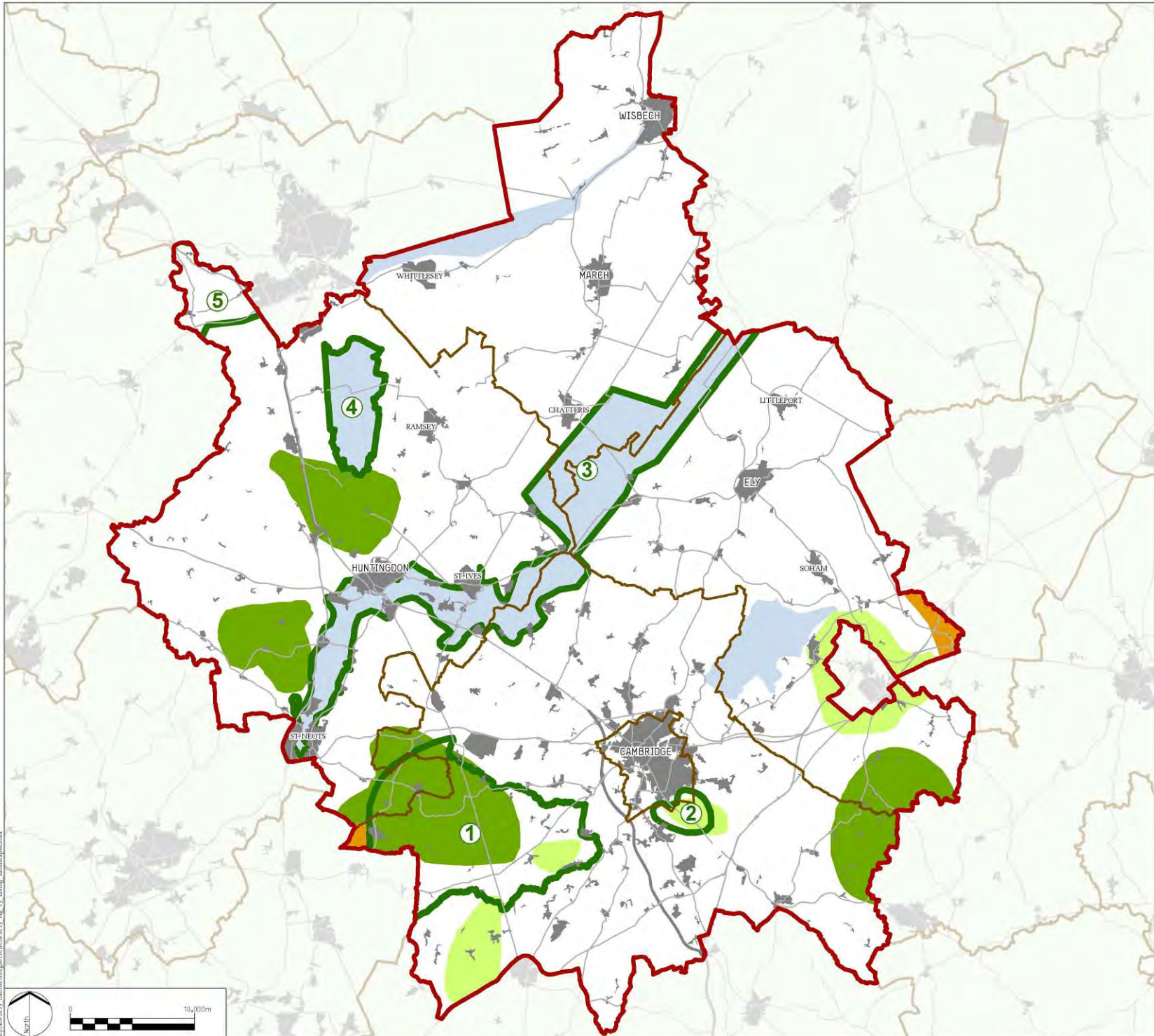
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Wildlife Trust's Living Landscapes Projects and Cambridgeshire and Peterborough Biodiversity Partnership's 50 Year Vision Areas: The Cambridgeshire and Peterborough Biodiversity Partnership has identified areas for large-scale habitat creation to support Biodiversity Action Plans (BAP) for habitats and species. These reflect in part the location of existing habitats. The Wildlife Trust has identified similar areas called 'living landscapes'. These show where large-scale habitat creation would be best located, based on the existing habitats in Cambridgeshire. This map illustrates extracts from the Wildlife Trust's Living Landscapes Projects and Biodiversity Partnership's 50 Year Vision plan.

Figure 5.6 Wildlife Trust's Living Landscapes projects and Biodiversity Partnership's 50 Year Vision (Next page)



LEGEND

- Study Area Boundary
- Biodiversity Partnership's 50 Year Vision Target Habitats
 - Chalk and Limestone Grassland
 - Habitats Including Meadows
 - Acid Grassland and Heath
 - Woodlands and Hedgerows
- Wildlife Trust Living Landscapes (within Cambridgeshire)
 - 1. West Cambridgeshire Hundreds
 - 2. Gog Magogs
 - 3. Ouse Valley
 - 4. Great Fen
 - 5. Nene Valley

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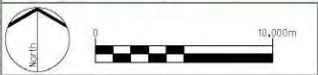
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DRAWING TITLE
 Wildlife Trust's Living Landscapes Projects and Biodiversity Partnership's 50 Year Vision

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The biodiversity theme was developed by analysing these key baseline maps to identify where larger areas of particular habitats, or clusters of smaller habitats, existed. A buffer zone was then drawn around each area to form 'reservoirs' or opportunities for strategic investment in habitat protection, enhancement and creation. When compared to the Biodiversity Partnership's 50 Year Vision Target Areas for biodiversity enhancement, there is a strong overlap between the areas identified.

The biodiversity reservoirs identified by this process are:-

- ***Woodland, Farmland and Hedgerows Habitat Reservoirs*** - eight Reservoirs have been identified:-
 - Alconbury and Sawtry
 - Chippenham and Fordham
 - Longstowe, Wimpole and Great Eversden
 - Hayley and Hatley
 - Gamlingay and Gransden
 - Croxton and Eltisley
 - Stetchworth and Kirtling
 - Grafham Water Fringe

These largely occupy the southern and western portion of the county, where woodlands are a characteristic feature of the landscape, and where the majority of the county's Ancient Woodland sites are located.

A particularly noticeable cluster has been identified across the West Anglian Plain centered on the clay hills and ridges between Cambridge and St Neots. Here the most ecologically important woodlands are largely ancient in origin. Indeed, several are nationally renowned, such as Hayley Wood which has been the subject of extensive study³⁴.

Whilst many of the woodlands in the Habitat Reservoirs are influenced by the underlying boulder clay geology, the influence of acidic soils is also evident, albeit very locally. For example to the west of Gamlingay, acidic soils influence the tree species and ground flora present.

- ***Parkland, Neutral Grassland and Lowland Meadow Habitat Reservoirs*** - eight Reservoirs have been identified:
 - Ouse Valley, Huntingdon and Brampton

³⁴Oliver Rackham, *Hayley Wood its History and Ecology*, Cambridgeshire Wildlife Trust, 1990

- Ouse Valley - St Ives and Hemingford
- Wimpole Hall Park
- Soham Commons
- Cambridge Commons, Southern Fringe and Cam Meadows
- Croxton Park
- Kingston and Bourn
- Caldecote

Areas of parkland and remnant species rich neutral grassland associated with verges and dismantled rail lines are notable nature conservation features across the claylands of the West Anglian Plain. Indeed, public rights of way often preserve strips of species-rich grassland. Further grasslands are located on the commons fringing Soham in the east of the county and often form an important component of many ancient woodland rides.

Several sites are currently designated, largely on account of the neutral grassland indicator species present such as Cowslip, Green-winged Orchid, Pepper Saxifrage or Yellow Rattle, or Great Burnet, Marsh Marigold or Ragged Robin which are found in the floodplain meadows. This Reservoir is also important because of the various other habitat features they support including veteran trees, ditches and wetland areas. Veteran trees are particularly valued features for their micro habitats and the invertebrates they support.

- *Calcareous Grassland Habitat Reservoirs* - up until relatively recently, botanically rich calcareous grasslands would have been a more common feature across the rolling chalk hills in the south of the county which were created and maintained through low intensity sheep farming well into the nineteenth century.

However, intensive agricultural regimes and decades of improvement for arable farming have reduced the remaining resource to a relatively small number of fragmented sites in well protected locations, roadside verges and former quarries. Six small clusters have been identified:

- Litlington and Morden
- Gog Magog Hills and Roman Road
- Fleam Dyke and Chilly Hill
- Devil's Ditch and Newmarket Heath
- Limekilns

- Bassingbourn Barracks
- **Floodplain Grassland, Open Water and Wet Woodland Habitat Reservoirs** - the four Habitat Reservoirs are:
 - Grafham Water
 - River Cam
 - Nene Washes
 - Ouse Valley and Washes

Rivers, streams, drainage ditches and open water areas such as Grafham Reservoir and associated wetland habitats such as wet woodland and floodplain grassland are significant and important habitat resources within the county. Of particular significance are the main river channels of the Cam, Nene and Ouse, each flowing in a north easterly direction towards the Wash where they meet the North Sea.

Several of Cambridgeshire's most significant nature conservation designations are found here, including Special Protected Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Ramsar sites. The Ouse and Nene Washes attract large flocks of over wintering birds. Artificial wetlands and water bodies, such as Grafham Water which was created in the mid 1960's, and restored sand and gravel pits such as those found along the Ouse, are also important.

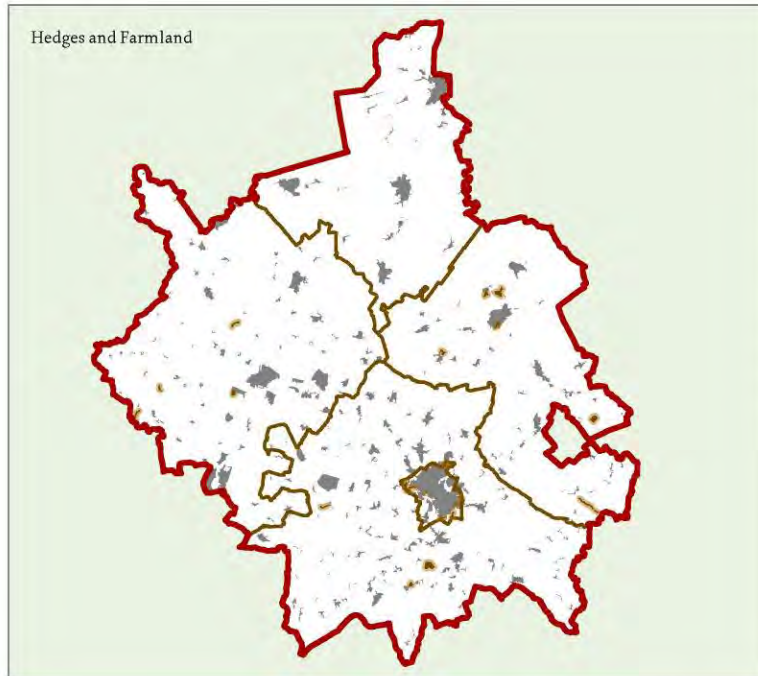
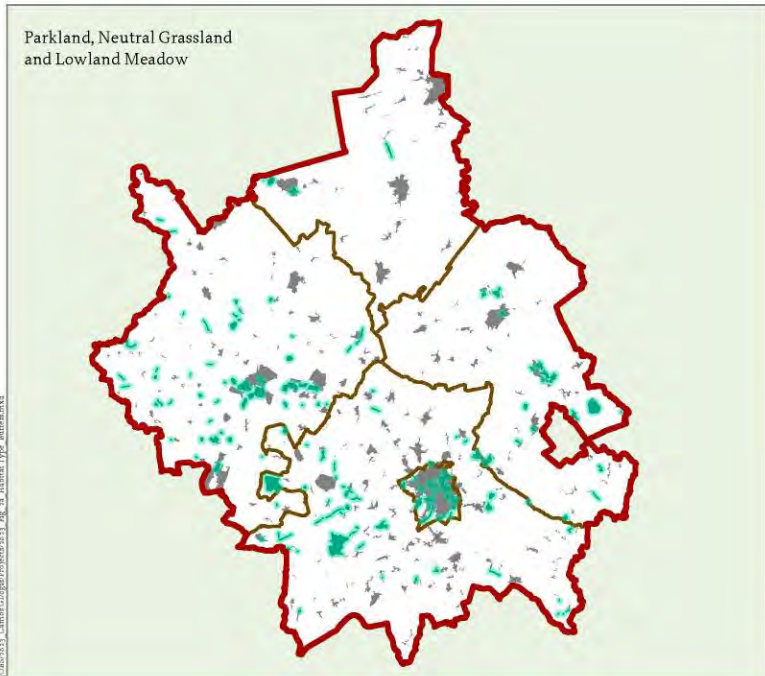
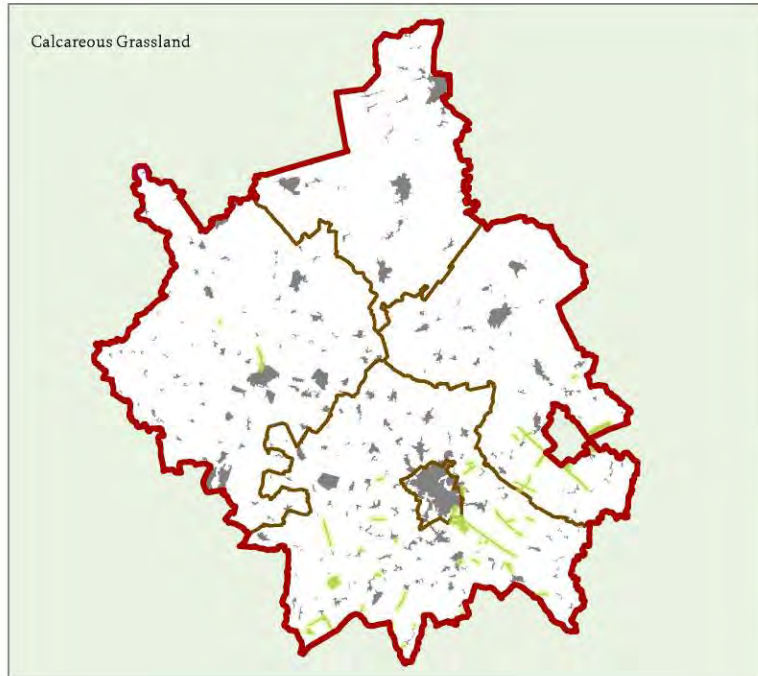
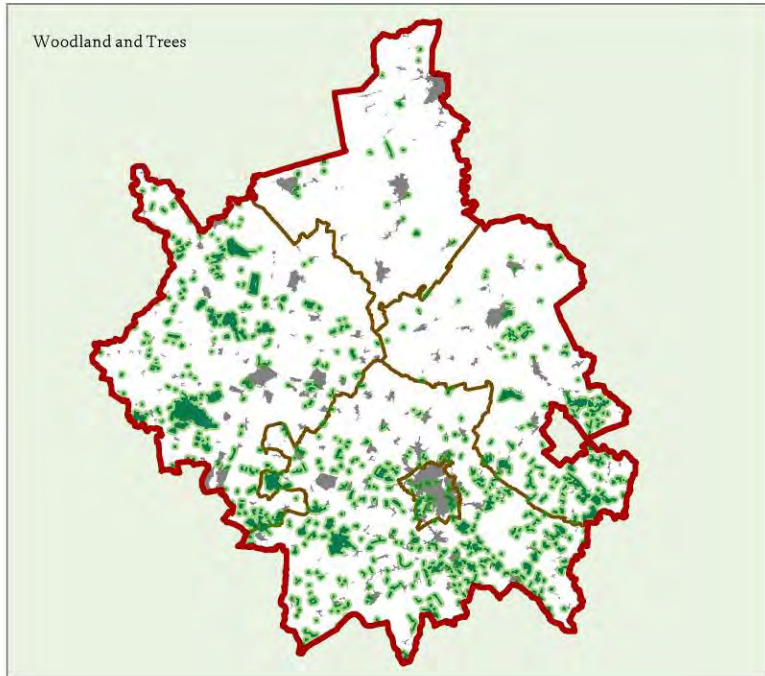
- **Fen** - there are small and isolated extents of existing fen habitats so the Fen Habitat Reservoirs are those that coincide with large-scale restoration proposals. The two fen Habitat Reservoirs are:
 - Great Fen Area
 - Wicken Fen Area

The Cambridgeshire Fenlands is an extensive landscape covering some 550 square miles that was, just a few centuries ago, a wild landscape comprising a rich matrix of fen, bog and open water habitats of significant biodiversity interest. However, the intensively farmed agricultural scene evident today has been created through extensive drainage over the last 350 years. The deep drainage of the southern peat fens and conversion of pasture to arable farming has accelerated peat shrinkage resulting in a continued requirement to pump water into the now elevated drainage channels and rivers.

As a result very few remnant fen habitats remain. The two key sites are Woodwalton Fen and Wicken Fen, both designated as SSSI,

although other remnant sites are also evident in proximity, many of which are County Wildlife Sites.

Figure 5.7 & 5.8 Biodiversity Opportunity analysis (Next page)



LEGEND

-  Study Area Boundar
- Principal Terrestrial Habitat Types and Buffers**
-  Woodland and Trees
-  300m Buffer of Woodland and Trees
-  Calcareous Grassland
-  300m Buffer of Calcareous Grassland
-  Parkland, Neutral Grassland and Lowland Meadow
-  300m Buffer of Parkland, Neutral Grassland and Lowland Meadow
-  Hedges and Farmland
-  300m Buffer of Hedges and Farmland



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Biodiversity Opportunity Analysis (1)

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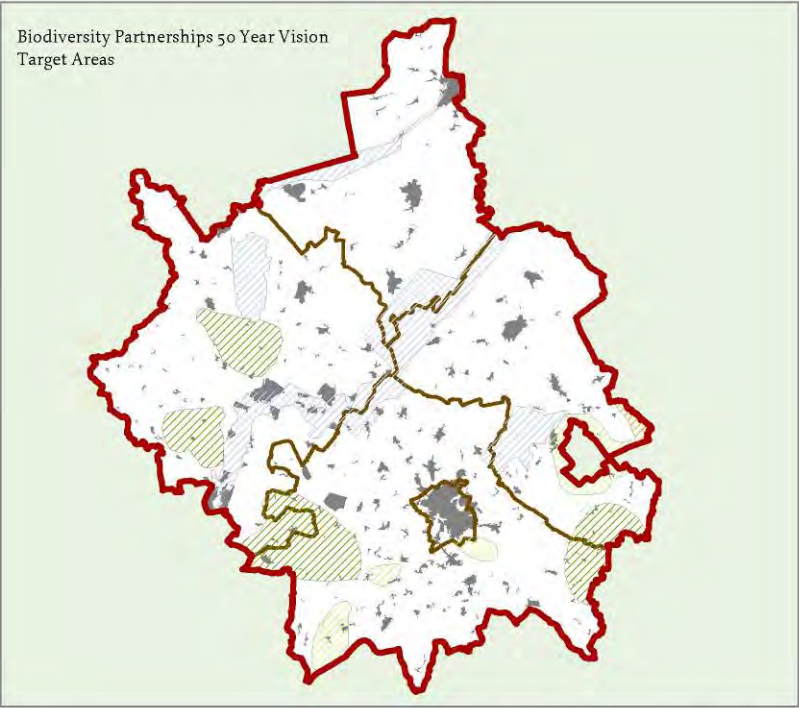
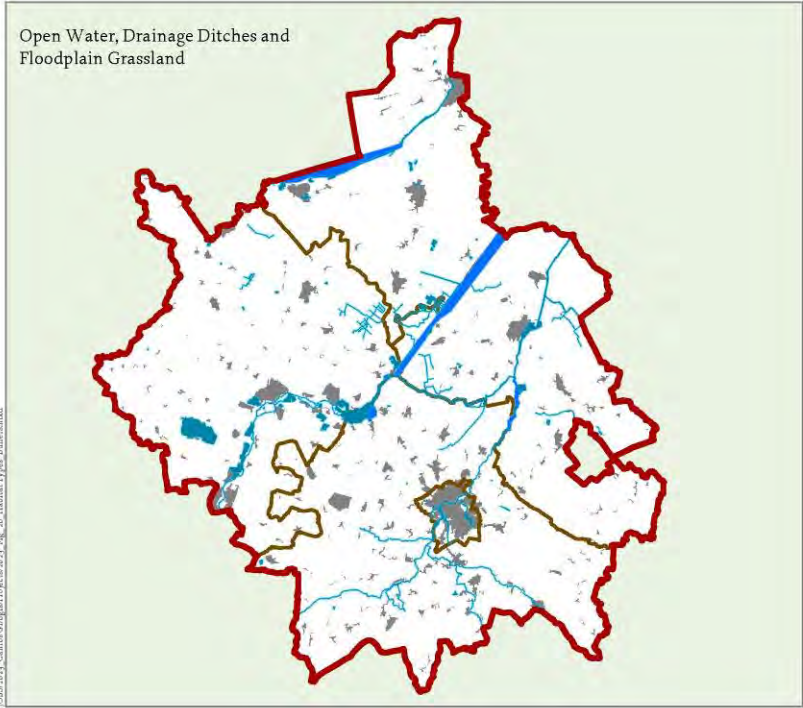
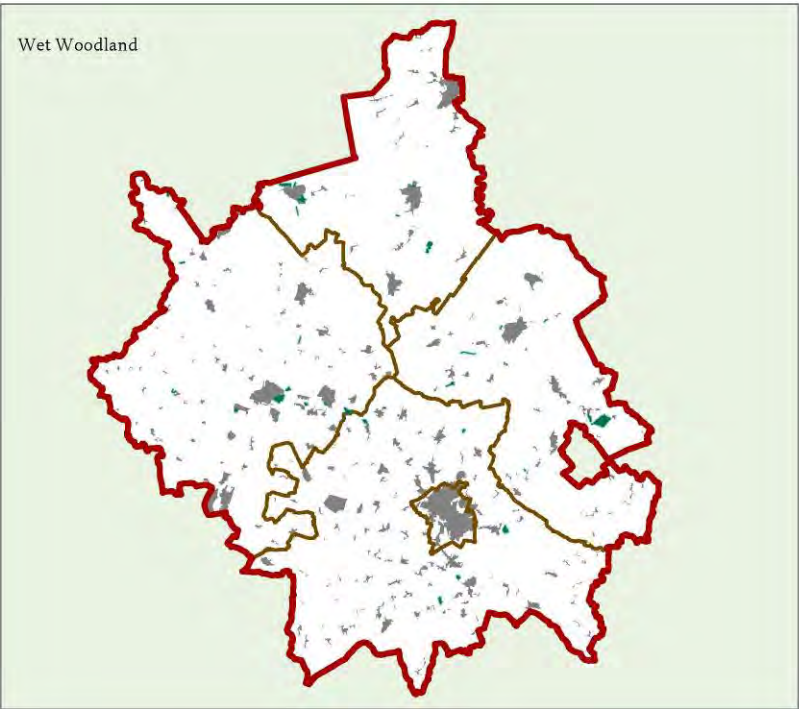
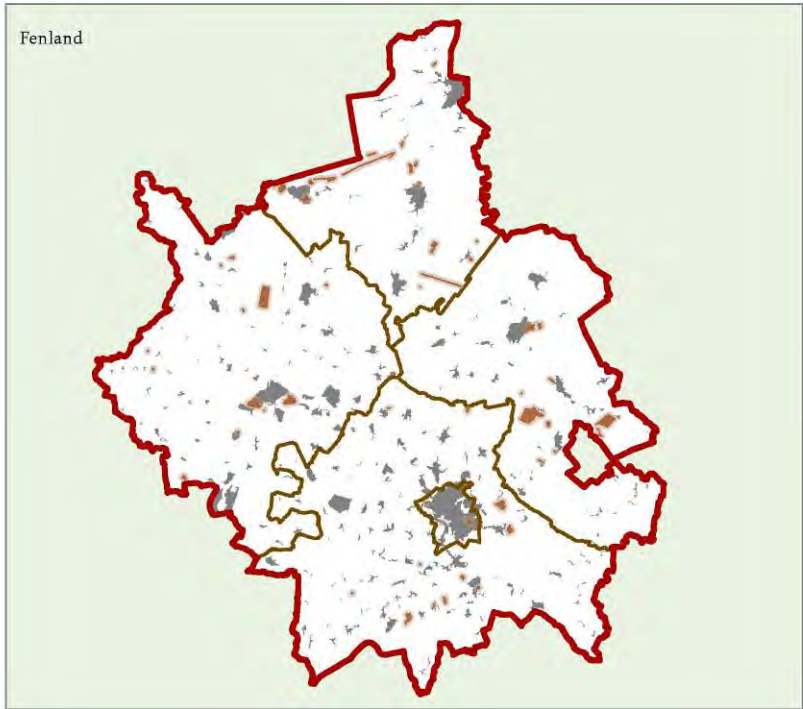
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 Sources: Ordnance Survey, 2001 Census Area Data, Natural England, Forestry Commission, DEFRA & Cambridgeshire and Peterborough Biological Records Centre.



- LEGEND
- Study Area Boundary
 - Principal Wetland/Riparian Habitat Types and Buffers
 - Fenland
 - 300m Buffer of Fenland
 - Wet Woodland and Trees
 - 300m Buffer of Wet Woodland and Trees
 - Open Water and Drainage Ditches
 - 100m Buffer of Open Water and Drainage Ditches
 - Floodplain Grassland
 - 100m Buffer of Floodplain Grassland
 - Biodiversity Partnership's 50 Year Vision Target Habitats

| | |
|--|---|
| Chalk and Limestone Grassland | Acid Grassland |
| Habitats Including Meadows | Wet Heaths |



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Sources: Ordnance Survey, 2001 Census Area Data, Natural England, DEFRA, Cambridgeshire and Peterborough Biological Records Centre.

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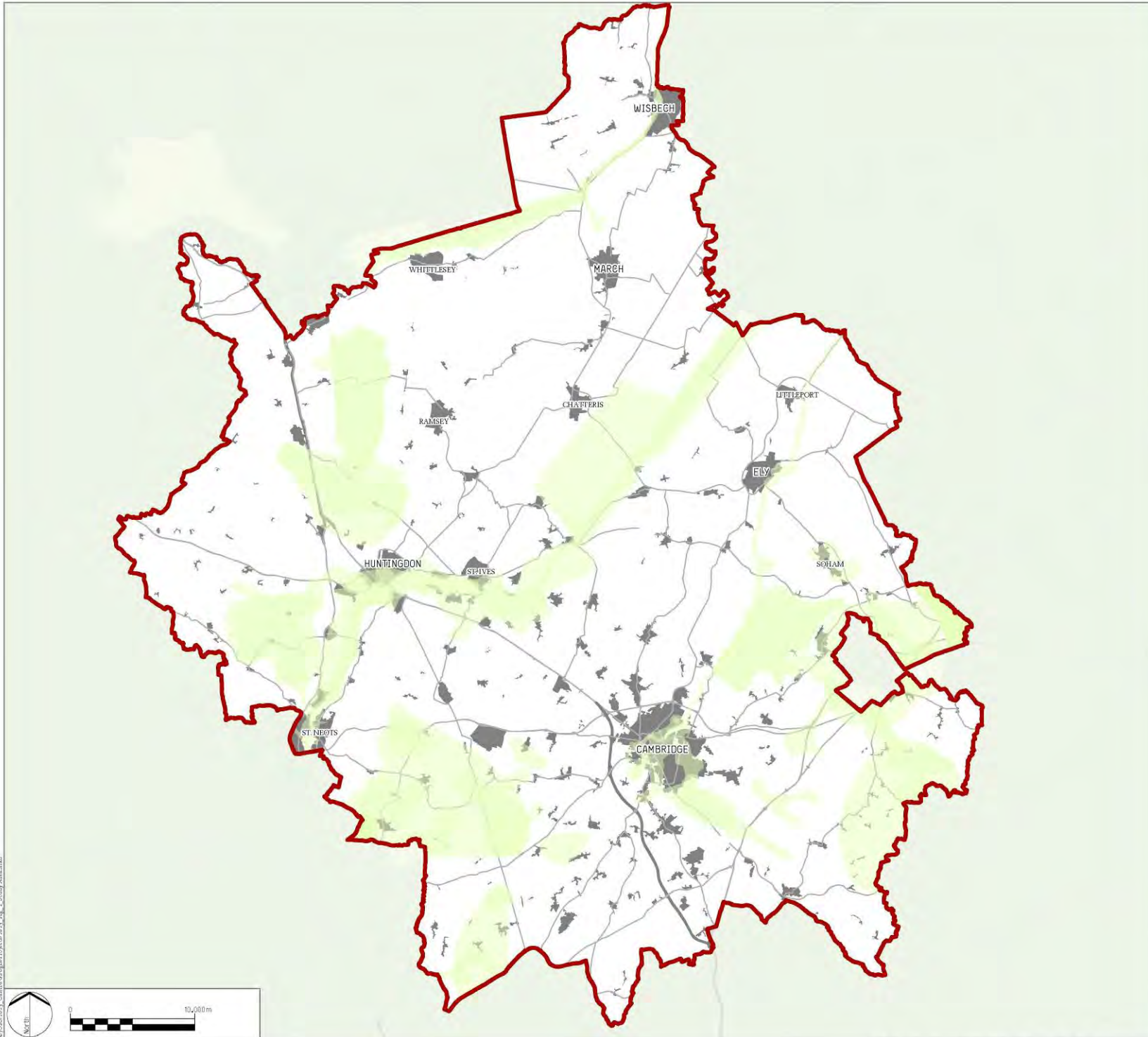
The above maps were then brought together in a single map to show the opportunities for strategic biodiversity enhancement. These opportunities are based on 'clusters' or 'reservoirs', which are areas where large areas of particular habitats exist or where smaller areas of habitats are found in close proximity to each other.

The different habitat areas identified by this process are:

- Woodland, Farmland and Hedgerows Habitat Reservoirs
- Parkland, Neutral Grassland and Lowland Meadow Habitat Reservoirs
- Calcareous Grassland Habitat Reservoirs
- Floodplain Grassland, Open Water and Wet Woodland Habitat Reservoirs
- Fen

Figure 5.9 Biodiversity Opportunities (Next page)

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LEGEND

- Study Area Boundary
- Settlement
- Opportunity Areas

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Biodiversity Opportunities

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3 Green Infrastructure and Biodiversity Opportunities

Cambridgeshire contains a rich biodiversity resource and potential, but changing land uses and new development, in both rural and urban contexts, can threaten and erode biodiversity character (as expressed by Natural Area Profiles). However, settlement growth can, through delivery of carefully considered Green Infrastructure plans at the local scale, strengthen biodiversity character and create new biodiversity assets. As such Green Infrastructure projects can demonstrate a sound understanding of underlying physical influences and ensure that key biodiversity character is protected and enhanced.

The county has suffered declines in a number of its species and habitats for many different reasons, most notably increased development pressure and agricultural intensification. Overall, Cambridgeshire has a smaller proportion of natural habitats than most counties in Britain. The protection of these existing resources and the potential for enhancement is a priority of the Green Infrastructure Strategy. Whilst the mapped areas are strategic priorities, they represent only a part of the rich biodiversity and habitats in Cambridgeshire that require protection and enhancement.

Fragmentation reduces the size and viability of species populations and their ability to move within the landscape. Climate change will compound these effects by increasing pressure on populations as well as their need to move. These effects can be offset by taking action at a landscape scale so that ecological connectivity is improved³⁵.

Habitat areas identified in the Green Infrastructure Strategy support the highest levels of biodiversity offering the best chance of achieving a high standard of habitat restoration, expansion and linkage.

The different habitat areas are:

- Woodland, Farmland and Hedgerows Habitat Reservoirs
- Parkland, Neutral Grassland and Lowland Meadow Habitat Reservoirs
- Calcareous Grassland Habitat Reservoirs
- Floodplain Grassland, Open Water and Wet Woodland Habitat Reservoirs
- Fen

At a more local scale, where core areas of habitat are located in close proximity to each other, priority can be given to habitat linkage initiatives with the aim of reversing fragmentation and isolation. Linear features such as

³⁵ J Latham and J Gillespie, *Applying Connectivity to Spatial Planning in Wales*, 2009

watercourses and hedgerows also make an important contribution to habitat connectivity.

Several Living Landscapes projects have been identified by the Wildlife Trust in Cambridgeshire. The Green Infrastructure Strategy presents an opportunity to support the objectives of existing Living Landscapes projects, and add new projects in the future. It may also be possible to extend the scope of existing Living Landscapes projects to help address a greater number of Green Infrastructure objectives.

The health, wellbeing and educational benefits of robust and functioning habitats cannot be overstated. These functions can be exploited, where possible and appropriate to protect the intrinsic character and quality of individual wildlife sites, through provision of improved access and interpretation.

Whilst much of the nature conservation interest across the [Woodland, Farmland and Hedgerows Habitat Reservoirs](#) is centred on the ancient woodland component, areas of secondary woodland and new plantations are also significant. These range in species composition and nature conservation interest and perform an important function in creating 'stepping stones' of woodland and shelter between fragments of ancient woodland.

Similarly, hedgerows, unimproved grasslands and field margins are an important component. Hedgerows form boundaries to many arable and pastoral fields, and whilst they are not as frequent as they once were due to agricultural intensification and field amalgamation, they are once again increasing in number and becoming more sympathetically managed. Hedgerows provide food and shelter for invertebrates, birds and mammals and are also known to operate as foraging routes for animals, such as bats, and as dispersal routes between woodlands for certain species.

Field margin buffer strips bordering hedgerows are also valuable, both as mechanisms for reducing the adverse effects of pesticide drift from neighbouring fields and for creating a range of habitats and vegetation profiles. These further enhance the foraging and shelter capacity of the hedgerows.

Within the Woodland, Farmland and Hedgerows Habitat Reservoirs, there are opportunities for woodland and hedgerow creation, which will increase the overall area of woodland and shrubby habitat. Habitat creation and enhancement should focus on buffering existing woodlands, particularly those which are currently designated for their nature conservation value, and on creating habitat links and stepping stones between woodland blocks.

Care should be given to visual and landscape character when planning new woodlands so that key views and panoramas are not obstructed and the balance

between woodland and open areas maintained. Woodland creation can be achieved through natural regeneration, particularly when planning new woodland adjacent to existing stands. All new planting should comprise native broadleaf species and ensure species selection is appropriate for site and prevailing conditions.

In addition to creating new woodlands and hedgerows and enhancing habitat connectivity, the quality of existing woodlands should be maintained and enhanced through appropriate management. Priority should be given to ancient woodland sites ensuring that these are maintained in a favourable condition.

All woodland habitat expansion and enhancement proposals need to be considered on a case by case basis, since land ownership, historic land use and soil conditions may be important factors determining the most appropriate approach to habitat creation, restoration and enhancement.

The creation of new and enhancement of existing woodlands and hedgerows will benefit particular species. These are:-

| Target Species |
|--|
| Farmland and woodland birds, including Spotted Flycatcher, Bullfinch and Turtle Dove |
| Barbastelle bat |
| Hazel Dormouse |
| Black Hairstreak |
| Invertebrates such as longhorn beetles or click beetles. |

Very few fragments of **species-rich grassland** remain within the county. Former sites have been damaged or degraded by decades of improvement through the application of pesticides and fertilisers or through reversion to arable production.

The extent and continuity of grassland habitat is less strongly developed than, for example, woodlands. As such remnant grasslands form 'islands' of habitat rather than large areas of continuous or linked habitat resource. Reducing the effects of habitat fragmentation is therefore the overall objective. This can be achieved through increasing the size of individual remnant areas of grassland, or connecting grassland patches through the creation of linear grassland belts, or enhancement of existing landscape features such as field margins, roadside verges and hedges. Priority needs to be given to the protection and enhancement of existing high quality grasslands as well as their expansion. This is important for creating buffers between the existing grasslands and adjacent land uses that have the potential to adversely affect habitats and key species.

The creation of new and enhancement of existing neutral grasslands will benefit particular species. These are:-

| |
|--|
| Target Species |
| (Meadows) Great Burnet, Saw-wort and Green-winged Orchid |
| (Parkland) various bat species and wood eating invertebrates such as the hoverfly <i>Callicera spinolae</i> and click-beetle <i>Elater ferrugineus</i> |

Remnants of **calcareous grassland** form 'islands' of habitat rather than large areas of continuous or linked habitat resource, albeit in some cases these are relatively long linear features such as the Devil's Dyke. As with neutral grassland, reducing the effects of habitat fragmentation and the size of remnant areas is key. These small fragment areas currently support scarce plant species such as Kidney Vetch, Horseshoe Vetch and Wild Thyme. Species which will benefit from the creation of new calcareous grassland include:

| |
|--|
| Target Species |
| Pasqueflower, Lizard Orchid, Moon Carrot, Great Pignut, Perennial Flax, Juniper |
| Stone Curlew |
| Invertebrates such as Chalk-hill Blue butterfly, Small Blue butterfly, the red data book robber fly <i>Machimus rusticus</i> , the ground beetle <i>Harpalus punctatulus</i> and the bumblebee <i>Bombus ruderatus</i> |
| Bryophytes such as <i>Tortula vahliana</i> , <i>Tortella inflexa</i> , <i>Aloina brevirostris</i> and <i>Lophozia perssonii</i> . |

The river corridors and Ouse and Nene Washes are of particular importance for their biodiversity interest. Significant opportunities exist to create coherent corridors of wetland landscape through the heart of the county, offering strategic scale habitat reserves and linkages to several other types of Habitat Reservoir. This includes maintaining and improving water quality, creating or enhancing riparian habitats such as marshy grassland, flood meadow, wet woodland and features such as waterside pollarded willows and alders.

Species which will benefit from the creation of new **floodplain grasslands, areas of open water and wet woodland** include:

| |
|---|
| Target Species |
| Breeding waders e.g. Snipe, Redshank & Black-tailed Godwit |
| Other water birds such as wintering Whooper and Bewick Swans and various duck species |
| Spined loach |

| |
|--|
| Ribbon-leaved water-plantain, Marsh sow-thistle, the stoneworts <i>Nitella tenuissima</i> and <i>Tolypella prolifera</i> |
| Scarce Chaser Dragonfly and various other aquatic invertebrates |
| Eels |

The remnant fens with their high occurrence of wetland plant communities, including marshy grassland, birch and alder woodland, and fen carr, are particularly important to protect, enhance and extend.

Species which will benefit from the creation of new fen include:

| |
|---|
| Target Species |
| Fen violet, Great Water Parsnip, aquatic plants |
| Bittern, Reed Bunting |
| Invertebrates such as Desmoulin's Whorl-snail, the fen diving beetle <i>Agabus undulatus</i> and other beetles such as <i>Oberea oculata</i> , <i>Pterostichus aterrimus</i> , <i>Pangaeus crux-major</i> and <i>Cryptocephalus exiguus</i> |

In conclusion, the protection of existing biodiversity resources and the potential for enhancement should be a priority of the Green Infrastructure Strategy. Whilst the opportunity areas are a priority for the Strategy, they represent only one a part of the rich biodiversity and habitats across all of Cambridgeshire that require protection and enhancement.

Cambridgeshire Green Infrastructure Strategy Appendix 6

Climate Change

Contents

- 1 **Baseline information**
 - Definition
 - Policy
 - Strategies and Guidance
 - Data and Baseline Maps
- 2 **What this information tells us**
- 3 **Spatial analysis**
- 4 **Green Infrastructure and Climate Change Opportunities**

This Appendix identifies the baseline information used to develop the Climate Change Theme and support the relevant Strategy Objective. This information together with the spatial analysis enabled mapping of the opportunities that exist for the Climate Change Green Infrastructure Theme through the provision of Green Infrastructure. This map was combined with the other six Theme maps to inform and develop the Strategic Network of Green Infrastructure.

For the purpose of this work the term climate change is used for the short, medium and long-term affects on our climate as a result of human activities and the use of resources such as fossil fuel combustion and vegetation clearing and burning.

1 Baseline information

The information in this section will cover:

- Policy
- Strategies and Guidance
- Data and Baseline Map

Policy

A range of climate related policy has been established to help limit the degree of future climate change, and to ensure that communities are adequately prepared for the anticipated impacts. The key national climate-related policies relating to Planning and Green Infrastructure are outlined below in Table 6.1.

Table 6.1 Key climate related policies relating to Green Infrastructure

| Policy | Explanation |
|---|---|
| Climate Change Act | The UK introduced a long-term legally binding framework to tackle the dangers of climate change. The Climate Change Act received Royal Assent on 26 November 2008. The Act requires that emissions are reduced by at least 80% by 2050, compared to 1990 levels and that adaptation to climate change is reported. |
| Planning Policy Statement 1 (PPS1): Delivering Sustainable Development | Regional planning bodies and local planning authorities should ensure that development plans contribute to global sustainability by addressing the causes and potential impact of climate change. |
| Planning Policy Statement: Planning and Climate Change: Supplement to PPS1 | This supplements PPS1 by setting out how planning should contribute to reducing carbon emissions and stabilising the impacts of climate change taking into account the unavoidable consequences. |
| Planning Policy Statement 25 (PPS25): Development and Flood Risk | PPS25 uses opportunities offered by new development to reduce the causes and impacts of flooding, (e.g. surface water management plans, making the most out of the benefits of green infrastructure for flood storage, conveyance and SuDs; re-creating functional floodplains; and setting back defences). |
| Planning Policy Statement: Planning for a Low Carbon Future (<i>Consultation Draft</i>) | <ul style="list-style-type: none"> • <i>Policy LCF5: Local Planning Approach for Adapting to Climate Change:</i> plan green infrastructure so as to maximise its benefits, as part of wider green infrastructure networks, in order to support local biodiversity and healthy, living environments, • <i>Policy LCF6: Local Planning Approach for Selecting</i> |

| | |
|--|---|
| | <p><i>Sites for Development</i>: where developing the site would provide opportunities to help the existing community adapt to impacts arising from changes in the climate, including sustainable drainage systems and green infrastructure.</p> <ul style="list-style-type: none"> • <i>Policy LCF13: Designing for a Low Carbon Future in a Changing Climate</i>: provide public or private open space as appropriate so that accessible choice of shade and shelter is offered, recognising the opportunities for people, biodiversity, flood storage and carbon management provided by multi-functional greenspaces and green infrastructure networks. |
|--|---|

Strategies and Guidance

Green Infrastructure by design: adding value to development (June 2010): published by Natural England and the Environment Agency illustrates how the incorporation of Green Infrastructure into the very core of spatial planning and urban design can deliver countless benefits for new communities including climate change adaptation and mitigation.

Environment Agency, Climate Change Adaptation Strategy (2008-11): sets out a systematic approach for embedding climate change adaptation providing a strategic framework for assessing climate risk, building adaptive capacity, identifying adaptation options and ensuring co-ordinated delivery.

Environment Agency Adaptation Report: Managing the environment in a changing climate (November 2010): The Climate Change Act 2008 gives Government the power to direct public bodies and statutory undertakers, such as utilities companies, to report on how they will address their climate change risks. This is called the Adaptation Reporting Power. The Environment Agency's Adaptation Report supercedes the Adaptation Strategy (above), and was submitted to Government as part of their Adaptation Reporting Power. It sets out climate change risks and the Agency's plans to address them.

Local Authority Climate Change Strategies:

- Climate Change and Environment Strategy 2008 Cambridgeshire County Council formally adopted as part of the Council's policy framework.
- Cambridge Climate Change Strategy and Action Plan 2008-2012, 2008, Cambridge City Council.
- Huntingdonshire Sustainable Community Strategy 2008 - 2028, Huntingdonshire District Council
- A Climate Change Strategy Framework, July 2007, Fenland District Council

Forestry Commission England, A Wood fuel Strategy for England (2007):

This indicates significant CO₂ savings and fiscal benefits are associated with substituting wood fuel for fossil fuels. A series of interventions are recommended, which if implemented, could utilise an extra 2 million tonnes of wood fuel, saving 400,000 tonnes of carbon, equivalent to supplying 250,000 homes with energy by 2020. Additional benefits of the Strategy include conserving woodland resources and reversing the decline in woodland diversity by increasing the number of sustainably managed woods, and creating economic opportunities through developing a viable biomass industry, however it must be acknowledged that appropriate management of local woodlands as a source of biomass supply, while positive, will not necessarily supply all local demand for woodfuel.¹

Green Infrastructure: How and where it can help the Northwest mitigate and adapt to climate change?²

An example of good practice guidance on Green Infrastructure specifically for climate change mitigation and adaptation³ has been produced through the green infrastructure strand of the Northwest Climate Change Action Plan. Published in June 2010, the report; "sets out how and where Green Infrastructure can help the Northwest to mitigate and adapt to climate change. It is intended to raise awareness in the Northwest of the climate change services that Green Infrastructure can provide, and to start to target where these may be considered to be the most important; highlighting that it may be possible to get multiple services from the same piece of land and the need to take opportunities as they arise to do this."⁴. In particular, the Plan highlights the role Green Infrastructure can play in water management and flood alleviation to help adapt to climate change, such as managing water supply, riverine flooding and surface water⁵. These issues will be particularly relevant in Cambridgeshire due to the low-lying nature of the county and the importance of drainage and water management, particularly in the fens.

Data & Baseline Maps

- Cambridgeshire CO₂ emissions
- UK Climate Change Impacts Programme & Projections
- Woodland/Ancient Woodland + English Woodland grant Scheme (EWGS) Target and Priority Areas
- Landscape Character Areas
- Strategic Flood Risk Maps
- Biodiversity Reservoirs

¹ Wood Fibre Availability and Demand in Britain 2007 to 2025. Prepared For Confederation of Forest Industries (Confor), Uk Forest Products Association (UKFPA), Wood Panel Industries Federation (WPIF) by John Clegg Consulting Ltd with Support From The Forestry Commission Funded By The Wood Fibre Processing & Supply Industry (March 2010).

² <http://www.greeninfrastructurenw.co.uk/html/index.php?page=resources&NorthWestRegion=true>

³ [http://www.greeninfrastructurenw.co.uk/climate change/](http://www.greeninfrastructurenw.co.uk/climate%20change/)

⁴ Green Infrastructure: How and where it can help the Northwest mitigate and adapt to climate change? 2010, p4

⁵ Green Infrastructure: How and where it can help the Northwest mitigate and adapt to climate change? 2010, p36-44.

- Main Urban Areas
- Air Quality Management Areas

Cambridgeshire CO₂ emissions

On average, each Cambridgeshire resident was responsible for an estimated 10 tonnes of CO₂, representing a total of 6.2 million tonnes for the County (in 2007). Of this total, around 473,000 tonnes were emitted as a result of land use change or from agricultural production⁶.

UK Climate Impact Programme & Projections

The UK Climate Impacts Programme (UKCIP) helps organisations to adapt to inevitable climate change. UKCIP is about getting a better understanding of the science of climate change to make it easier to consider the possible impacts, manage climate risks and make better decisions about planning for the future.

The UK Climate Projections (UKCP09) provides climate information designed to help those needing to plan how they will adapt to a changing climate. UKCP09 offer projections of the future climate using climate model simulations that are based on the current understanding of the climate system.

The Projections provide information up to the end of the century based on three different future scenarios (High, Medium and Low greenhouse gas emissions). They allow the user to develop projections for a range of climate variables (including temperature, precipitation and sea level rise) for a specific location or region, to help improve knowledge and planning in adapting to climate change.

A broad range of anticipated changes up to the end of the century is in Figure 6.1 and 6.2. Figure 6.1 shows the percentage change in summer/winter precipitation relative to the 1961-1990 baselines under the medium emissions scenario for 2020, 2050 and 2080. Figure 6.2 shows the change in annual mean temperature (°C) relative to the 1961-1990 baselines under the medium emissions scenario for 2020, 2050 and 2080.

The level of future climate impacts will ultimately vary according to the success of global efforts to reduce greenhouse gas emissions⁷. However, the national UK Climate Projections database can highlight some of the likely anticipated changes to help inform future decision making. Within the East

⁶ Department of Energy and Climate Change (DECC) (2010) Local and Regional CO₂ emissions estimates 2005-2007

http://www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2007_local/2007_local.aspx

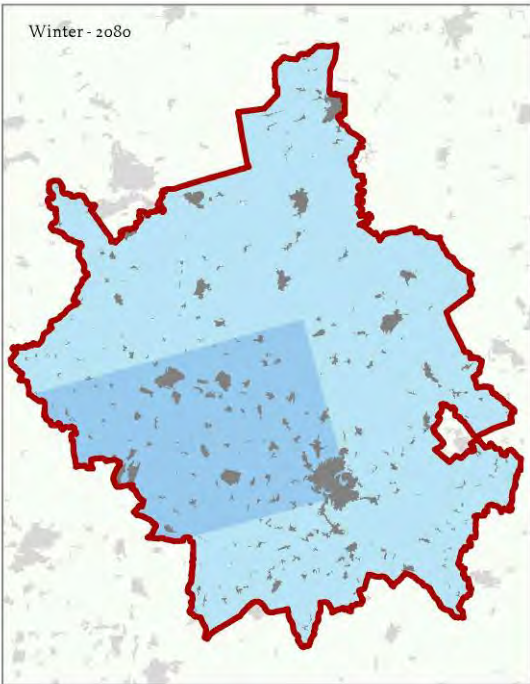
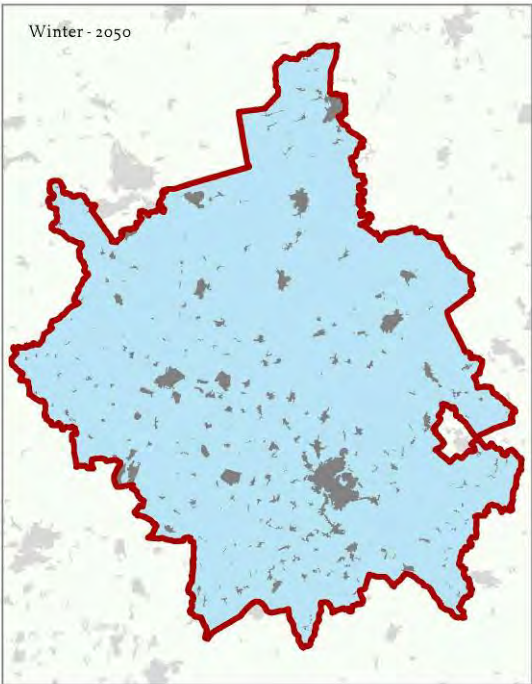
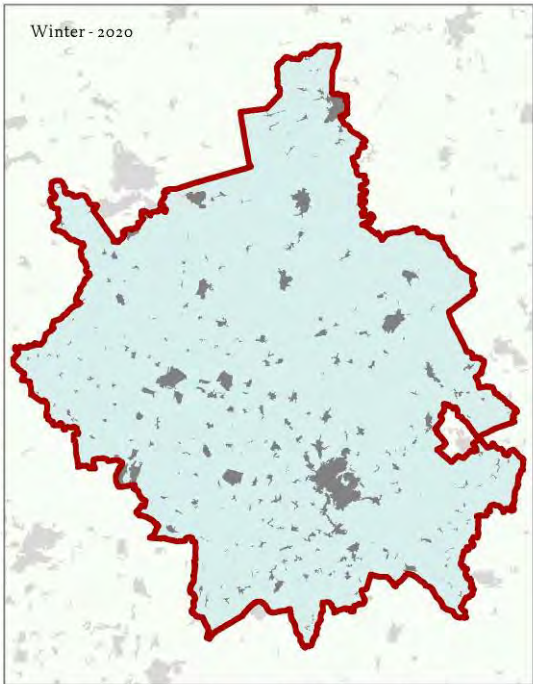
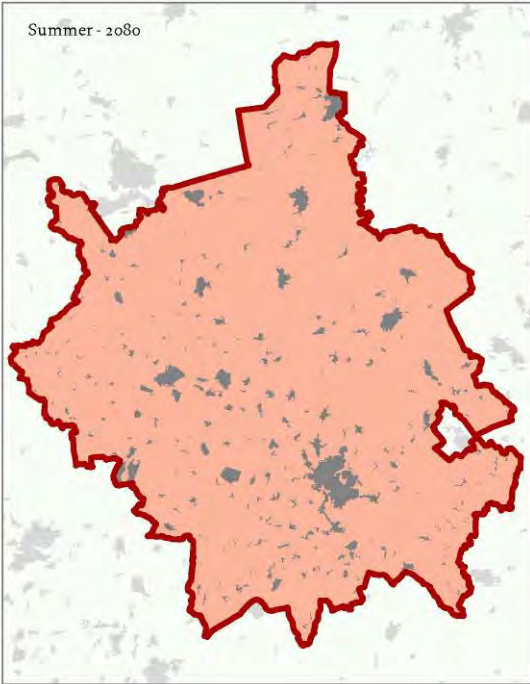
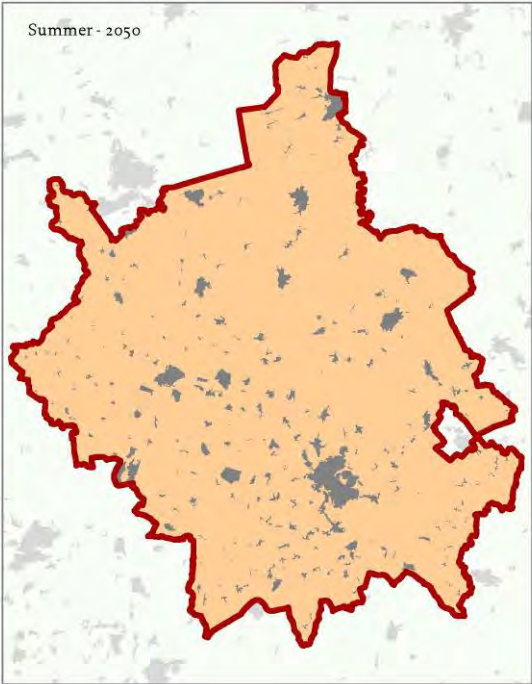
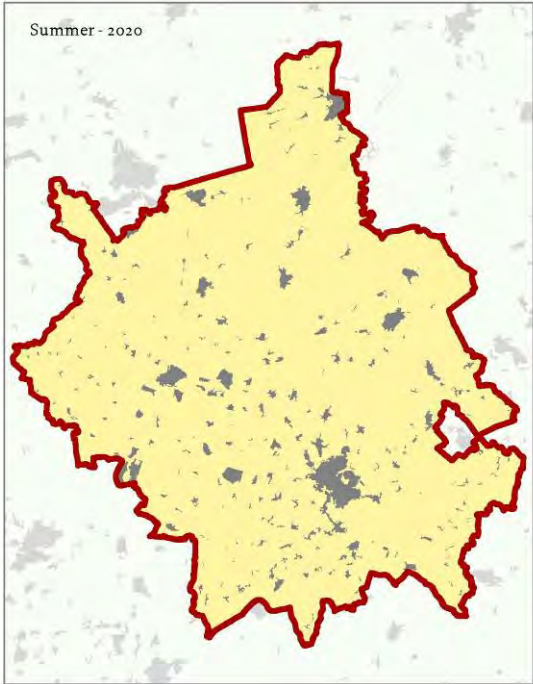
⁷ Carbon dioxide equivalents: Emissions of other greenhouse gases (e.g. Nitrous oxide and Methane) are often expressed in terms of CO₂ equivalent. This is the number of tonnes of CO₂ that would have the equivalent warming effect. Use of CO₂ equivalents allows a measure of consistency when comparing emissions of varying greenhouse gases.


of England, the following scenarios can be expected (data shown in Table 6.2 at end of Appendix):

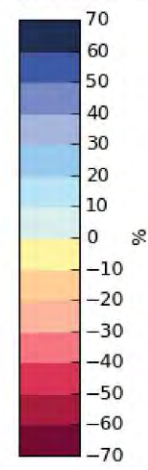
- **Hotter, drier summers:** average summer temperatures are likely to increase by around 2.5 degrees centigrade (ranging between 1.2 and 4.3 degrees), whilst summer rainfall will reduce by around 17% (ranging from -38% to +6%)
- **Milder, wetter winters:** average winter temperatures will increase by around 2.2 degrees centigrade (ranging from 1.1 to 4.1 degrees) whilst average winter rainfall will increase by around 14% (but may range from 3 to 31%)
- **More frequent extreme weather events:** temperatures on the warmest day of the year may increase by around 2.2 degrees centigrade (although could increase by up to 6.9 degrees). Rainfall on the wettest day of the year may increase by around 14% (although this may range between 2% and 30%)
- **Rising sea levels:** mean sea level is expected to rise by around 22cm by the 2050s

Some of the anticipated changes in Cambridgeshire up to the end of the century are depicted in Figures 6.1 and 6.2. Figure 6.1 highlights the projected percentage change in summer and winter precipitation (relative to the 1961-1990 baseline) under the medium emissions scenario in 2020, 2050 and 2080. Figure 6.2 shows the projected change in annual mean temperature (°C) (relative to the 1961-1990 baseline) under the medium emissions scenario for the same time periods.

Figure 6.1 Climate Change projections - summer and winter precipitation & Figure 6.2 Climate Change projections - change in annual mean temperature (Next page)



LEGEND
 Study Area Boundary
 % change in summer/winter precipitation relative to the 1961-1990 baseline under medium emissions scenario



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 Climate Change Projections - Precipitation

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 The UK Climate Projections data have been made available by the Department for Environment, Food and Rural Affairs (Defra) and Department for Energy and Climate Change (DECC) under licence from the Met Office, Newcastle University, University of East Anglia and Proudman Oceanographic Laboratory. These organisations accept no responsibility for any inaccuracies or omissions in the data, nor for any loss or damage directly or indirectly caused to any person or body by reason of, or arising out of, any use of this data.
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Woodland/Ancient Woodland & English Woodland Grant Scheme (EWGS)⁸ Target/Priority Areas:

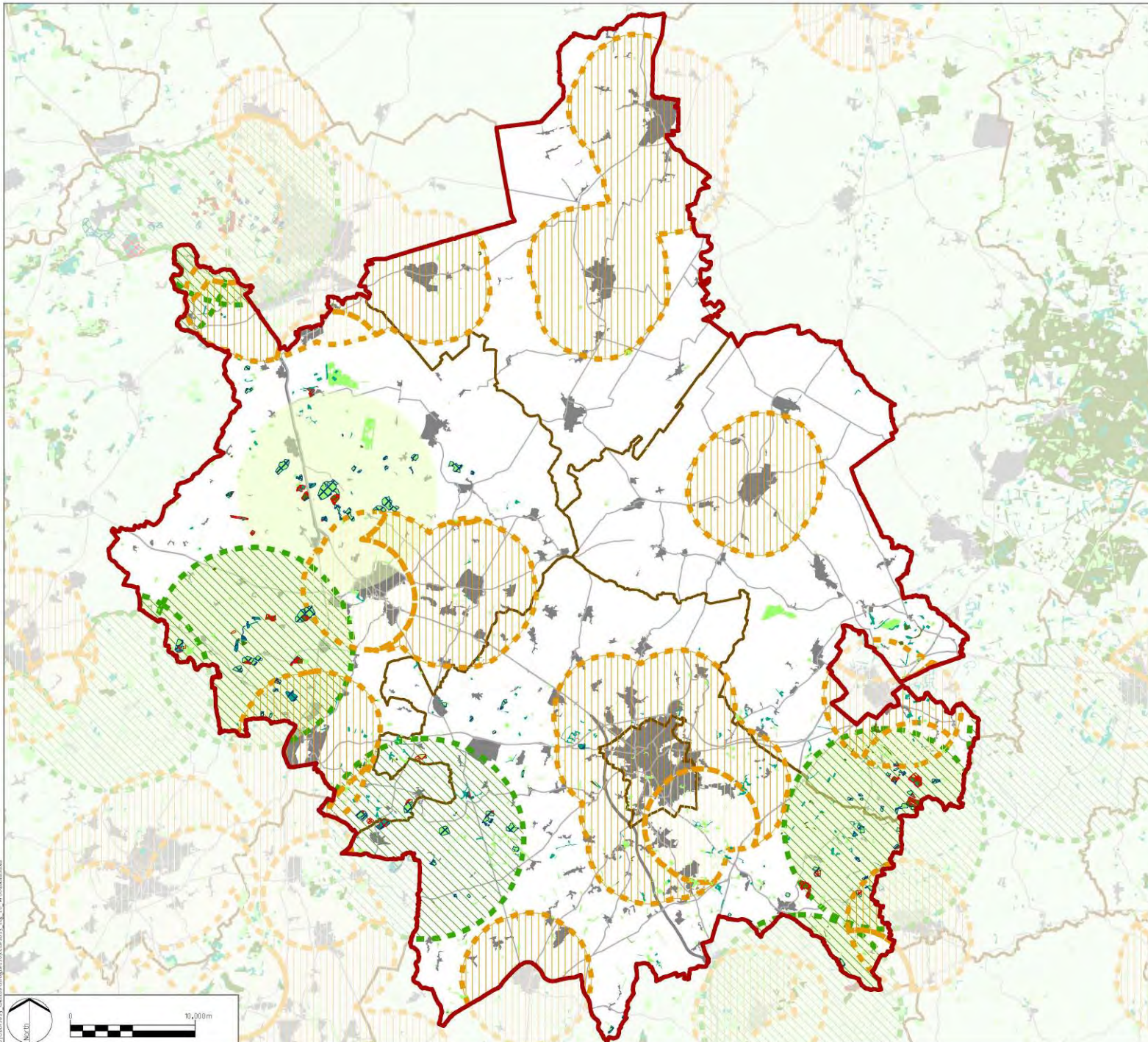
Woodland is an important component of Green Infrastructure, providing biodiversity, habitat, landscape and recreational benefits. Woodland can also help with mitigating and adapting to climate change. The creation of new woodland and appropriate management of existing woods can capture and store carbon, albeit not as effectively as other forms of carbon capture, such as peat creation. Well-managed woodland can also provide a renewable source of energy through wood-fuel production.

The English Woodland Grant Scheme (EWGS) provides grant support for landowners wanting to create new woodland and carry out sustainable woodland management, particularly where it protects and enhances the woodland's environmental or social value.






Figure 6.3 tells us where there are current opportunities to manage woodland more effectively and grow more woodland to secure carbon reductions and for fuel supply in Cambridgeshire. The distribution of woodlands is also important for their role in storing and slowing down water run off as part of the adaptation to climate change.

Figure 6.3 Woodland/Ancient Woodland and EWGS Target Areas/Priority Areas (Next page)

⁸ <http://www.forestry.gov.uk/ewgs>





LEGEND



-  Study Area Boundary
- Simplified National Inventory of Woodland Types (NIWT)**
-  Broadleaved Woodland*
-  Coniferous Woodland
-  Mixed Woodland
-  Felled Woodland and Ground Prepared for Planting

* Includes areas identified as Coppice, Coppice with Standards, Shrub and Young Trees.



Ancient Woodland

-  Ancient Semi-Natural Woodland
-  Plantation on Ancient Woodland Site

Ancient Woodland Target Areas

-  Expand
-  Restore

Quality of Place Priority Areas

-  High
-  Other

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Distribution of Woodland/Ancient Woodland and EWGS Target Areas/Priority Areas

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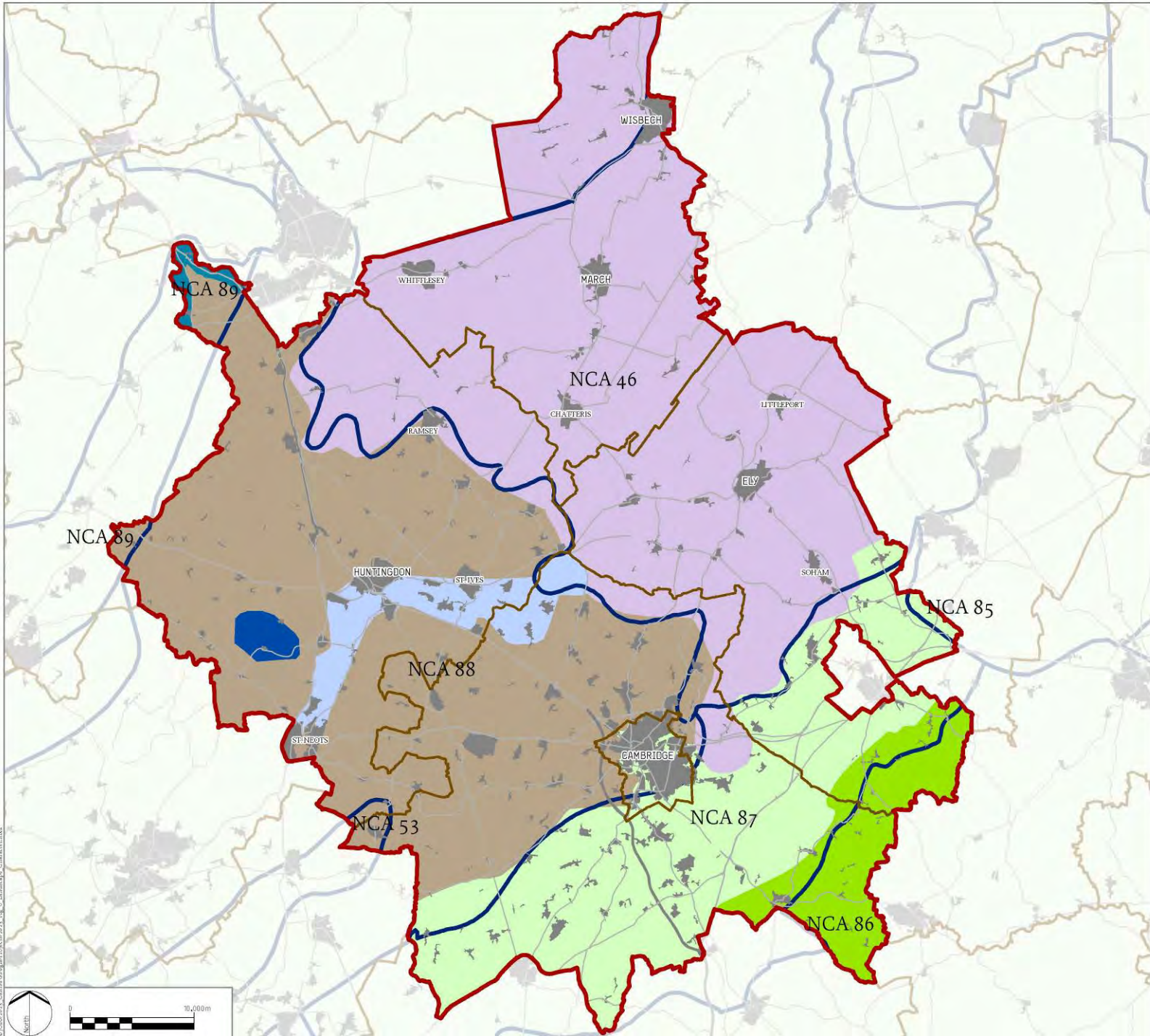
Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Natural England & Forestry Commission.

Landscape Character Areas

Broad landscape areas can help indicate where peat restoration could take place e.g. Fenlands. These are likely to be the most appropriate locations for land uses that can capture and store carbon. Peat restoration can provide significant capture and storage benefits.

Figure 6.4 identifies for Cambridgeshire where peat restoration and carbon capture and storage can be considered.

Figure 6.4 Landscape Character (Next page)



LEGEND

- Study Area Boundary
- National Landscape Character Areas**
- NCA 46 The Fens
- NCA 53 Bedfordshire Greensand Ridge
- NCA 85 Breckland
- NCA 86 South Suffolk and North Essex Clayland
- NCA 87 East Anglian Chalk
- NCA 88 Bedfordshire and Cambridgeshire Claylands
- NCA 89 Northamptonshire Vales

Cambridgeshire Landscape Guidelines Landscape Character Areas

- South East Clay Hills
- Grafham Water
- Chalklands
- Nene Valley
- Western Claylands
- Fenlands
- Ouse Valley

Note: East of England Regional Landscape Character Types are not illustrated or available (accurate to 30 October 2009).

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 Landscape Character Assessment for Cambridgeshire

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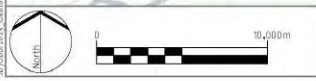
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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Cambridgeshire County Council & Natural England.

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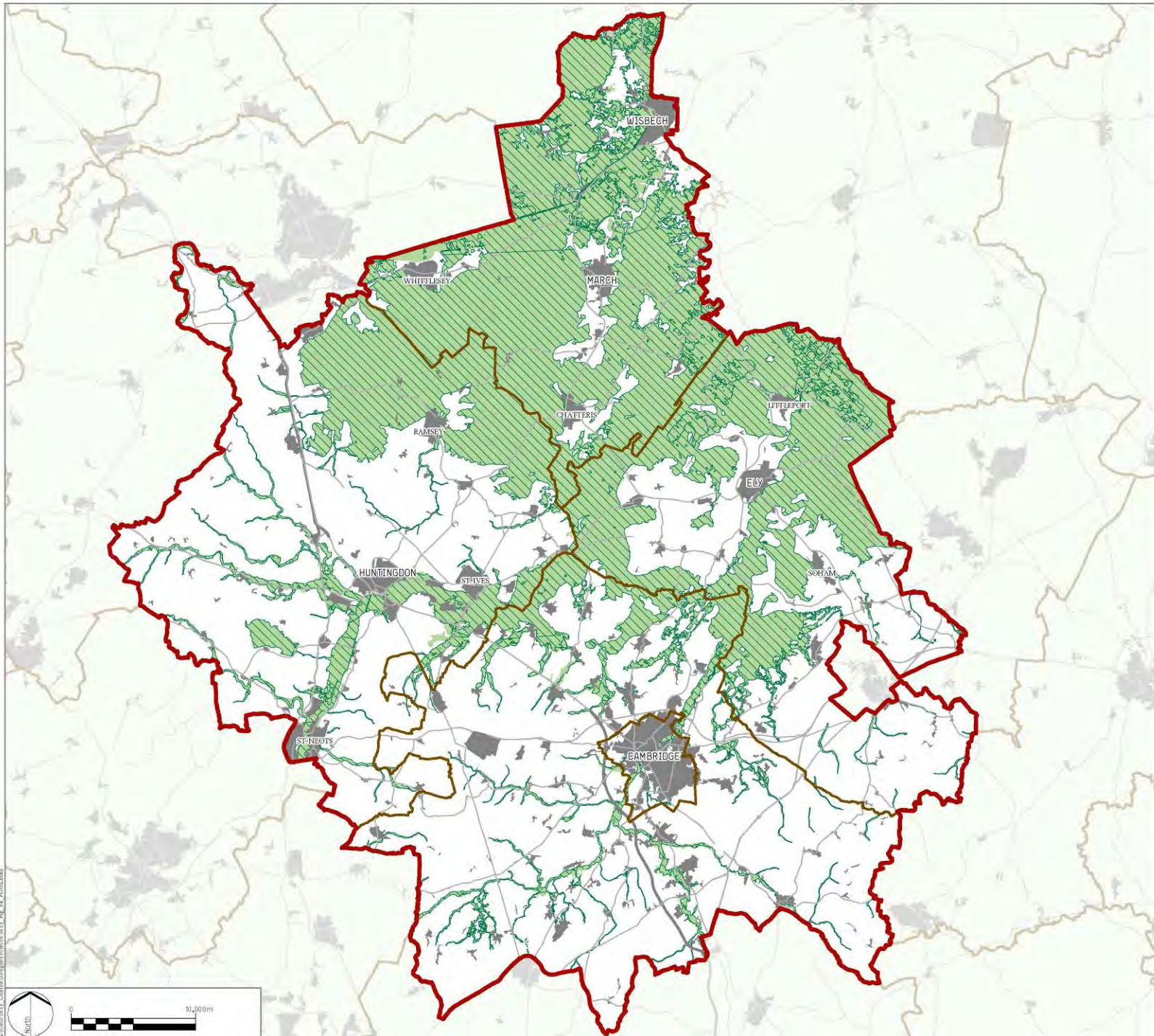


Strategic Flood Risk Maps

Climate change projections indicate changing precipitation patterns that may lead to an increase in flood risk and flooding. Much of the north of county is low lying and it is estimated by the Environment Agency, that 23% of the area of Cambridgeshire is at risk of 1 in 100 year flood events from rivers in the absence of flood defences.

Habitats such as flood meadows, water bodies such as old gravel workings, wet woodland and wet grassland can help store water and reduce flood risk and the severity of flood events. Figure 6.5 shows the areas most at risk from flooding and where these habitats may already exist or new habitats could be created.

Figure 6.5 Strategic flood mapping (Next page)



LEGEND

- Study Area Boundary
- Flood Zone 3 (high risk with annual probability of flooding of 1% or greater)
- Flood Zone 2 (low to medium risk with annual probability of flooding of 0.1 - 1%)

The Environment Agency Flood Map is intended for guidance only and cannot provide details for residential properties

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Strategic Flooding Risk in Cambridgeshire

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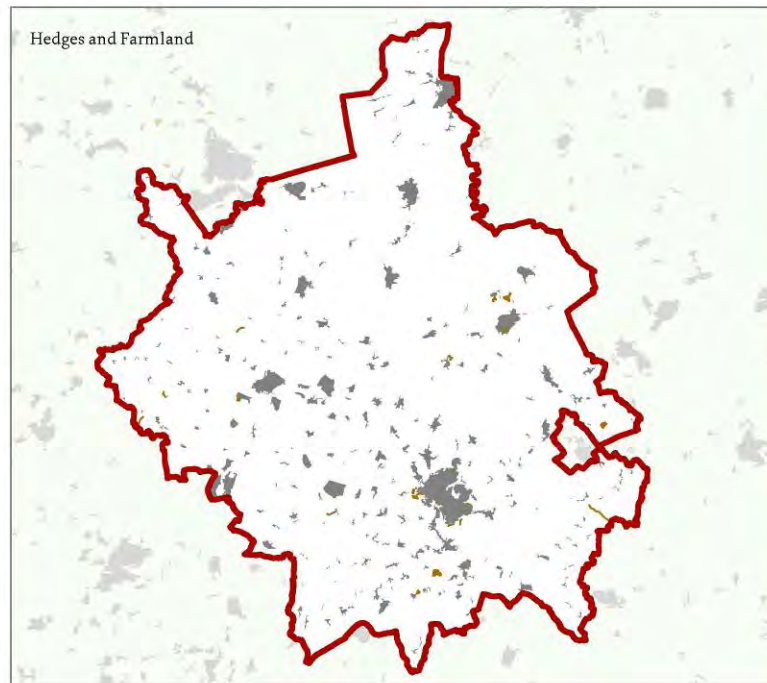
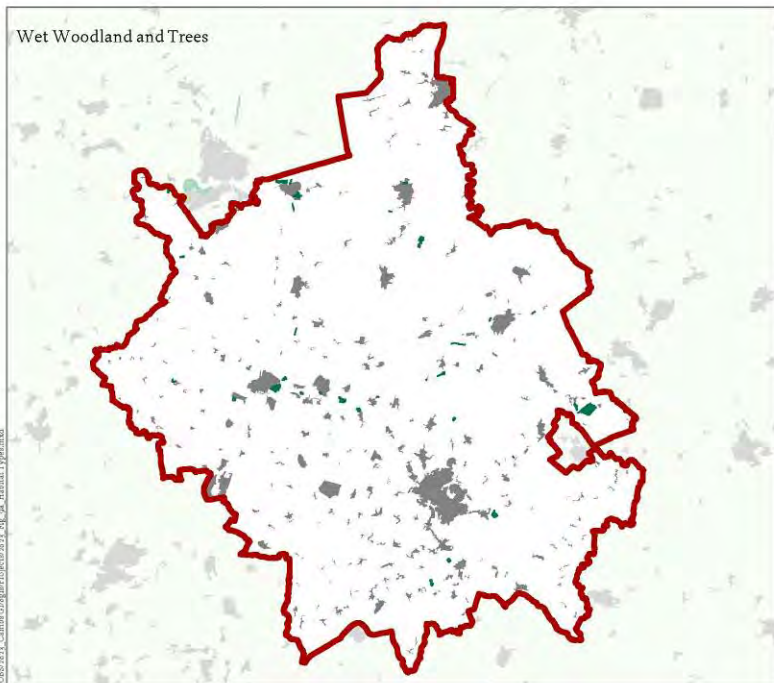
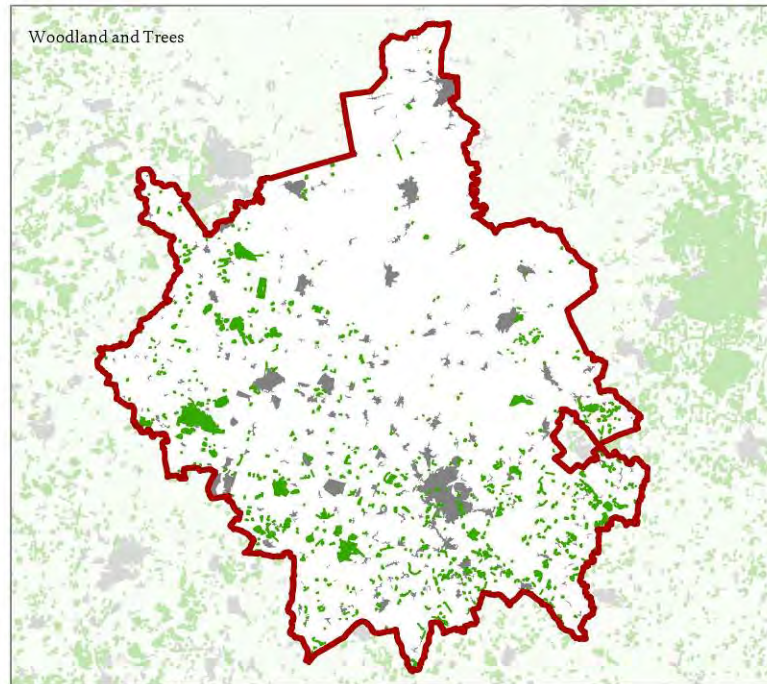
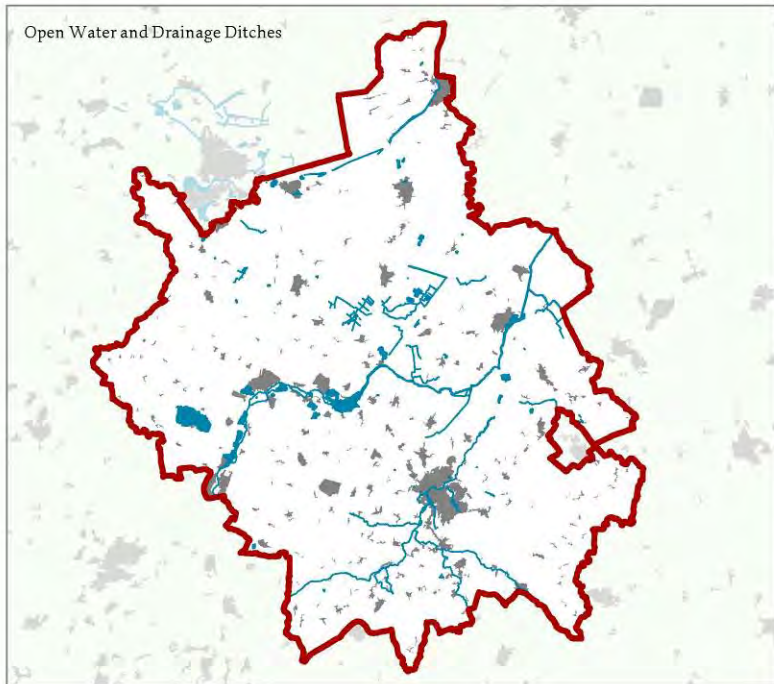
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Woodland and fen habitat sites and Biodiversity Reservoirs

Figures 6.6 and 6.7 identify the location of existing habitats and show where it would be more appropriate to undertake woodland planting and management, and peat restoration to link to and enhance these existing habitats.

Figure 6.6 & 6.7 Principle habitat types (Next page)



LEGEND

-  Study Area Boundary
- Principal Habitat Types**
-  Open Water and Drainage Ditches
-  Woodland and Trees
-  Wet Woodland and Trees
-  Hedges and Farmland



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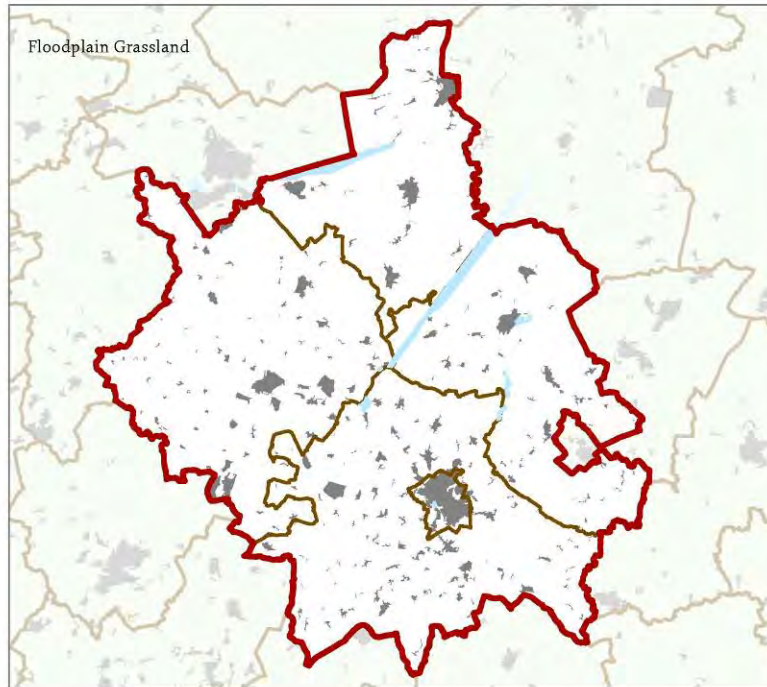
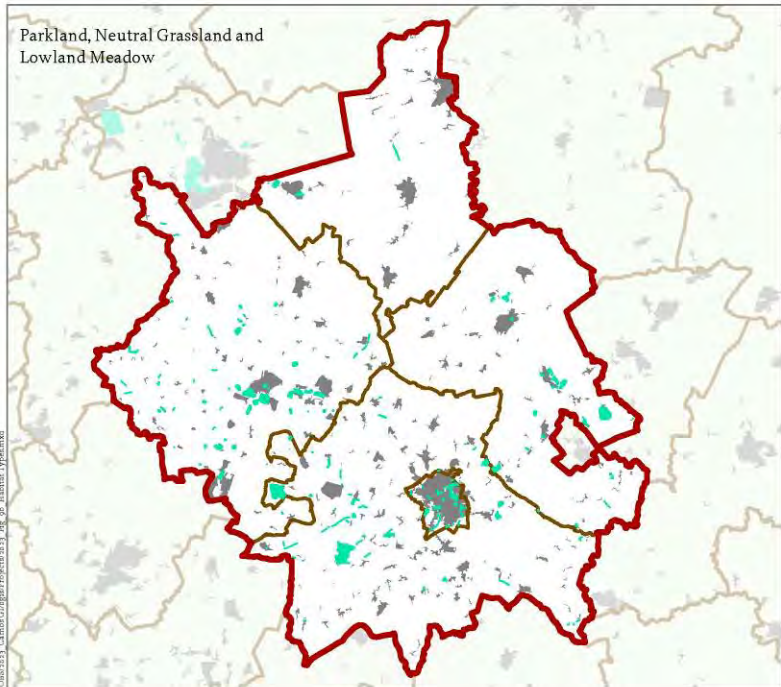
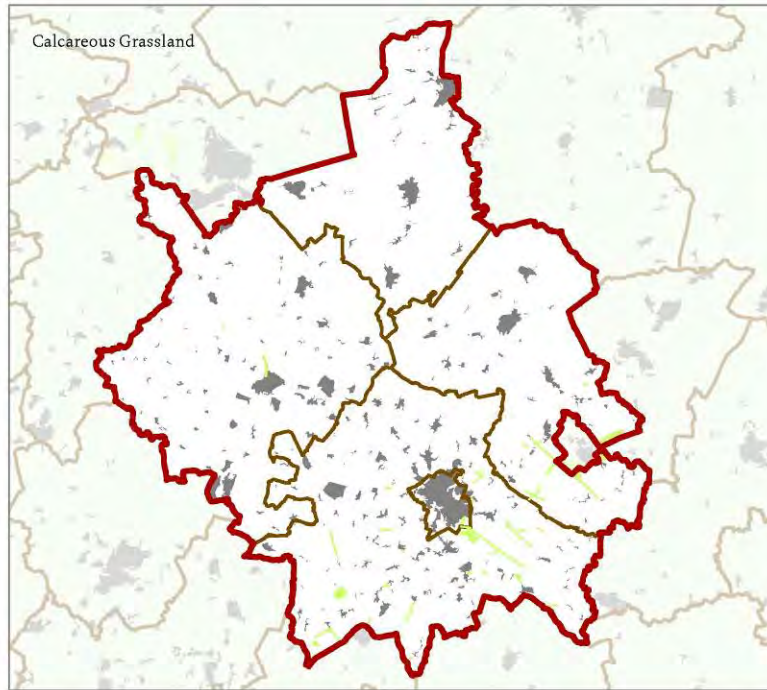
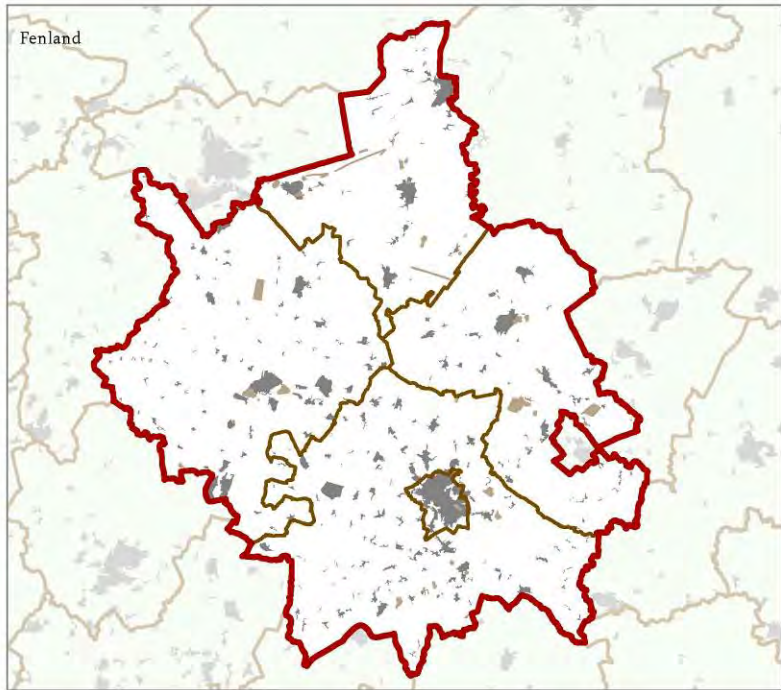
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



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LEGEND

-  Study Area Boundary
- Principal Habitat Types
 -  Fenland
 -  Calcareous Grassland
 -  Parkland, Neutral Grassland and Lowland Meadow
 -  Floodplain Grassland



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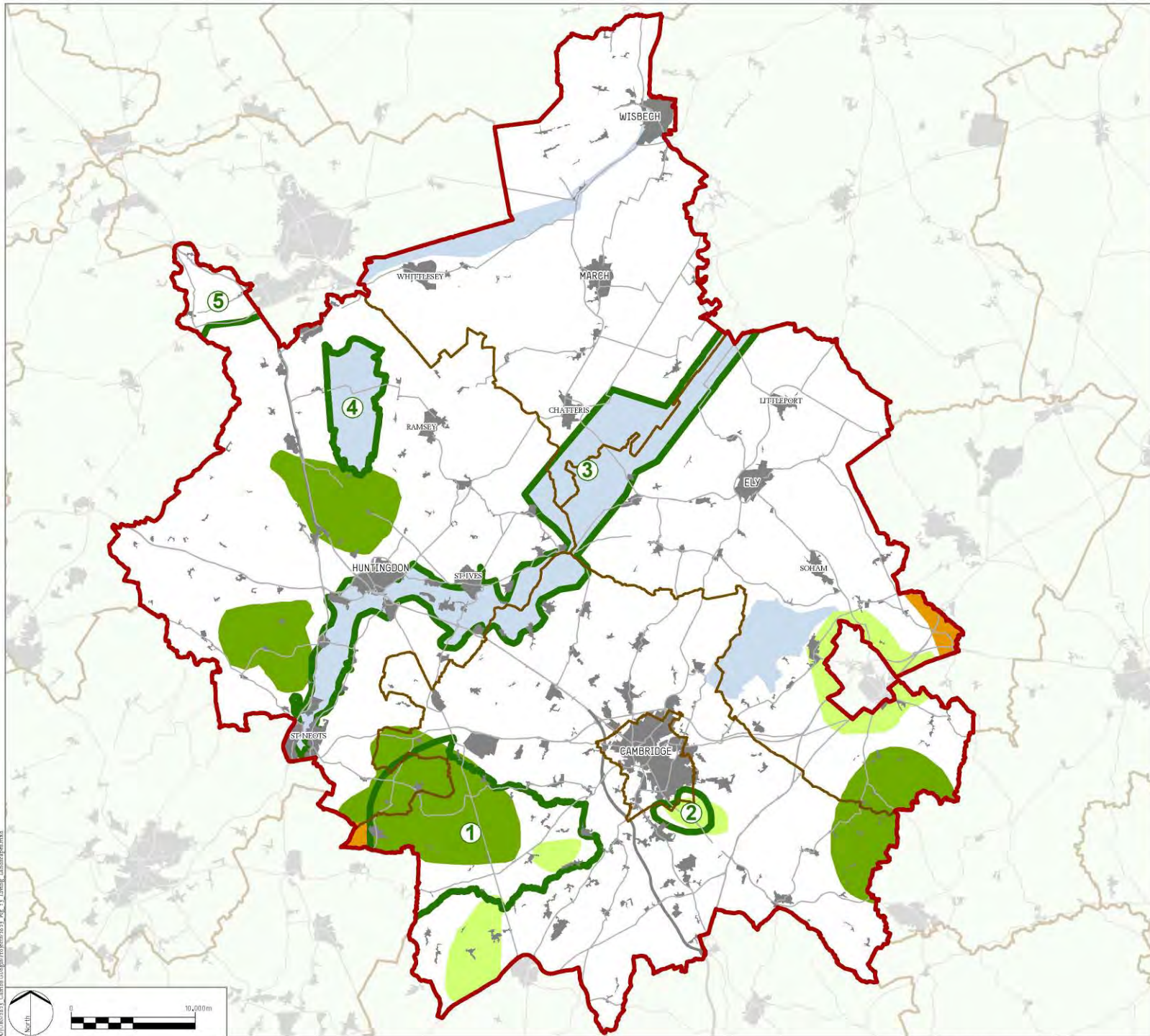
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 Sources: Ordnance Survey, 2001 Census Area Data, Natural England, DEFRA & Cambridgeshire and Peterborough Biological Records Centre.

Wildlife Trust's Living Landscape projects and Biodiversity Partnership's 50 Year Vision

The Cambridgeshire and Peterborough Biodiversity Partnership have identified areas for large-scale habitat creation to support Biodiversity Action Plan habitats and species - reflecting in part the location of existing habitats. The Wildlife Trust has also identified similar areas called 'living landscapes'. Figure 6.8 highlights areas for woodland creation and peat restoration and allows the identification of broad areas for carbon capture and storage and wood fuel production

Figure 6.8 Wildlife Trust's Living Landscape projects and Biodiversity Partnership's 50 Year Vision (Next page)



LEGEND

Study Area Boundary

Biodiversity Partnership's 50 Year Vision Target Habitats

- Chalk and Limestone Grassland
- Habitats Including Meadows
- Acid Grassland and Heath
- Woodlands and Hedgerows

Wildlife Trust Living Landscapes (within Cambridgeshire)

- 2. Gog Magog
- 1. West Cambridgeshire Hundreds
- 3. Ouse Valley
- 4. Great Fen
- 5. Nene Valley

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Wildlife Trust's Living Landscapes Projects and Biodiversity Partnership's 50 Year Vision

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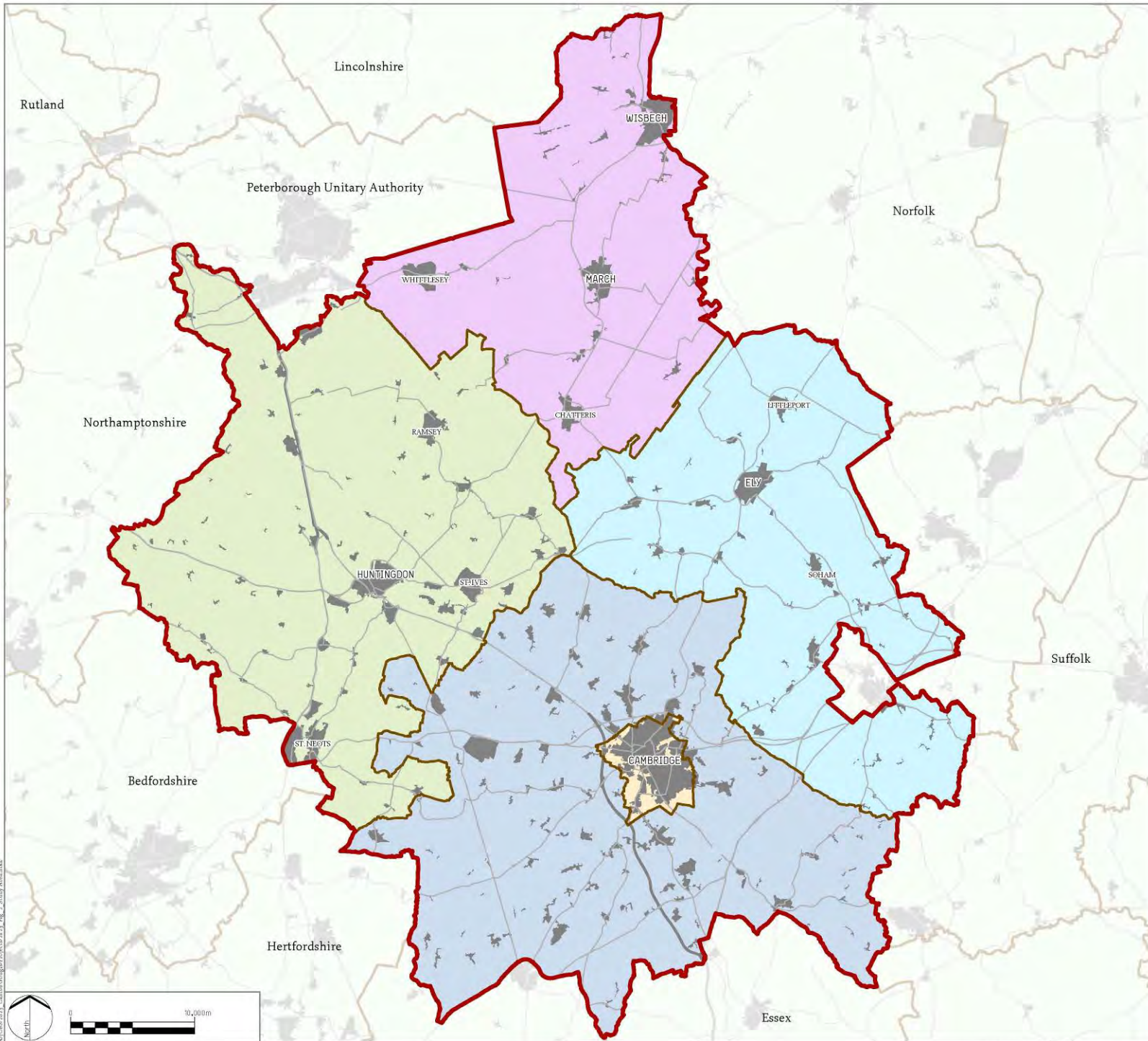
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Main Urban Areas

Climate change projections indicate an increase in average summer temperatures of around 2.5°C by the middle of the century. These can be particularly noticeable in urban areas, where the built environment increases temperatures and hold heat for longer than in rural/natural areas. This 'urban heat island effect' can have significant impacts of people's health and wellbeing.

Figure 6.9 shows the larger settlements within Cambridgeshire and the main urban centres where the heat island effect is likely to be most significant.

Figure 6.9 Study Areas within Cambridgeshire (Next page)



- LEGEND**
- Study Area Boundary
 - Fenland District Council
 - East Cambridgeshire District Council
 - Huntingdonshire District Council
 - South Cambridgeshire District Council
 - Cambridge City Council

Urban areas are derived from the Census 2001 dataset and includes all built up and developed areas.

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 Cambridgeshire, showing Administrative Boundaries and Settlement Pattern

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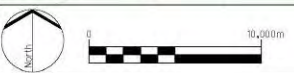
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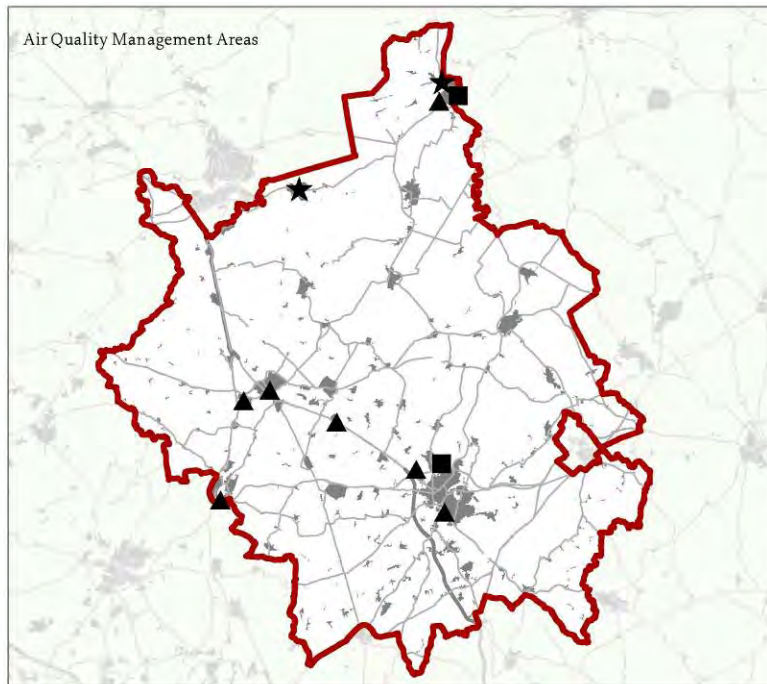
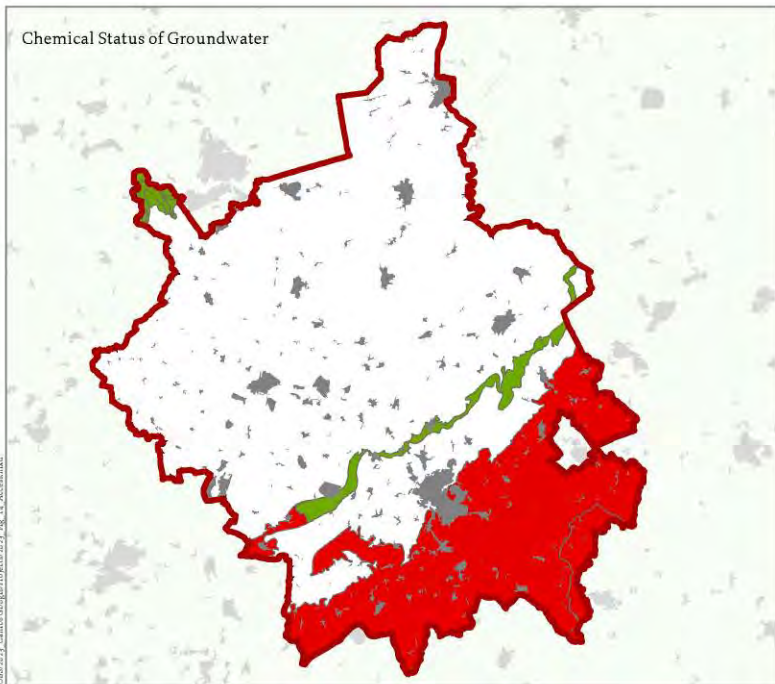
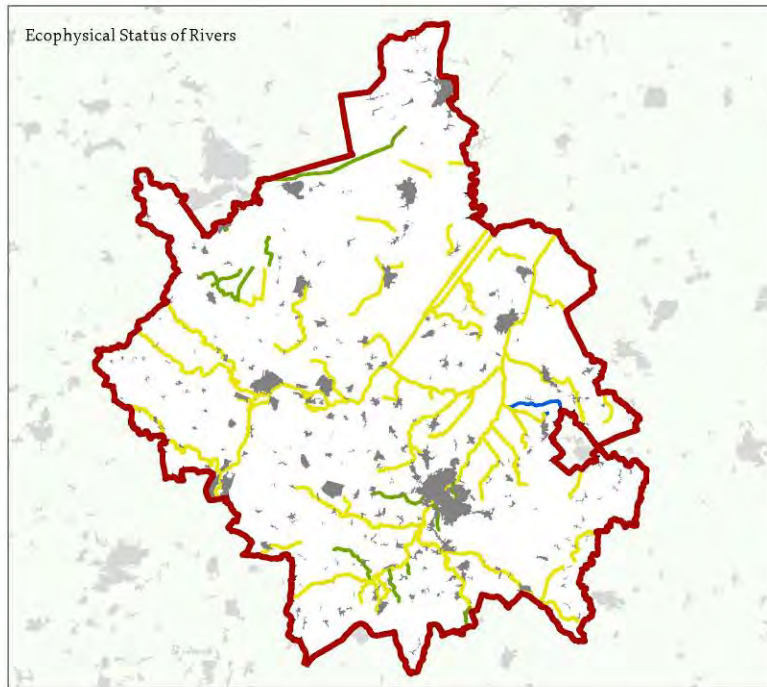
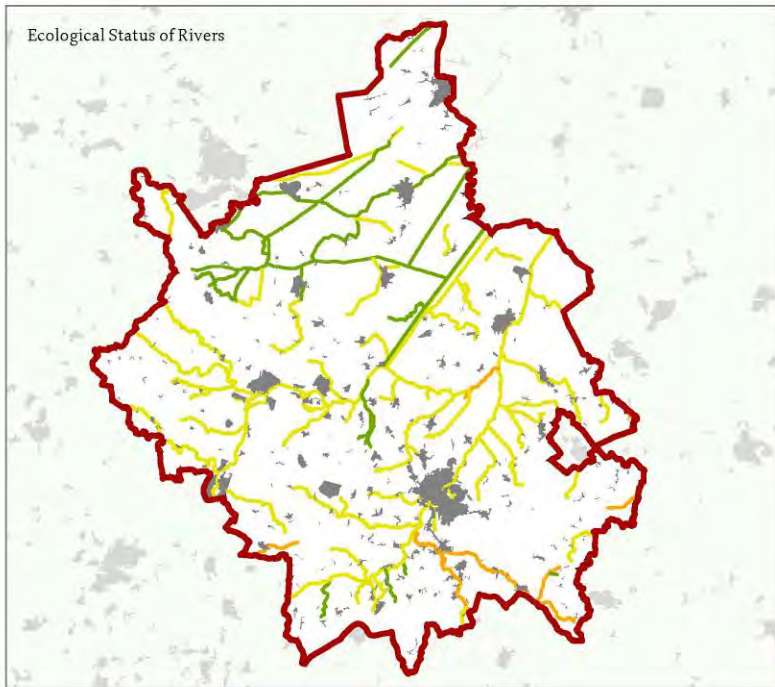


Air Quality Management Areas

Poor air quality affects people's health and can be exacerbated by the impacts of climate change - in particular, extreme summer events such as heat waves.

Air quality management areas (AQMAs) are designated where air quality is poor to enable action to be taken to improve air quality. Those living and working within AQMAs may be detrimentally affected by the impacts of poor air quality. Green Infrastructure, particularly tree planting, can help alleviate air pollution. Figure 6.10 presents environmental quality data (surface water quality and air quality).

Figure 6.10 Environmental Quality (Next page)



LEGEND

- Study Area Boundary
- Ecological Status of Rivers**
 - Good
 - Moderate
 - Poor
- Ecophysical Status of Rivers**
 - High
 - Good
 - Moderate
- Chemical Status of Groundwater**
 - Good
 - Poor
- Air Quality Management Areas**
 - NO₂
 - PM₁₀
 - SO₂



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PROJECT TITLE
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DRAWING TITLE
Environmental Quality

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Sources: Ordnance Survey, Environment Agency & Cambridgeshire County Council.

2 What this information tells us

Cambridgeshire is within a particularly dry part of the country. Changes in weather patterns such as summer conditions are likely to exacerbate potential drought problems with widespread impacts on native woodlands, habitat persistence and agricultural productivity. By contrast, much of the north of county is low lying and is at risk of flooding.

Changes as small as a 2°C global temperature rise will have serious impacts:

- Rising sea levels
- Extreme events such as droughts and heavy rainfall, leading to disruption to natural and man-made habitats.
- Communities across the county may struggle to cope with the effects of warmer summers and wetter winters.

Growth and development will serve to further exacerbate the potential human and economic impacts.

There are opportunities to:

- Undertake woodland planting and management (including ancient woodland) with potential for wood fuel production, woodland creation and woodland habitats
- Provide existing large-scale peat restoration or appropriate habitat creation schemes, which could help to further research into the costs and benefits of carbon capture and storage through peat restoration;
- mitigate against increased flood risk through appropriate habitat creation or management;
- To reduce heat island effect
- To help mitigate air pollution

3 Spatial Analysis

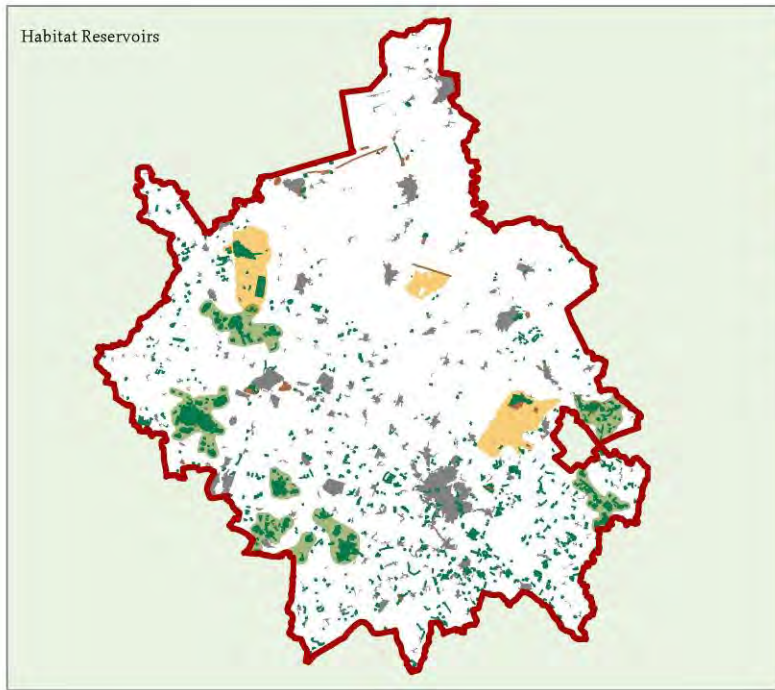
Further mapping enables identification of these opportunities and the development of one climate change theme map. Figures 6.11 and 6.12 indicate areas where Green Infrastructure could:

- Mitigate against increased flood risk through appropriate habitat creation or management.
- Could provide large-scale peat restoration or appropriate habitat creation schemes.

- Enable woodland creation and enhance principle woodland habitats (including ancient woodland) including through management and potential wood fuel production
- Reduce heat island effect in urban areas.
- Help improve air quality

By bringing all these together the Climate Change Theme Figure 6.13 was developed.

Figure 6.11 & 6.12 Climate Change opportunity analysis, Figure 6.13 Climate change opportunities (Next page)

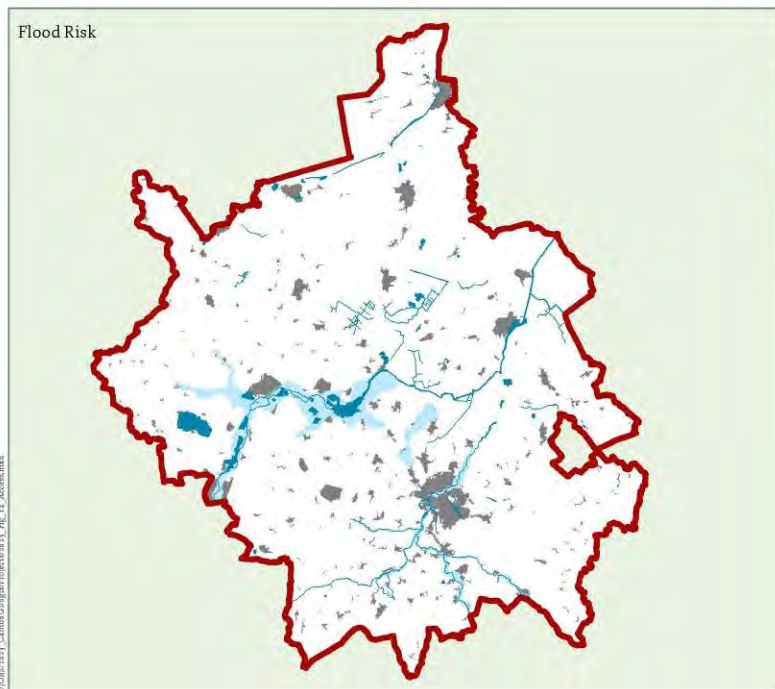


- LEGEND
- Study Area Boundary
 - Settlement
 - Fen Habitat
 - Fen Habitat Opportunity Areas
 - Woodland Habitat
 - Woodland Habitat Opportunity Area

Habitat Reservoirs
 This map identifies areas where there is fen and woodland habitat and opportunities for carbon sequestration through peat restoration and woodland planting.



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- LEGEND
- Study Area Boundary
 - Settlement
 - Open Water
 - Flood Risk Opportunity Areas

Flood Risk
 This map identifies areas where there is open water and opportunities to reduce the risk of flooding.

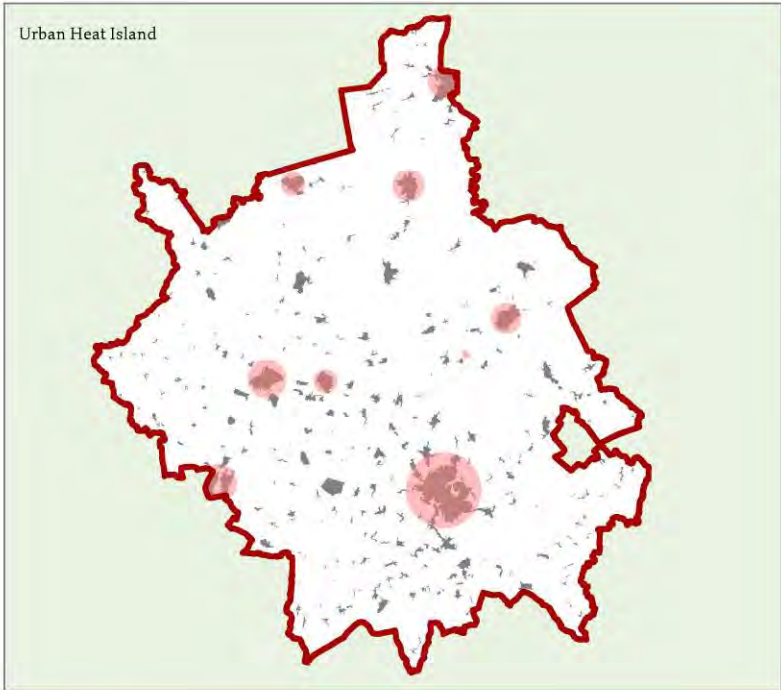
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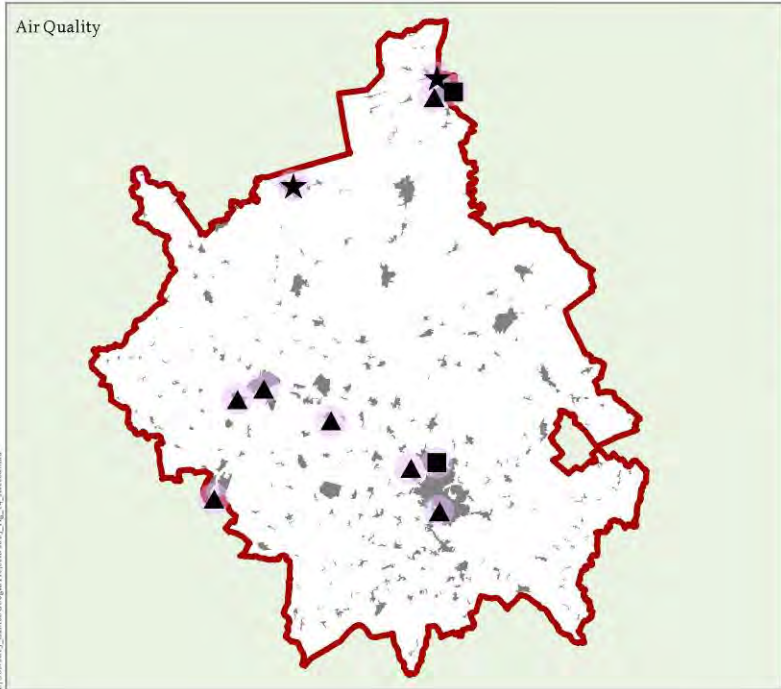


- LEGEND
-  Study Area Boundary
 -  Settlement
 -  Urban Heat Island Opportunity Areas

Urban Heat Island
 This map identifies areas where there are principal settlements and opportunities to reduce the effects of urban heat island.



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- LEGEND
-  Study Area Boundary
 -  Settlement
- Air Quality Management Zones
-  NO₂
 -  PM₁₀
 -  SO₂
-  Air Quality Opportunity Area

Air Quality
 This map identifies areas where there are air quality management zones and opportunities to improve air quality.

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Climate Change Opportunity Analysis (2)

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4 Green Infrastructure and Climate Change opportunities

This section will identify:

- The Issues and Opportunities for Climate Change Mitigation
- The Issues and Opportunities for Climate Change Adaptation

The Issues and Opportunities for Climate Change Mitigation

Climate Change mitigation is the reduction of CO₂ emissions and greenhouse gases into the atmosphere. The mitigation measures considered for Cambridgeshire include:

- Carbon sequestration
- Supply of wood fuel
- Sustainable transport and reducing the need to travel

Carbon Sequestration

This is the capture and storage of carbon emissions through the use of 'carbon sinks' such as woodland and peat. The Cambridgeshire GI Strategy can help ensure that the release of carbon is minimised and that 'carbon sinks' are created in areas where natural geography and land use allows. The continued management of land uses so they continue to act as carbon stores should be protected and enhanced where appropriate. There is also potential to explore opportunities for "offsetting" the carbon emissions of new developments by increasing carbon stored through Green Infrastructure in key opportunity areas identified in Cambridgeshire.

In the U.K. soils contain more carbon than vegetation, and different soil types have different carbon components (for example peat stores more carbon than sand). Different types of vegetation also store different amounts of carbon, with, for example, forests generally having significantly higher above ground carbon reservoirs than other vegetation types. Depending on their nature, land use change and/or management practices can lead to increases or decreases in the amount of carbon stored in both soils and vegetation.

Peat bogs act as an important carbon sink - and are deemed the single most important soil type for carbon storage.⁹ Within the UK, peat lands contain more than half of total UK soil carbon, but many are under threat from activities including cultivation, drainage, burning and extraction (for use in horticulture or for fuel). Within East Anglia, the average rates of peat loss in the Fens are around 1.5 cm per year. Natural England estimates that in their current state, English peat lands are responsible for the emission of ~3 million tonnes of CO₂-equivalent a

⁹ Natural England (2010) England's peat lands: Carbon storage and greenhouse gases
<http://naturalengland.etraderstores.com/NaturalEnglandShop/NE257>

year, which is similar to emissions from around a third of a million British households.

Trees and woodlands play an important role in balancing the cycle of greenhouse gases, particularly carbon dioxide, by acting as carbon reservoirs (storing carbon in biomass, litter and soils). The Read Report (2009)¹⁰, produced on behalf of the Forestry Commission, suggests that actively growing woodland in the UK sequester on average three tonnes of carbon (equivalent to 11 tonnes of CO₂) per hectare, per year. Various activities can be employed to influence the uptake of CO₂ in woodlands, including sustainable harvesting; increasing the forest carbon stored per unit area through forestry management measures (such as longer rotations and increased tree stocking densities), and extending the time over which harvested wood remains in use.

Supply of Wood fuel

Substituting fossil fuels for renewable wood fuel supply will support the reduction of CO₂ emitted. Establishing sources of renewable energy such as wood fuel in appropriate locations should also be a priority of Green Infrastructure.

Sustainable transport and reducing the need to travel

Promoting the opportunities to walk, cycle and use public transport to move around Cambridgeshire through a green and sustainable transport network will help reduce carbon emissions. This includes identifying gaps in the existing rights of way network to ensure people can get to where they want to go. The protection of high quality recreational assets close to where people live the creation of new assets as part of new development that reduce the need to travel by car.

In addition, helping to reduce 'food miles' through supporting initiatives that promote local food production/ markets such as farm shops, community gardens and/or orchards close to where people live. Green Infrastructure provision should seek to ensure that the best and most versatile land is protected and maintained in agricultural land uses. It may also be possible, through advice and guidance, to promote soil management and farming practices that reduce greenhouse gas emissions, such as organic/ low tillage.

Climate Change Adaptation

Adaptation recognises that there are now some inevitable climate change implications, which need to be addressed. The role Green Infrastructure in climate change adaptation is perhaps more significant than it is in mitigation.

The key areas of adaptation include:

- Moderation of the Urban Heat Island Effect
- Flood risk management
- Habitat creation

¹⁰ Read Report (2009) <http://www.forestry.gov.uk/forestry/infd-7y4gn9>

Urban Heat Island Effect

The GI Strategy has the potential to moderate the urban heat island effect, especially in densely built up areas such as Cambridge, through the protection, management and planning of green and blue space and sensitive tree planting. Consideration should also be given to maintaining Green Infrastructure assets, such as river corridors or Sustainable Urban Drainage (SUDS), that encourage air flow into and through urban areas, and woodland that can filter out air pollutants.

Flood Risk management

The GI Strategy can reduce the impacts of flood risk through the restoration of natural flood plains along river valleys, creating strategic flood storage areas, and delivering Sustainable Drainage Systems (SUDS) as part of development proposals. Such an approach will support the Government's strategy 'Making Space for Water'¹¹, which proposes a whole catchment approach in order to take better account of the environmental and social consequences of flood risk. Within this, the promotion of green roofs planting of trees, permeable paving and rainwater harvesting also have a role in reducing flood risk and making the most of available water.¹²

Habitat creation

Due to changing weather patterns, there is evidence that certain flora and fauna will need to move northwards to find suitable alternative habitat. The GI Strategy will need to identify opportunities where existing habitats and wildlife sites can be connected to new habitats to fill the gaps in the existing habitat networks. Priority should be given to enhancing north-south habitat connectivity.

Certain flora will also not be able to tolerate changing climatic conditions. The design of new and existing open spaces will need to consider the types of trees and plants that are resilient to a changing climate.

¹¹ Defra, Making Space for Water: Taking forward a new Government strategy for flood and coastal erosion risk management in England, 2005

¹² Shaw R et. al. Climate Change Adaptation by Design, Town and Country Planning Association, 2007

Table 6.2: Projected changes in climate in the East of England up to the 2080s (relative to the 1961-1990 baselines)

| Variable | Emissions Scenario | Range of Change - 2020s | | | Range of Change - 2050s | | | Range of Change - 2080s | | |
|--|--------------------|-------------------------|---------------|-------------|-------------------------|---------------|-------------|-------------------------|---------------|-------------|
| | | Lower (10%) | Central (50%) | Upper (90%) | Lower (10%) | Central (50%) | Upper (90%) | Lower (10%) | Central (50%) | Upper (90%) |
| Average Summer Temperature | Low | +1.0°C | +2.4°C | +4.0°C | +1.0°C | +2.4°C | +4.0°C | +1.3°C | +2.7°C | +4.7°C |
| | Medium | +1.2°C | +2.5°C | +4.3°C | +1.2°C | +2.5°C | +4.3°C | +1.9°C | +3.6°C | +5.9°C |
| | High | +1.3°C | +2.9°C | +4.8°C | +1.3°C | +2.9°C | +4.8°C | +2.4°C | +4.5°C | +7.5°C |
| Average Winter Temperature | Low | +0.5°C | +1.3°C | +2.1°C | +0.9°C | +2.0°C | +3.1°C | +1.4°C | +2.6°C | +4.0°C |
| | Medium | +0.6°C | +1.3°C | +2.2°C | +1.1°C | +2.2°C | 3.4°C | +1.6°C | +3.0°C | +4.7°C |
| | High | +1.0°C | +1.0°C | +2.0°C | +1.4°C | +2.5°C | +3.8°C | +2.0°C | 3.7°C | +5.7°C |
| Temperature on the warmest day of the year | Low | -2.0°C | +1.1°C | +4.3°C | -1.6°C | +2.3°C | +6.7°C | -2.3°C | +2.3°C | +7.7°C |
| | Medium | -1.9°C | +1.1°C | +4.3°C | -1.6°C | +2.2°C | +6.9°C | -2.1°C | +2.9°C | +9.3°C |
| | High | -1.7°C | +1.4°C | +4.7°C | -2.0°C | +2.6°C | +8.0°C | -2.2°C | +3.8°C | +11.5°C |
| Average Summer Precipitation | Low | -21% | -5% | +11% | -33% | -12% | +14% | -35% | -13% | +11% |
| | Medium | -23% | +6% | +12% | -37% | -16% | +6% | -44% | -20% | +6% |
| | High | -15% | -3% | +20% | -39% | -17% | +8% | -52% | -26% | +4% |
| Average Winter Precipitation | Low | -2% | +6% | +16% | +1% | +12% | +26% | -4% | +16% | +34% |
| | Medium | -2% | +6% | +16% | +3% | +14% | +31% | +4% | +20% | +44% |
| | High | -1% | +7% | +16% | +3% | +16% | +35% | +52% | +26% | +4% |
| Rainfall on the wettest day of the year | Low | -6% | +6% | +19% | -0.5% | +12% | +26% | +2% | +16% | +33% |
| | Medium | -4% | +6% | +17% | +2% | +14% | +30% | +5% | +20% | +41% |
| | High | -4% | +7% | +21% | +2% | +16% | +33% | +7% | +26% | +53% |

Figures quoted in Section in this Appendix.

Cambridgeshire Green infrastructure Strategy Appendix 7

Green Infrastructure Gateways

Contents

- 1 Introduction and Definition
- 2 Baseline Information
 - Main functions of gateways
 - Examples of 'gateways' in use
 - Gateway examples from Cambridgeshire
 - Scale of Gateway Developments
- 3 Spatial Analysis
- 4 What this information tells us
- 5 Issues and Opportunities

This appendix identifies the baseline datasets and relevant policies for Green Infrastructure Gateways, which are important components of Green Infrastructure in Cambridgeshire. These identify the general and spatial issues that relate to this Theme. Conclusions are then made about how the issues can be mapped and overlaid to highlight the opportunities that exist for the Green Infrastructure Gateways Theme.

This resulted in a map of Green Infrastructure Gateways opportunities which was then combined with the other six Themes, as well as other important issues and assets in Cambridgeshire, to inform and develop the Strategic Network of Green Infrastructure.

1 Introduction and Definition

Green Infrastructure Gateway sites are areas that introduce people to the countryside and greenspaces through accessible, safe and functional landscape resources and encourage the use of other resources through links with circular routes, trails, waterways and public rights of way (PRoW).

Gateway sites should be located in transitional locations (e.g. the urban-fringe or rural locations between centres of population) where they can act as stepping stones connecting people with more rural landscapes or open countryside. Gateways should provide amenities or services to encourage use, and information about each site should be made available as widely as possible through on-site provision and other media.

Gateways therefore:

- Offer balance between recreational need, nature conservation and access to the countryside
- Develop or further the concept of a 'connected landscape'
- Provide appropriate locations for outdoor activity that facilitate easy movement between urban and rural areas
- Enable people to move between rural locations by means of publicly accessible routes
- Enable the establishment and creation of 'outward' looking spaces that facilitate the use of the countryside by people who live in urban areas.¹
- Promote, protect and where appropriate enhance the historic environment to attract visitors and long-term funding
- Can be seen as entrances to a wider landscape
- Facilitate community involvement in setting objectives for green spaces to encourage a longer-term use of the landscape

¹ In the document, 'The countryside in and around towns: A vision for connecting town and country in pursuit of sustainable development (The Countryside Agency & Groundwork, 2005) it is noted that gateways can be either a) a bridge to the countryside or b) a gateway to the town. Also, in terms of master planning gateway appears to be used predominately as a moniker to encapsulate moving inward and towards a location. Thus, gateways appear to act as entrances to a specific location (e.g. discussions of gateways in Soham masterplan). Consequently, there is a need to be very careful with the wording and definition of a gateway to avoid confusion.

2 Baseline Information

Main functions of gateways

'Gateway' sites have a number of complementary functions, many of which are discussed frequently in Green Infrastructure research. Gateway sites can:

- Facilitate use of the landscape for leisure, recreation and health and quiet enjoyment
- Provide easier access to existing sites of interest
- Provide high quality amenities and services that meet the needs of local populations (access, connectivity and facilities)
- Promote, protect and where possible enhance the value of ecological, historic and social resources and locations
- Develop a stepping stone landscape or landscape mosaic that provides a tiered network of sites for users (urban parks, gateway sites, landscape scale sites)
- Provide an integrated approach to urban - urban-fringe - rural Green Infrastructure or open spaces site development that values these resources in each location
- Enable rural-to-rural access to resources via gateway sites
- Promote economic investment by encouraging more outdoor lifestyles and activities (investment into local services and amenities - shops, transport, leisure facilities)
- Encourage a greater use of the landscape to facilitate better health and well-being (extensive economic benefits of such a process to the NHS in terms of lowering costs of primary and tertiary health care)
- Encourage greater use of the landscape to promote sustainable development and economic regeneration (e.g. via tourism)

Thames Gateway:

The Thames Gateway is a sub-regional example where 'gateways' have been used to facilitate a larger landscape scale programme of capital infrastructure development. Working within the proposed Green Grid for the South-East and estuary area, Communities and Local Government and the London Development Agency identified five themes - a) Thames Gateway (TG) waterfront, b) TG heritage, c) TG corridors, d) TG squares and e) TG landscapes - that gateways should be developed alongside:

North-East of England:

The North-East Community Forests identifies countryside gateway sites in and around Gateshead, South Tyneside, Sunderland, County Durham, Darlington-Stockton-Hartlepool and Teeside. The 37 sites identified as part of the project are located in close proximity to an urban area and provide key links between urban and rural areas.

The North-East Community Forests Partnership (NECF) has facilitated urban-fringe and brown field redevelopment with a view of increasing the ecological and social value of these areas. Examples of such sites include: the Rising Sun Country Park, Herrington Country Park and Wynyard Woodland Park.

The promotion of gateway sites focuses predominately on introducing people to an accessible, safe and functional landscape that then encourages them to further explore the countryside using PRoW and other accessible routes.

Figure 7.1 Examples of 'Gateways' in use

Gateway examples in Cambridgeshire

Anglesey Abbey

Anglesey Abbey is an example of a gateway site between Cambridge and Wicken Fen. It provides a connective route between the City and the countryside. Anglesey Abbey also provides recreational and environmental assets that attract people to it and it is accessible by public transport or bicycle. It can, however, also be accessed by car. It facilitates additional movement to the wider countryside by foot, horse or bicycle due to the Public Rights of Way and cycle path network in the area.

Northstowe

At a larger scale Northstowe could be viewed as a future gateway site. Northstowe is located between Cambridge and the Ouse Valley and could aid the movement of people from Cambridge, the northwest urban expansions and from Northstowe itself into the wider countryside/Ouse Valley. Northstowe could therefore act as a hub linking with the wider countryside through Public Rights of Way, the Guided Busway, cycleways and through the Green Infrastructure provision within the new settlement.

The Fens

Smaller locations within the Fens could act as more localised gateways that provide access to a series of walks or activities such as nature reserves or long distance trails. These smaller sites could provide the essential access links between larger and more popular sites and aid the creation of a wider network of gateways. The Great Fen masterplan identifies a number of gateway locations that would help visitors access the project area.

Scale of Gateway Developments

Further work is needed regarding the most appropriate scale for Gateway development sites in Cambridgeshire. Work in the North-East of England has proposed that smaller scale sites may promote better movement and use of the wider countryside because of the position of a site and its values for a given community. However, larger projects at a sub-regional scale (i.e. Thames Gateway / green grid) may be able to engage a larger (wider) population and encourage a greater engagement with the landscape.

The function of gateway sites, however, depends on the needs of the local population, the available resources on a site (and those which can be developed) and funding. Each site should therefore be appropriate to the location and there should be no restrictive criteria for identifying or developing a gateway site other than land availability, funding and meeting the needs of the local area. Consequently, a discussion should be made as to how 'local' a gateway site should be. This follows on from the requirement to meet local needs and provide appropriate resources to act as gateway sites. Gateways can be linked by accessible corridors (such as a disused railway or right of way).

Waterways and Green Infrastructure Gateways

Waterways for Everyone, Defra 2009

Following on from DETR White Paper 'Waterways for Tomorrow' (2000), this report provides a vision for how inland waterways can contribute to a wide range of public policy objectives concerning place-making and place-shaping, the natural environment, climate change, cultural heritage, health, well-being, recreation, tourism, business development and fairer, stronger and more active communities. Defra recommended that authorities at all levels should consider the potential of waterways in strategies and plans, recognizing the multi-functional role of the inland waterways and the need to maintain and improve the waterway resource.

Enjoying Water: Strategic Priorities for Water-Related Recreation in the East of England 2009-2014 (Brighton University for the Environment Agency, 2011)

This document outlines the strategic priorities shared by key stakeholders in developing recreational opportunities on and near the water. It identifies the benefits of water-related recreation, and maps current opportunities and gaps in provision.

Policy Advice Note: Inland Waterways. Unlocking the potential and securing the future of inland waterways through the planning system. Town and Country Planning Association and British Waterways, 2009

This document emphasises multi-functional role of inland waterways and the way they cut across a number of policy themes and support a range of Government agendas (sustainable communities, climate change, social inclusion and cohesion, health & well-being etc). It highlights opportunities to strengthen planning policy at all levels to support the role of waterways and secure their long-term sustainability, advocating a 'waterways proofing' approach to plans and strategies and a checklist for developments affecting waterways.

River Great Ouse Waterway Plan, Environment Agency 2005

The Environment Agency has published Waterway Plans that describe the vision for maintaining and enhancing their navigable waterways, including the River Great Ouse. The River Great Ouse Waterway Plan makes clear the Environment Agency's commitment to managing the river navigation in such

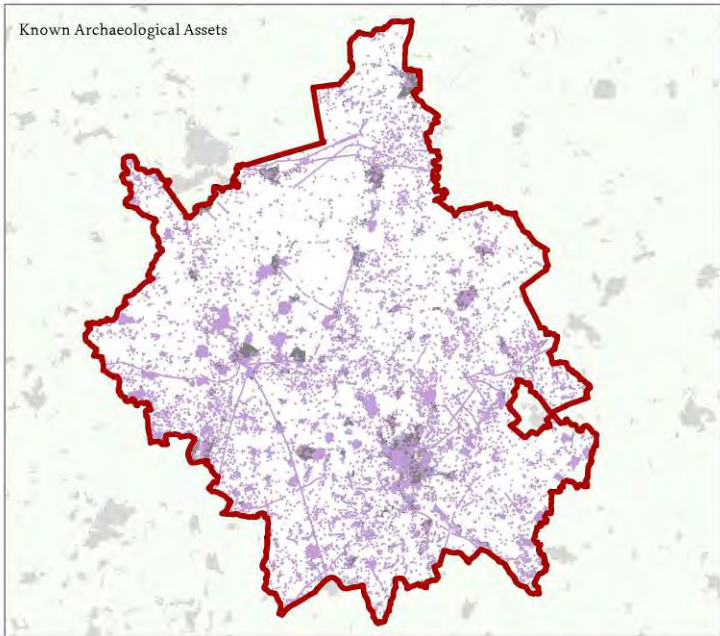
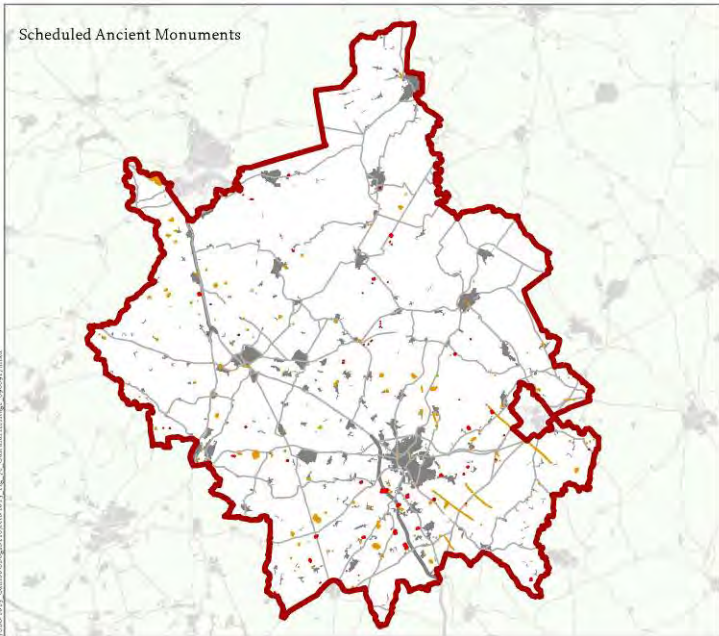
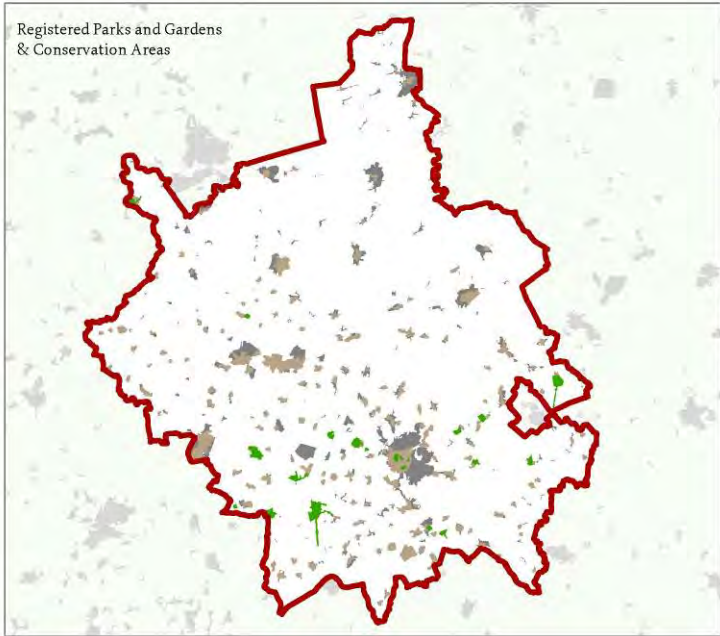
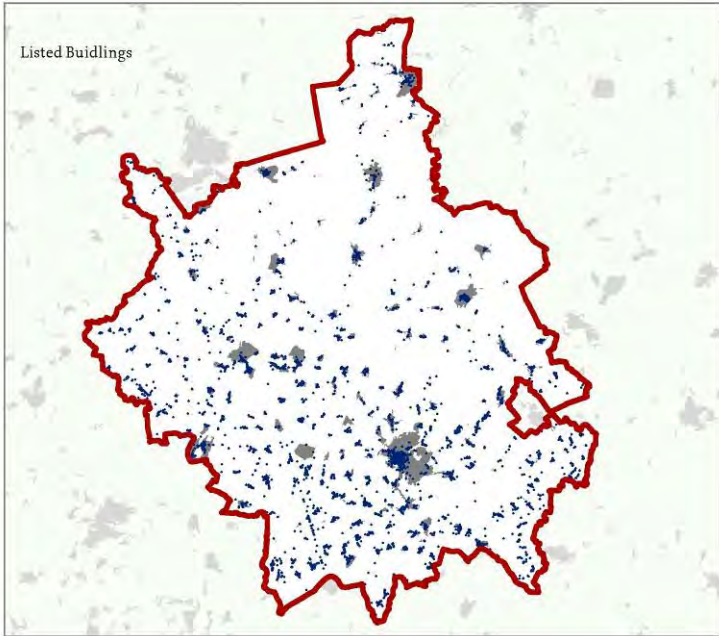
a way that maintains an equitable balance between the various uses, and recognises the full range of benefits the river can deliver for boaters and other recreation activities such as walking and fishing, and for the wildlife that depends on the natural riverine environment. The plan also recognises that in some aspects, the River Great Ouse navigation does not reach the standard expected of a 21st century navigation in terms of facility provision (moorings, pump-out points etc) and standards of service (weed cutting and dredging etc). It highlights a number of areas in Cambridgeshire where current provision falls short of the Waterway Standards of the Association of Inland Navigation Authorities (AINA), identifying the following areas of river corridor as having gaps that need to be addressed with new or improved facilities and services:




- St. Neots
- Huntingdon
- St. Ives
- Upware, Wicken, Burwell and Stretham
- Earith
- Ely
- Littleport
- Lakenheath

3 Spatial Analysis

Cultural Heritage Designations: Listed buildings, registered parks and gardens, Scheduled Ancient Monuments (SAMs) and known archaeological assets can have a role in providing specific Green Infrastructure Gateways or setting the wider context for Gateways in rural and urban locations. In particular publicly accessible registered parks and gardens and listed buildings and SAMs (such as Denny Abbey) have a significant role to play in providing Gateways. Figure 7.2 shows cultural heritage designations in Cambridgeshire. It should be noted that some assets are not suited to public access due to their fragility.

Figure 7.2 Cultural heritage designations in Cambridgeshire (Next page)



- LEGEND
-  Study Area Boundary
 -  Listed Building
 -  Registered Parks and Gardens
 -  Conservation Area
 -  Scheduled Monument
 -  Scheduled Monument at Risk (2010)
 -  Known Archaeological Asset



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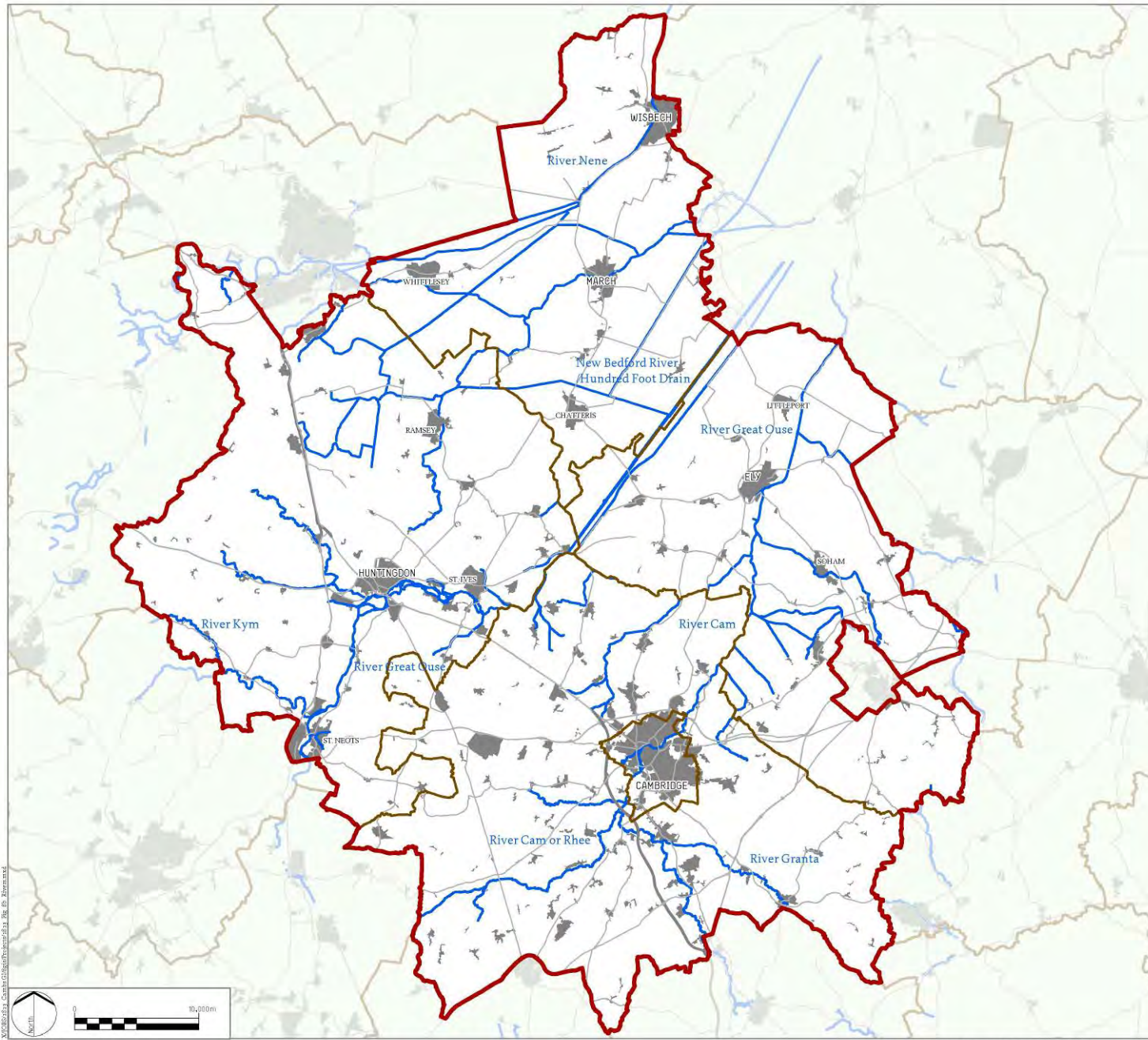
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Principal River Channels and Navigations: Figure 7.3 shows the principal river channels in Cambridgeshire. Rivers and navigation channels have an important tourism and economic function. They provide connections between settlements, the wider countryside and other destinations - both along the waterways themselves and also along adjacent rights of way, cycleways or other access routes. A recent Environment Agency study demonstrated that the River Great Ouse generates an economic value of £39 million per annum in the Anglian region. This equates to roughly £0.25 million per mile per annum in Cambridgeshire.

The large Cambridgeshire waterways network supports a wide range of recreational uses and a substantial boating industry, with a range of boat charter businesses. The River Nene provides a link into the British Waterways network at Northampton. Navigation from the River Great Ouse onto the Nene is currently possible via the Middle Level Navigations or via the Wash. The Fens Waterways Link project will enhance this connection and bring a significant increase in the number of boats travelling to Cambridgeshire from elsewhere in the inland navigation network. The waterways provide connections between settlements, the wider countryside and other destinations - both along the waterways themselves and also along adjacent rights of way, cycleways, towpaths or other access routes. Waterways within settlements can be an attraction for other types of visitor, not just those using the rivers and navigations.

Figure 7.3 Principle river channels in Cambridgeshire (Next page)



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Principal River Channels in Cambridgeshire

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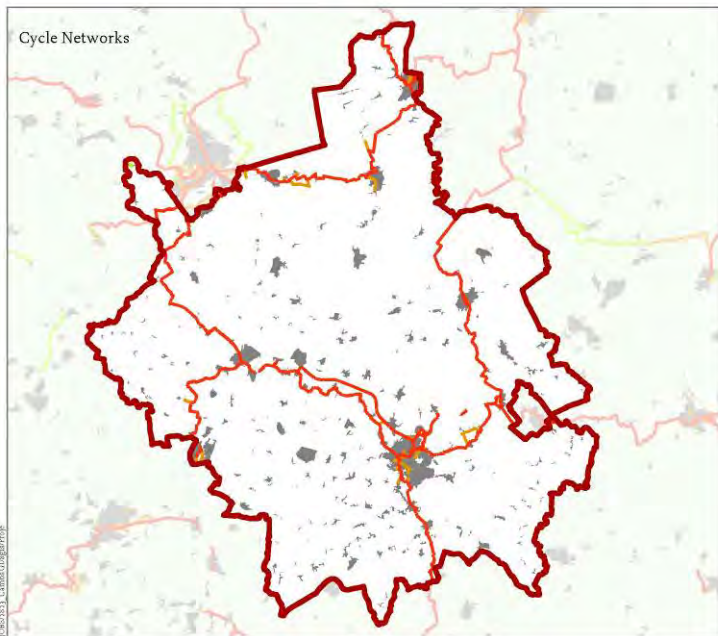
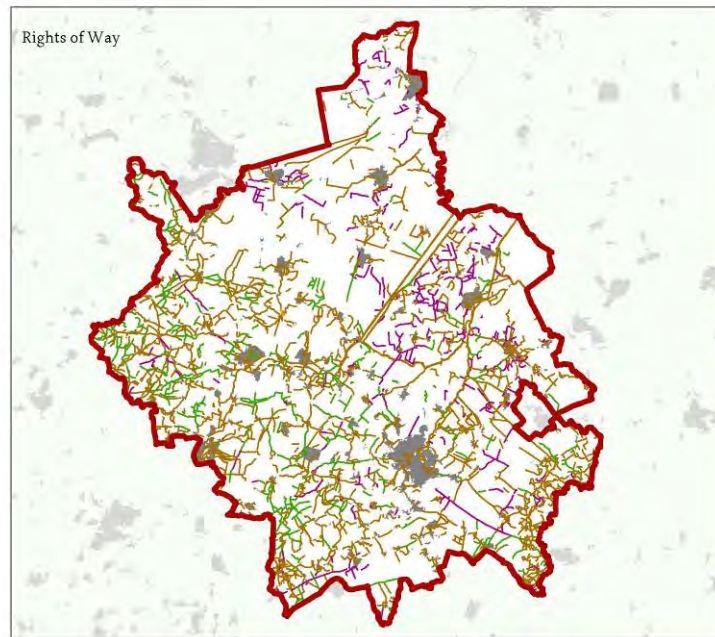
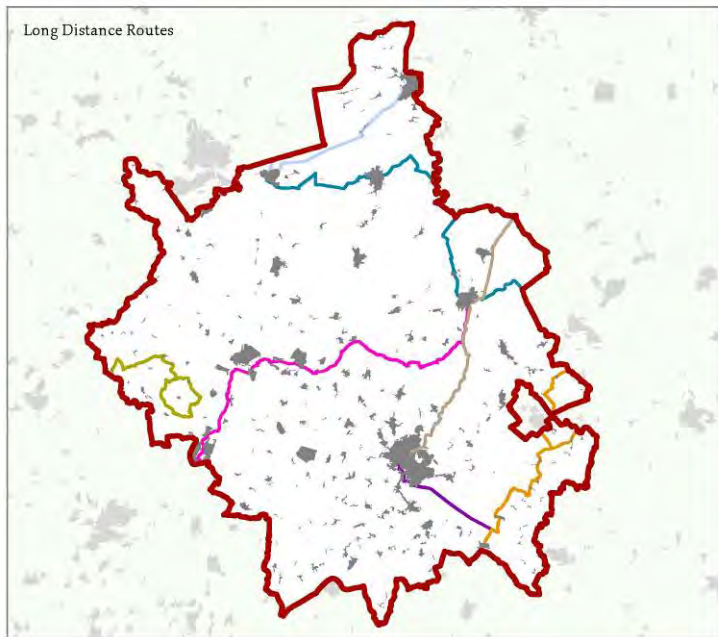
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Rights of Way, Cycling Routes and Navigation Channels: Figure 7.4 shows rights of way, cycling routes and navigable waterways in Cambridgeshire. Long distance promoted routes (such as the Fen Rivers Way or the Ouse Valley Way) and National Cycle Network Routes can provide tourism and economic benefits as well as providing a strategic network for movement around the county. The Trans European route E2 follows the line of the Hereward Way, Fen Rivers Way and the Roman Road Link through Cambridgeshire.

The Association of Inland Navigation Authorities (AINA) produces national standards for the type and quantity of services and amenities which should be provided for people using the waterway navigations. Within Cambridgeshire's navigable waterways there are a number of shortfall areas where the AINA standards are not currently met. These areas present an opportunity for enhancing gateways to Green Infrastructure. These shortfall areas should be taken into account when planning and delivering the Strategy's Strategic Network.

Figure 7.4 Rights of way, cycling routes and navigations (Next page)



LEGEND

| | | | |
|-----------------------------|-------------------------|--|---|
| | Study Area Boundary | | |
| Long Distance Routes | | | |
| | Ouse Valley Way | | Roman Road Link |
| | Fen Rivers Way | | Icknield Way |
| | Hereward Way | | Nene Way |
| | Three Shires Way | | |
| Rights of Way | | | |
| | Footpath | | Byways Open to all Traffic (BOATs) |
| | Bridleway | | Restricted Byway |
| Cycle Networks | | | |
| | Sustrans National Route | | National Cycle Network Link |
| | Sustrans Regional Route | | Local Cycle Network not available in digital format |
| Navigations | | | |
| | Principal River Channel | | Navigable Waterway |



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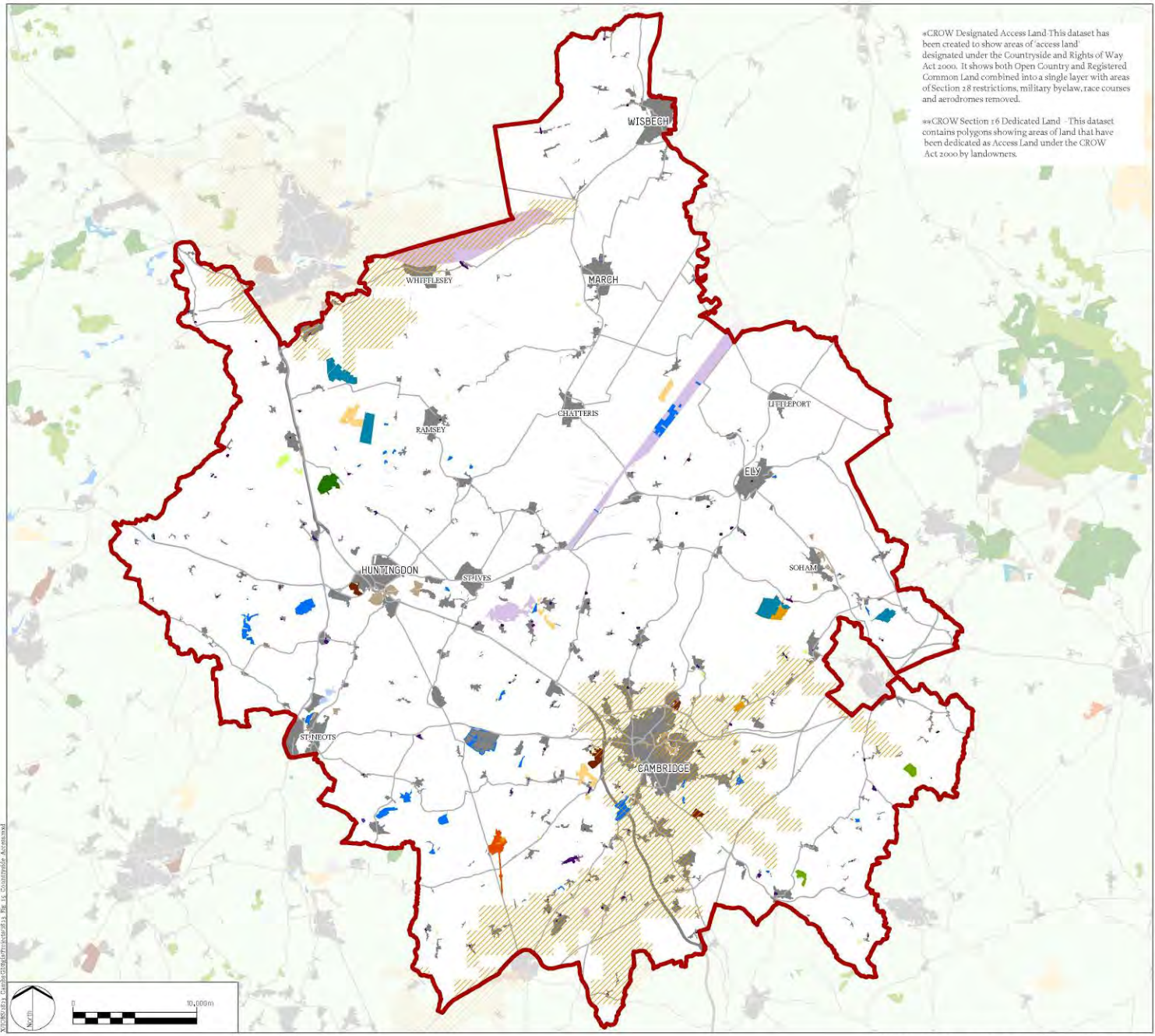
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Countryside Access: Figure 7.5 shows Countryside access in Cambridgeshire. There is a variety of sites across the county that are publicly accessible. These include over twenty Woodland Trust reserves and several National and Local Nature Reserves. In addition there are several Country Parks including Milton and Hinchingsbrooke. The National Trust owns land at Wimpole, Anglesey Abbey and Wicken Fen and Anglian Water owns Grafham Water. The RSPB runs reserves at Fowlmere, Fen Drayton Lakes and the Ouse Washes, where the Wildfowl Trust also operates. Wandlebury Country Park and Coton Countryside Reserve are run by Cambridge Past, Present and Future. In addition there are a range of County Farms access sites and countryside access is also provided by Environmental Stewardship schemes. Many of these are tourist attractions and are well used by local people.

Figure 7.5 Countryside access sites in Cambridgeshire (Next page)



*CROW Designated Access Land - This dataset has been created to show areas of 'access land' designated under the Countryside and Rights of Way Act 2000. It shows both Open Country and Registered Common Land combined into a single layer with areas of Section 28 restrictions, military byelaw, race courses and aerodromes removed.

**CROW Section 26 Dedicated Land - This dataset contains polygons showing areas of land that have been dedicated as Access Land under the CROW Act 2000 by landowners.

- LEGEND
- Study Area Boundary
 - Access Land Open Country/ Registered Common Land*
 - Section 26 Dedicated Land**
 - Village Green/Town Green
 - Forestry Commission Land
 - Woodland Trust Sites
 - Local Nature Reserve (LNR)
 - National Nature Reserve (NNR)
 - National Trust Land (Access 24 hrs)
 - National Trust Land (Access Limited)
 - RSPB Reserve
 - Wildlife Trust Nature Reserve
 - Country Park
 - Environmental Stewardship Agreements
Higher Level Stewardship and Organic
Entry Level Plus Higher Level Stewardship
 - Higher Level Stewardship Target Areas

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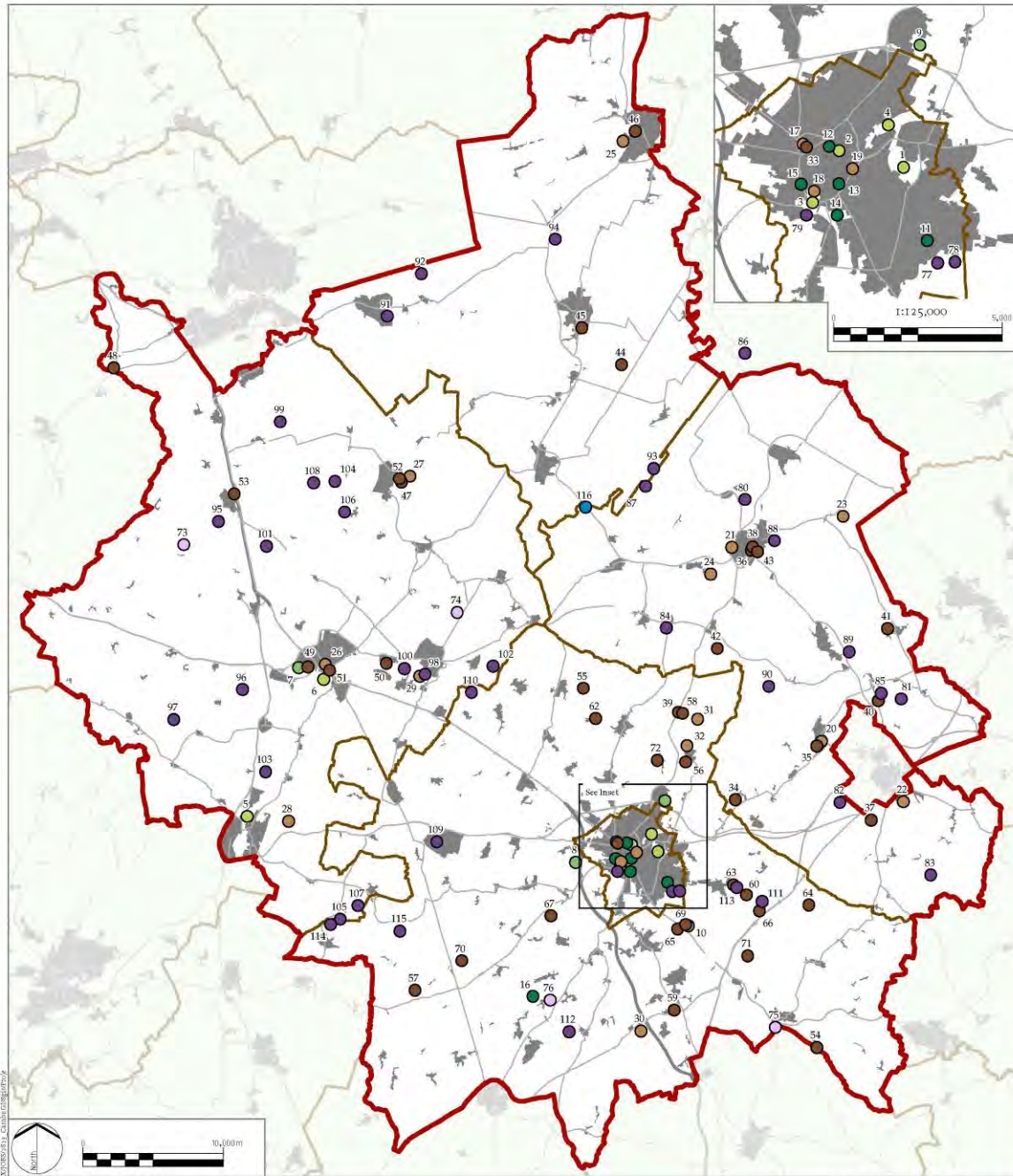
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 Countryside Access Sites in Cambridgeshire

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Destinations: Over 100 strategic destinations were identified within Cambridgeshire, including commons, country parks, parks or gardens, museums, historic sites or features, wildlife centres, nature reserves and activity centres. Figure 7.6 shows these destinations. Key destinations are principally located in the south of the county, in and around the city of Cambridge. In the north of the county, destinations are less frequent, and consist mainly of historic sites or features and nature reserves; there are no country parks and very few strategic parks and gardens. As with the south of the county, destinations are principally located within or near to urban areas, although there are a number of destinations, namely nature reserves that are more isolated and potentially less accessible. These destinations do not include key waterway features such as moorings, marinas and rowing clubs that provide access to the waterways and serve as destinations for water users.

Figure 7.6 Green Infrastructure Destinations in Cambridgeshire (Next page)



LEGEND

- Study Area Boundary

- Destination
- Common
 - 1 Goldhams Common
 - 2 Midsummer Common
 - 3 Sheep Green & Cow Fen
 - 4 Stourbridge Common
 - 5 St Neots Common
 - 6 Fortholme Common
- Country Park
 - 7 Hinchingsbrooke Country Park
 - 8 Goton Countryside Reserve
 - 9 Milton Country Park
 - 10 Wandlebury Country Park
- Park or Garden
 - 11 Cherry Hinton Hall
 - 12 Jesus Green
 - 13 Parkers Piece
 - 14 Cambridge University Botanic Gardens
 - 15 The Backs (River Cam)
 - 16 Docwra's Manor Garden
- Museum
 - 17 Cambridge and County Folk Museum
 - 18 Fitzwilliam Museum
 - 19 Museum Of Technology
 - 20 Burwell Museum
 - 21 Ely Museum, Stained Glass Museum
 - 22 National Horse Racing Museum
 - 23 Prickwillow Drainage Engine Museum
 - 24 RAF Witchford Display
 - 25 Wisbech & Fenland Museum,
 - 26 Blacked Out Britain War Museum & The Cromwell Museum
 - 27 Ramsey Rural Museum
 - 28 St Neots Museum
 - 29 The Norris Museum
 - 30 Duxford Imperial War Museum
 - 31 Farmland Museum
 - 32 Waterbeach Station Museum
- Historic Site or Feature
 - 33 Cambridge Castle
 - 34 Anglesy Abbey
 - 35 Burwell Castle
 - 36 Cherry Hill castle
 - 37 Devils Dyke
 - 38 Ely Cathedral
 - 39 Farmland Museum and Denny Abbey
 - 40 Fordham Abbey
 - 41 Isham Priory Church
 - 42 Stretton Old Engine
 - 43 Ely Riverside
 - 44 Stones Camp
 - 45 March Scout
 - 46 Peckover House
 - 47 Booths Hill
 - 48 Elton Hall
 - 49 Hinchingsbrooke House
 - 50 Houghton Mill
 - 51 Huntingdon Castle
 - 52 Ramsey Abbey Gatehouse
 - 53 Sawtry Mead and Shrunkened Medieval Village
 - 54 Barlow Hills Roman barrows
 - 55 Belars Hill
 - 56 Car Dyke
 - 57 Clifton Deserted Medieval Village
 - 58 Denny Abbey
 - 59 Duxford Chapel
 - 60 Fleam Dyke
 - 61 Fort
 - 62 Giants Hill
 - 63 Hall Orchard moated site
 - 64 Lark Hall
 - 65 Magg Down
 - 66 Mallow Hill
 - 67 Radin Astronomy Observatory
 - 68 Tumuli
 - 69 Wandlebury Camp
 - 70 Wimpole Hall
 - 71 Worsted Street Roman Road
 - 72 Words Meadow
- Wildlife Centre
 - 73 Hamerton Zoo Park
 - 74 The Raptor Foundation
 - 75 Linton Zoological Gardens
 - 76 Sheepch Wildlife Park

- Nature Reserve
 - 77 Cherry Hinton Chalk Pits
 - 78 Limekiln Close
 - 79 Paradise Local Nature Reserve
 - 80 Chetisham & Mursels Meadows
 - 81 Chippenham Fen
 - 82 Devils Dyke
 - 83 Ditton Park Wood
 - 84 Doghouse Grove
 - 85 Fordham Woods
 - 86 Hundred Foot Rank (Wildfowl and Wetlands Trust)
 - 87 Duse Washes
 - 88 Rowwell Pits
 - 89 Soham Meadows
 - 90 Wicken Fen
 - 91 Lattersey
 - 92 Nene Washes (RSPB)
 - 93 Welches Dam Chase Washes (RSPB)
 - 94 Rings End Pocket Park & Nature Reserve
 - 95 Aversley Wood
 - 96 Brampton Wood
 - 97 Grahams Water
 - 98 Hemingford Meadow
 - 99 Holme Fen
 - 100 Houghton Meadows
 - 101 Monk Wood
 - 102 Needingworth Quarry
 - 103 Faxton Pits
 - 104 Ramsey Heights
 - 105 Slogley Wood
 - 106 Upwood Meadows
 - 107 Waresley & Granden Woods
 - 108 Woodwalton Fen
 - 109 Camboorne Reserve
 - 110 Fen Drayton
 - 111 Fleam Dyke
 - 112 Fowlmere
 - 113 Fulbourn Fen
 - 114 Gamlingay Wood
 - 115 Hayley Wood

- Activity Centre
 - 116 Mepal Outdoor Centre

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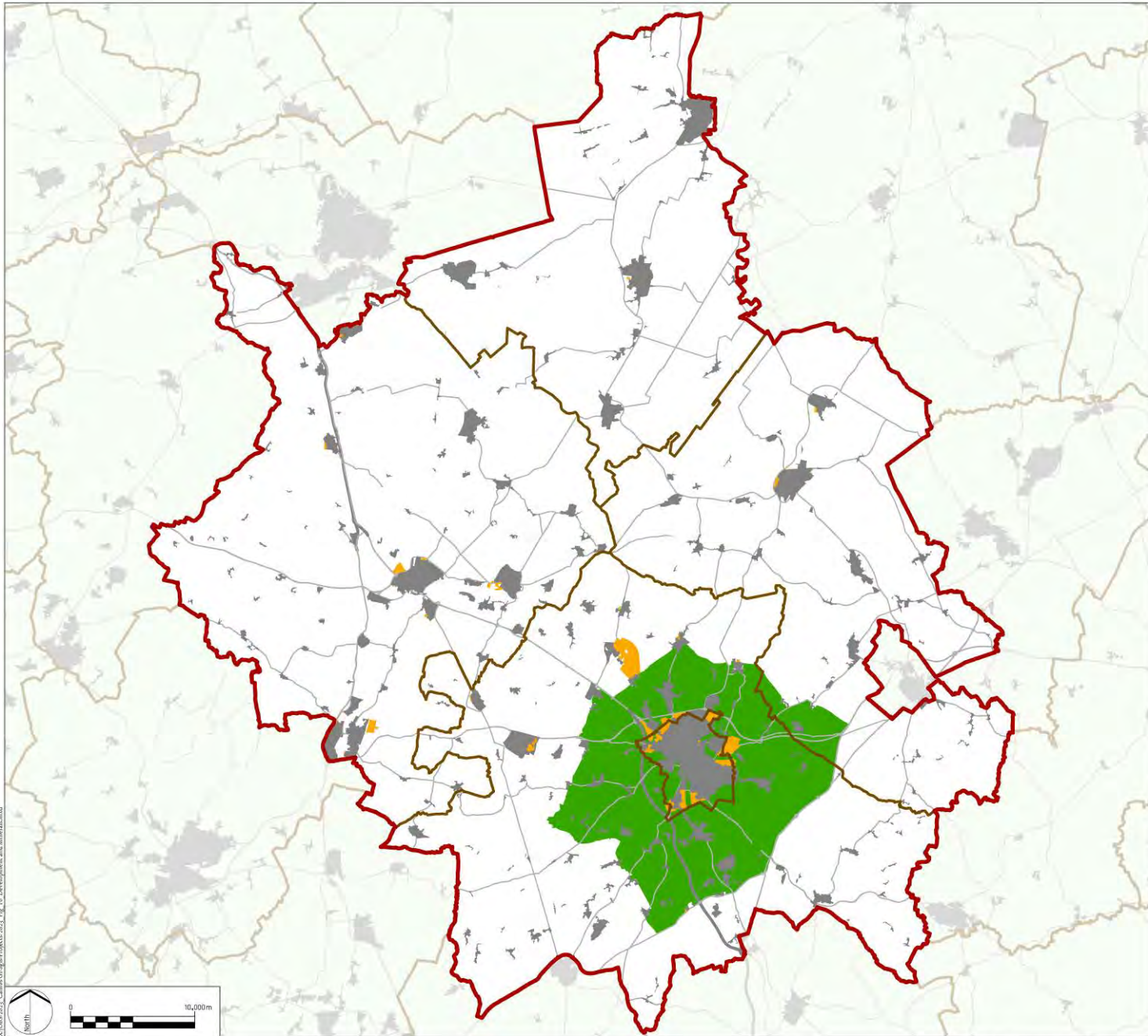
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Major Development: Major development areas provide an opportunity to identify locations that that may form new Green Infrastructure Gateways or that will enhance or develop existing Gateways. The diversity and rich urban fabric is a particularly positive feature of a large number of the county's principle towns and in particular in the historic core of settlements where a concentration of older properties can often be found. Also valued are urban green spaces, whether these constitute formal areas for sport and recreation, cemeteries, allotments or 'captured' countryside within the urban envelope, perhaps in the form of riverside flood meadows. Figure 7.7 shows the major housing and growth locations in Cambridgeshire.

Figure 7.7 Major housing and growth locations in Cambridgeshire (Next page)



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LEGEND

- Study Area Boundary
- Green Belt
- Major Development Sites*

* Major Development Sites are correct as of September 2010 and comprises locations/sites:

- Allocated in Local Plan or LDF
- With Outline Planning Permission
- With Unimplemented Full Planning Permission
- Under Construction
- Completed between 01 July and 30 September 2010
- Where residential development sites are 100 dwellings or more

NB: Please refer to Cambridge Insert Plan for further detail of settlement boundaries and major developments in and around Cambridge.

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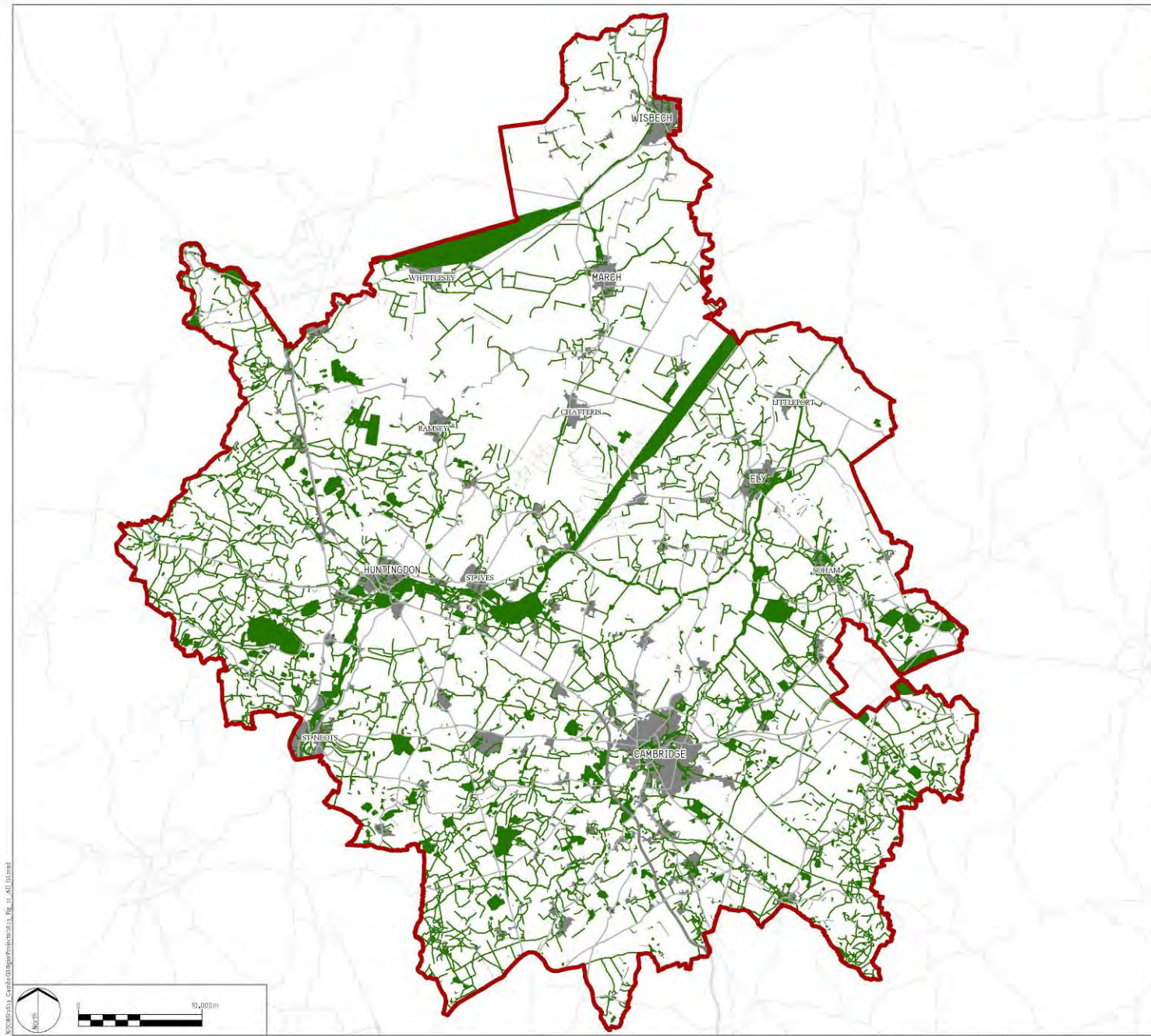
Major Development Sites and the Cambridge Greenbelt

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Existing Strategic Green Infrastructure: Mapping all existing strategic Green Infrastructure in Cambridgeshire (including Public Rights of Way) can provide a context for the identification of Green Infrastructure Gateways and show how such Gateways link into the wider and more local network of Green Infrastructure. Figure 7.8 shows existing Strategic Green Infrastructure.

Figure 7.8 Strategic Green Infrastructure (Next page)



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LEGEND

- Study Area Boundary
- All Strategic Green Infrastructure Assets

GI Assets are derived from the baseline data shown on Figure T7c (Cultural Heritage), Figure T8b (Rivers), Figure T9a and T9b (Habitat Types), Figure T10 (Woodland), Figure T12 (Biodiversity Designations), Figure T14 (Access) and Figure T15 (Countryside Access).

Some baseline data has been excluded, as while relevant to the understanding the baseline, are not GI Assets in themselves. These include:

- Listed buildings and conservation areas;
- Flood zones; and
- Destinations.

Urban areas are derived from the Census 2001 dataset and includes all built up and developed areas.

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Strategic Green Infrastructure

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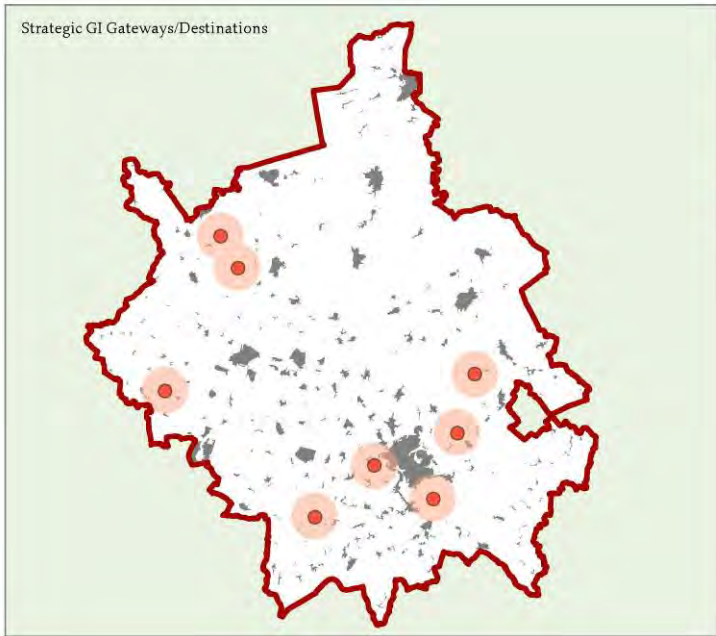
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The Gateways theme was developed by analysing the key baseline maps that related to Green Infrastructure gateways together with:

- Existing Green Infrastructure Gateways according to the definition used in the Strategy. (i.e., figures 7.2-7.6 and 7.8)
- Main urban centres located close to accessible nature conservation sites and countryside destinations (i.e., figure 7.7).

Figures 7.9 show the outcome of this 'opportunity' analysis.

Figure 7.9 Gateway opportunity analysis (Next page)

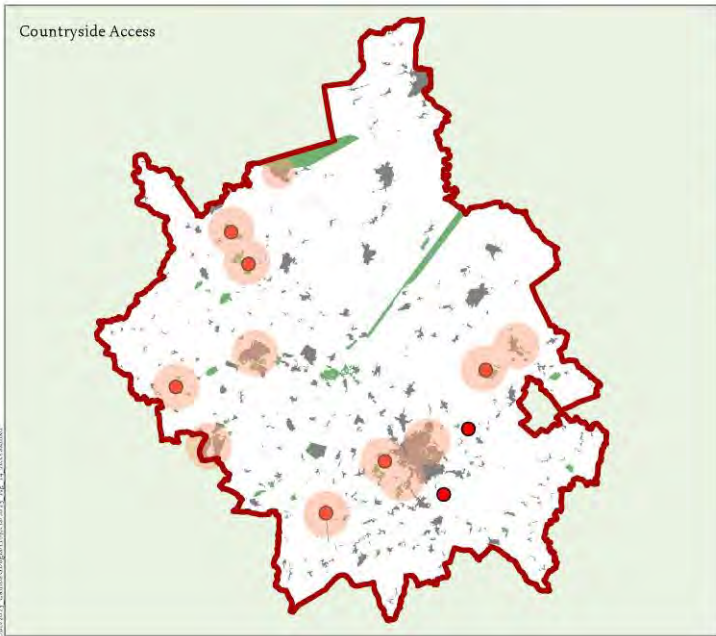


- LEGEND
-  Study Area Boundary
 -  Settlement
 -  Strategic GI Gateways/Destinations
 -  Opportunity Areas

Existing GI Gateways
 This map identifies areas where there are existing Strategic Green Infrastructure Gateways/Destinations.



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- LEGEND
-  Study Area Boundary
 -  Settlement
 -  Strategic GI Gateways/Destinations
 -  Nature Conservation Designations
 -  Opportunity Areas

Nature Conservation
 This map identifies areas where biodiversity assets are located close to principal urban areas and strategic GI gateways/destinations.

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 Gateway Opportunity Analysis (1)

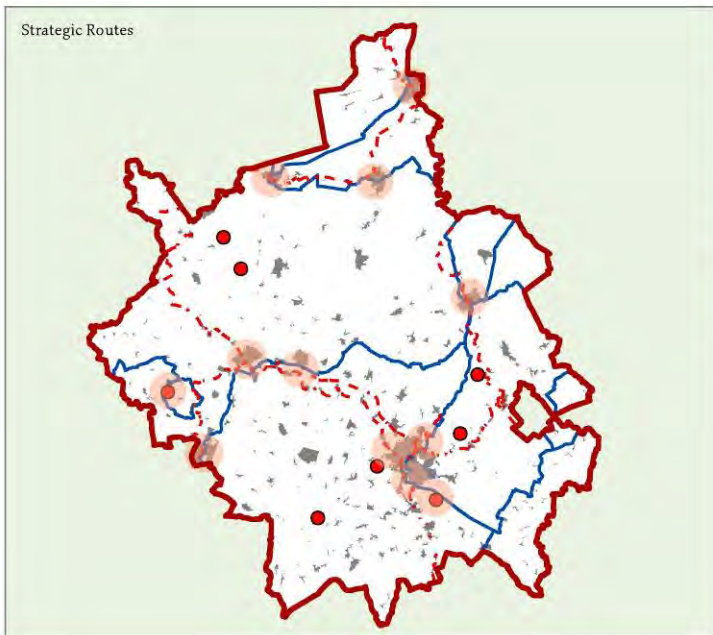
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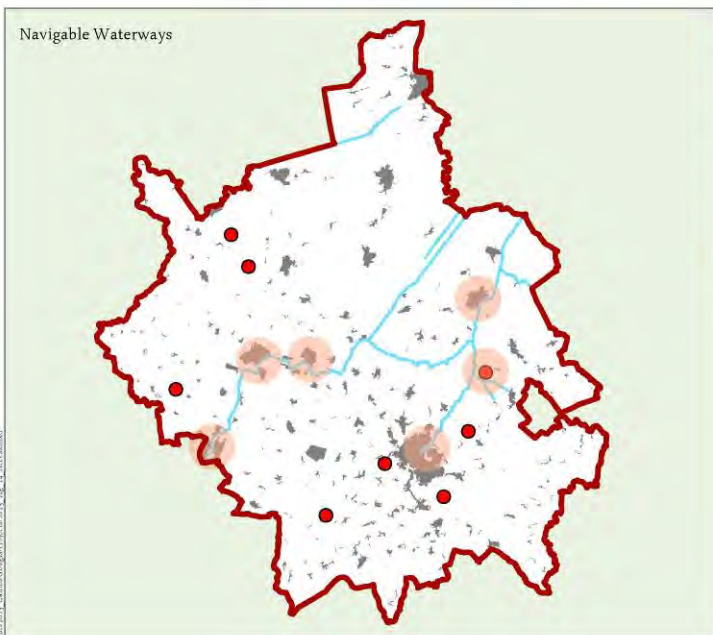
In addition, areas were mapped where strategic promoted Rights of Way routes, National Cycle Network and navigable waterways connected to principle urban areas or existing gateways. This analysis is shown in Figure 7.10.

Figure 7.10 Gateway opportunity analysis (Next page)



- LEGEND
- Study Area Boundary
 - Settlement
 - Strategic GI Gateways/Destinations
 - Promoted Route
 - Sustrans Route
 - Opportunity Areas

Strategic Routes
 This map identifies areas where strategic routes connect to principal urban areas and strategic GI gateways/destinations.



- LEGEND
- Study Area Boundary
 - Settlement
 - Strategic GI Gateways/Destinations
 - Navigable Waterways
 - Opportunity Areas

Navigable Waterways
 This map identifies areas where navigable waterways connect to principal urban areas and strategic GI gateways/destinations.



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Gateway Opportunity Analysis (2)

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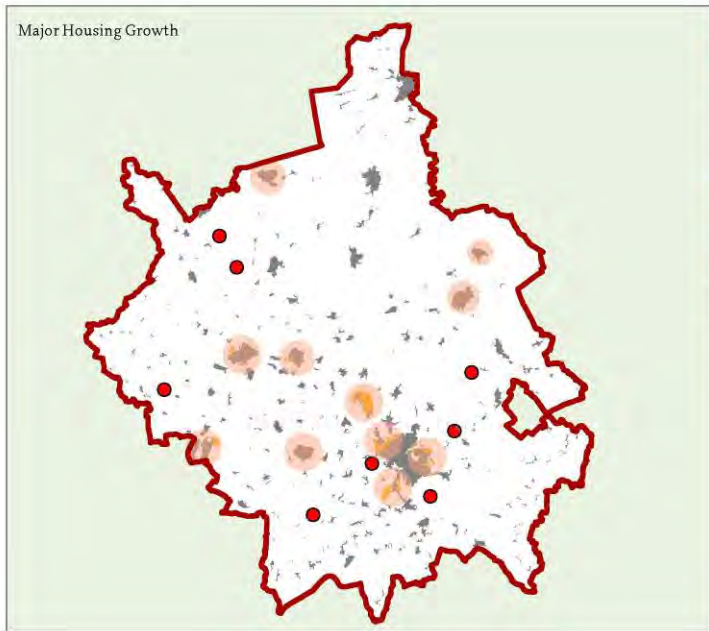
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In addition, areas were mapped where major housing growth sites and strategic destinations are adjacent to principle urban areas or existing gateways. This analysis is shown in Figure 7.11.

These were then considered, alongside clusters of strategic destinations (such as heritage sites, cultural sites or nature conservation destinations) located close to main urban centres.

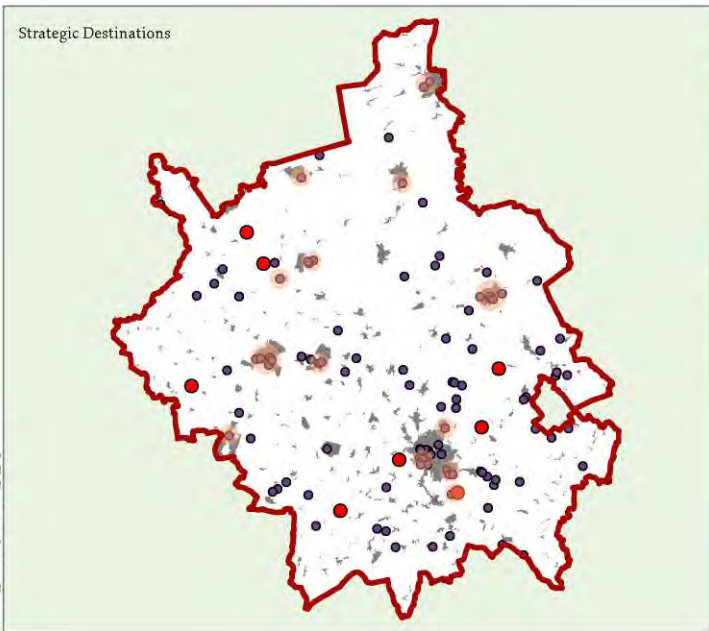
This analysis is shown in Figure 7.11.

Figure 7.11 Gateway opportunity analysis (Next page)



- LEGEND
- Study Area Boundary
 - Settlement
 - Strategic GI Gateways/Destinations
 - Major Housing Growth
 - Opportunity Areas

Major Housing Growth
 This map identifies areas where areas of major housing growth are located close to principal urban areas and strategic GI gateways/destinations



- LEGEND
- Study Area Boundary
 - Settlement
 - Strategic GI Gateways/Destinations
 - Other Destinations
 - Opportunity Areas

Strategic Destinations
 This map identifies areas where other destinations are located close to principal urban areas and strategic GI gateways/destinations.

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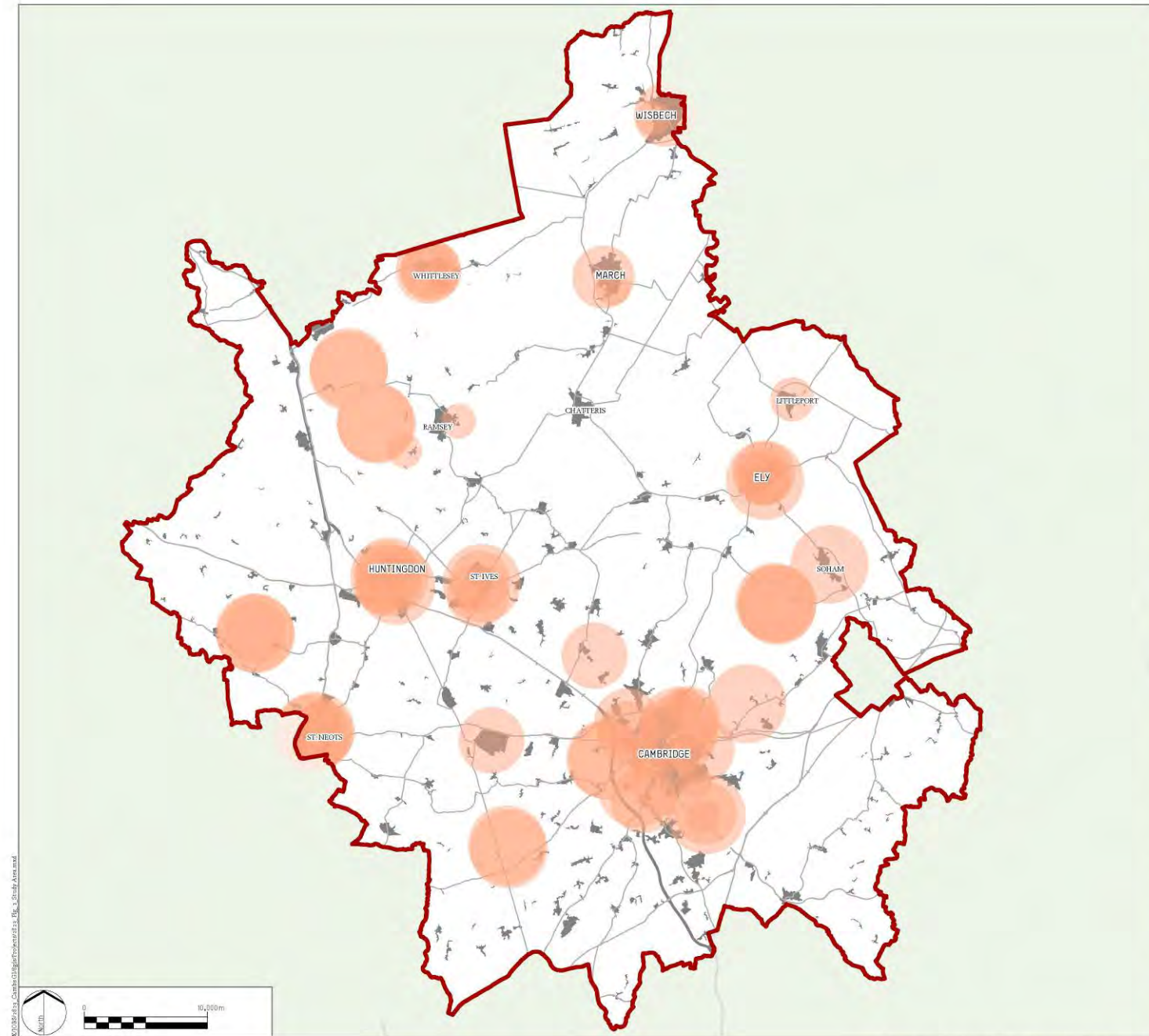
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Bringing all these together into one single map identifies areas of concentration - the darker the highlighted area the more opportunity there is for Green Infrastructure Gateways to support Green Infrastructure.

Figure 7.12 shows the outcome of this combined Gateway opportunity analysis.

Figure 7.12 Combined Gateway opportunities (Next page)



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LEGEND

- Study Area Boundary
- Settlement
- Opportunity Areas

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4 What this information tells us

Gateways can be seen to strengthen the development of a strategic Green Infrastructure network by providing locations that link strategic projects with areas of need and opportunity. Gateways can radiate from urban locations and increase the capacity for urban greenspaces to cope with an increased use or need for outdoor recreation associated with development. Gateways also provide key infrastructure to fill the gaps in a given network and join up Green Infrastructure resources at a strategic scale.

Gateways are determined by the location of green infrastructure destinations and existing Rights of Way or other forms of transportation/access, and by the distribution of the population across Cambridgeshire. Gateways should, therefore:

- Be accessible by sustainable modes of transport
- Be located in close proximity to population centres to discourage car travel
- Demonstrate amenity value - e.g. activities for people to do
- Offer connectivity - connect people to their intended destinations through signposting and provision of information

5 Issues and Opportunities

The key issues for Green Infrastructure Gateways relate to the variety of functions and purposes they provide, access to sustainable funding and limited land availability.

Green Infrastructure Gateways offer numerous opportunities to enhance and support existing Green Infrastructure and open up new Green Infrastructure resources in Cambridgeshire. Gateways introduce people to the countryside through publicly accessible routes, safe parks and visitor attractions and act as urban-to-rural and rural-to-rural stepping-stones to other Green Infrastructure such as circular routes, trails and public rights of way.

Gateways also promote economic growth and investment and tourism. By encouraging outdoor lifestyles and activities, local services and amenities such as shops, cafes, transport and leisure facilities may be developed to support visitor needs.

Gateways can impact positively on the health and wellbeing, which also has positive economic benefits. By facilitating people's access to green spaces, Gateways encourage outdoor activity, which is an important component of

a healthy lifestyle. A healthy population is economically beneficial as it lowers the costs of primary and tertiary health care.

Gateways can act as visitor attractions and attract long-term funding for enhancing landscapes and green infrastructure resources. Similarly, Gateways can promote, protect and enhance Cambridgeshire's historic environments.

By enhancing access to Green Infrastructure resources, Gateways facilitate greater community involvement in their development. This can help to encourage a sense of community ownership and more sustained community use of the landscape. Community involvement can also help to attract funding for Green Infrastructure projects.

New developments in Cambridgeshire offer further opportunities for the delivery of Gateways and Green Infrastructure. Whilst limited land availability, high land values and uncertain access to funding may constrain the development of new Gateways and Green Infrastructure destinations, the planned new developments do offer opportunities to provide land for new Gateway sites and Green Infrastructure resources.

Cambridgeshire Green Infrastructure Strategy Appendix 8 Heritage

Contents

- 1 Introduction and definition
- 2 Baseline information and datasets, including policy
 - Policy
 - Surveys
 - Designated and Non-designated sites
 - Historic Landscape Characterisation
 - Extensive Urban Surveys
 - Conservation Area Appraisals
 - Historic Environment Characterisation Assessment
- 3 What this information tells us
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- 6 Funding Opportunities
 - Heritage Lottery Fund
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1 Introduction

This Appendix identifies the baseline datasets, maps and relevant policies for Heritage, which is an important component of Green Infrastructure in Cambridgeshire. These are drawn together to identify the general and spatial issues that relate to this Theme, and to highlight the opportunities that exist for the Heritage Green Infrastructure Theme.

This map of Heritage opportunities was then combined with the other six Themes, as well as other important issues and assets in Cambridgeshire, to inform and develop the Strategic Network of Green Infrastructure.

For the purposes of the Green Infrastructure Strategy, heritage is defined as the aspects of the environment arising from the interaction between people and places throughout time and includes all surviving physical remains of the past, whether visible, buried or submerged, together with landscapes and managed flora.

2 Baseline information and datasets, including policy

The following information was taken into consideration regarding heritage.

Policy

Until government passes a Heritage Protection Bill the following suite of statements is the benchmark for the protection of heritage for the foreseeable future.

- **Government Vision Statement on the Historic Environment 2010** - this sets out the government's vision for the historic environment in that it is an asset of enormous cultural, social, economic and environmental value. Its six strategic aims include "Sustainable Future" which seeks *"to promote the role of the historic environment in the government's response to climate change and as part of the sustainable development agenda."* (p2)

"...the historic environment is an asset of enormous cultural, social, economic and environmental value. It makes a very real contribution to our quality of life and the quality of our places. We recognise that while some of today's achievements may become tomorrow's heritage our existing heritage assets are also simply irreplaceable.... We believe in encouraging a wider involvement in our heritage, in order to ensure that everyone, both today and in the future, has an

opportunity to discover their connection to those who have come before” (p1)

- **PPS5: Planning for the Historic Environment** (2010) - this sets out policy for conservation of the historic environment.
- **PPS5 Planning Practice Guide** this guide assists local authorities, owners, applicants and other interested parties in implementing *Planning Policy Statement 5* helping to interpret PPS5 policies.

Cambridgeshire Horizons Arts and Cultural Strategy 2006

This strategy outlines the possible funding mechanisms to support the provision of arts and cultural facilities in new communities and considers the economic benefits to the region in providing high quality arts and culture facilities. Of particular reference for green infrastructure is

“Taking part in cultural activity can bring communities together and empower individuals to articulate their own aspirations and expectations.”
(Paragraph 6.7)

Surveys

Cambridgeshire Archaeology JIGSAW (The Market Research Group Feb. 2007)

A survey done in 2007 for Cambridgeshire County Council Archaeology Service showed that 94% of Cambridgeshire schools wanted to attend events with object handling sessions, 88% of respondents wanted Hands on History events and 87% wanted access to information on Cambridgeshire’s heritage through the Internet.

Heritage Counts 2010 is a guidebook containing research and information from a number of organisations on the value of the historic environment

Designated and Non-designated sites

Designated assets are those identified under appropriate legislation as being of national importance and recorded in central lists. These are Scheduled Monuments, Listed Buildings, Registered Parks & Gardens, Conservation Areas and Registered Battlefields. Currently each of these designations operates as a separate register although there is legislation proposed to unify them into a single Register of Heritage Assets.

Non-designated assets are those that do not meet the criteria for entry onto a national register. This can be for a variety of reasons, including lesser importance poor preservation, or sites that are lost, damaged or destroyed (not uncommon for assets of a purely archaeological nature). Such assets may be classified as being of regional or local importance, and may include

lists of historic buildings of local interest. A further category is of sites that may not meet the exact criteria for designation but are nevertheless of national importance; this is sometimes case with archaeological sites that fall outside the Ancient Monuments Act 1979.

Details of known non-designated assets are held in the **Historic Environment Record (HER)**, a relational and GIS based database that contains all known records of archaeology and the historic environment in the county. The HER also contains the statutory records for designated assets. Additional information (especially on Conservation Areas and local lists of historic buildings) is held by district councils.

By its nature, HER data is all encompassing, containing everything that is known about an area. It is both informative and archival. Not all of this information is significant in a planning context, as it is too imprecise or unreferenced (for example based on an entry in a 19th century newspaper). Other information can have its significance affected by its proximity to other sites: hence a stray find of pottery by itself may have lesser significance than several stray finds or other sites of a similar date nearby. Conversely, a record of an excavation is an archive, as the excavated site will be unlikely to possess further remains, but will give a very strong indicator of the presence and type of nearby sites

A combination of the Heritage Counts 2010 report produced by English Heritage and information from the Cambridgeshire Historic Environment Record provides the following evidence base.

- 259 Scheduled Monuments
- 7273 Listed Buildings
- 33 Registered Parks and Gardens
- 193 Conservation Areas
- 16554 Monuments (the data term applied to all pieces of archaeological data)
- 3,279 Fieldwork events

The distribution of monuments and national designations for each of the planning authorities in Cambridgeshire in 2010 is shown in Table 8.1 and Table 8.2:

Table 8.1 Distribution of monuments and national designations

| | City of Cambridge | East Cambs District | Fenland District | Hunts District | South Cambs District |
|---------------------|-------------------|---------------------|------------------|----------------|----------------------|
| Monuments | 1437 | 3278 | 1838 | 4374 | 5627 |
| Scheduled Monuments | 5 | 50 | 20 | 82 | 102 |
| Listed Buildings | 780 | 977 | 656 | 2198 | 2662 |

| | | | | | |
|------------------------------|----|----|----|----|----|
| Registered Parks and Gardens | 11 | 4 | 1 | 5 | 12 |
| Conservation Areas | 11 | 27 | 10 | 60 | 84 |

Table 8.2 Distribution of monuments and national designations

| | Percentage of total historic assets | Percentage of Area of Cambridgeshire | Historic Assets per km2 |
|----------------------|-------------------------------------|--------------------------------------|-------------------------|
| City of Cambridge | 9.2% | 1.3% | 55 |
| East Cambs District | 17.8% | 21.3% | 7 |
| Fenland District | 10.4% | 17.9% | 5 |
| Hunts District | 27.6% | 29.9% | 7 |
| South Cambs District | 34.9% | 29.5% | 9 |

Historic Landscape Characterisation (HLC):

This is a map based exercise looking at survival of boundaries and fields within the modern rural landscape. The agrarian landscape of Cambridgeshire is primarily modern, comprising of 19th and 20th century prairie fields, but there are still pockets of survival of older field systems, dating back to the mediaeval period or earlier.

Extensive Urban Surveys (EUS):

These are detailed assessments of the historic cores of 30 of the county's towns and larger villages, drawing on archaeological, cartographic and documentary sources to produce summary statements and maps of the areas of archaeological interest within our 'urban' areas. This does not include the city of Cambridge which is subject to a separate Urban Archaeological Database exercise.

Conservation Area Appraisals:

A Conservation Area is an area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. They may be small or large and each has its own look, feel and distinctive sense of place. Conservation Areas will normally be based on groups of buildings that are listed or of local interest, and include other features such as open spaces, trees, a historic street pattern, archaeology or historic landscapes. Main views and the street scene, or townscape, also contribute to the special character. As Conservation Areas are vibrant and changing

places, local authorities have a programme to review and assess the boundaries and significance of these areas, to designate new ones or amend the boundaries of existing ones.

Historic Environment Characterisation Assessment*

This is a process that takes account of a frequent criticism of HLC projects that they take little or no account of the underlying patterns of Prehistoric, Roman-British or medieval land use and that the HER data that has been systematically compiled over many decades plays no role in the final mapping of the historic landscape. Conversely, the HER records and maps many thousands of years of human activity, but is of limited use as a tool at a landscape scale. Historic Environment Character Assessment aims to resolve this dichotomy by mapping and analysis of a range of datasets including the HER, HLC, EUS, settlement form and geographic data (geology, landform, drainage, etc). This produces a map showing the major influences of the historic environment that have shaped our current landscape, but that will highlight what the significant factors are within different areas across the county.

3 What this information tells us

Cambridgeshire is predominately a rural county. The generally open character of the countryside has its origins in the prehistoric clearance of native woodland and the ongoing management of natural resources, although wide areas are relatively modern, dating to periods of reclamation and fenland drainage.

The broad patterns of farmed land, grazing and woodland evident today were all probably in place by the medieval period, as were the principal settlements and communications routes across the uplands and along the river valleys. Six millennia of changes in social organisation and in the concept of land ownership and control are also etched into the landscape; visible in the patterns created by linear earthworks, field boundaries, drainage ditches and tracks. It is possible to see evidence of communal territories from the prehistoric period, private estates surrounding Roman villas, the open fields and villages of the early medieval period, the various episodes of fenland drainage and the private and parliamentary enclosures of more recent centuries. Onto this framework there have been more recent changes in agriculture, recreation and growth of the economy, together with the consolidation of transportation routes, such as rivers, roads and railways.

The historic city of Cambridge has a significant impact on the number of known historic assets in the county. In general terms, both Cambridge and Ely include archaeological remains and built environments of exceptional

importance. There is also a network of historic market towns such as Huntingdon, St. Neots and Wisbech that have retained high quality archaeological remains and buildings that are nationally and locally distinctive. Accordingly, the city of Cambridge and markets towns contain a significant number of Conservation Areas, designed to protect built heritage.

Most of Cambridgeshire's villages can also be identified as having ancient origins, while some settlements contain extensive early remains such as the Roman towns at Godmanchester and Water Newton. In the wider landscape, rural areas contain many settlements, funerary sites, boundaries and features with ancient origins; some field systems dating back to at least the 10th century and possibly to the pre-Roman period.

When the points of known archaeology are plotted in Cambridgeshire, it is possible to observe concentrations along the chalklands, river valleys, main communication corridors, silt fen, fen edge and fen islands, although to some extent this distribution provides a picture of discoveries, rather than survival and past activity.

When observing the distribution of Listed Buildings, a similar pattern emerges, with higher occurrences on the dry 'uplands' and in specific locations within the fen basin, or more significantly on the margins of fenland. Conversely, Registered Parks and Gardens are concentrated mainly in the southern parts of the county, reflecting the historic land use in these areas. The distribution of Scheduled Monuments is more balanced, reflecting the presence of sites of national significance across the fen areas and more elevated landscapes.

This information represents points or areas of known historic environment information. There are two key limitations with this. Firstly, there are large gaps in the county between these points which does not mean that nothing is present but that it is unknown, and secondly, the variation and significance of the pieces of data is not reflected in maps such that a single piece of pottery has the same weight as an iconic designated structure such as Ely Cathedral.

4 Spatial analysis

The following maps were all taken into consideration in the spatial analysis for heritage.

Figure 8.1 Historic landscape character (Next page)

Figure 8.1 shows the distribution of visible landscapes and fields by the most visible type.

It shows the spread of relict field systems visible in the current landscape. The predominant type is modern 'prairie field', a type associated with large scale mechanised farming, but there are areas of significant survival of earlier types dating back to the mediaeval period and even earlier. The oldest fields in the county are the Neolithic systems at Horsley Fen, near Chatteris (a Scheduled Monument).

Figure 8.2 Historic environmental character areas (Next page)



LEGEND

- Study Area Boundary
- Historic Environment Character Areas**
- HECA 01 Cambridgeshire Silt Fen
- HECA 02 Wisbech Fenlands
- HECA 03 Cambridgeshire Fen Islands
- HECA 04 The Cambridgeshire Peat Fen
- HECA 05 Peterborough Skirtland
- HECA 06 Northamptonshire Clayland Border
- HECA 07 The Great Fen
- HECA 08 Southern Silt Fen Edge
- HECA 09 Huntingdonshire Urban Environs
- HECA 10 Western Cambridgeshire Claylands
- HECA 11 The Great Ouse Valley
- HECA 12 Southern Fen Edge Settlements
- HECA 13 Cambridgeshire Claylands
- HECA 14 Central Claylands
- HECA 15 Bedfordshire Greensand Ridge
- HECA 16 South East Fen Edge
- HECA 17 East Cambridgeshire Brecklands
- HECA 18 Cambridgeshire Chalk Fen Edge
- HECA 19 Upper Cam Valley
- HECA 20 Granta Valley
- HECA 21 Croydon Clays
- HECA 22 Cam or Rhee Valley
- HECA 23 The Icknield Path
- HECA 24 Lower Chalk Valley
- HECA 25 Radfield Hundred
- HECA 26 Newmarket Horses and Courses
- HECA 27 Suffolk Ridgeland
- HECA 28 Chishill Ridge
- Cambridge

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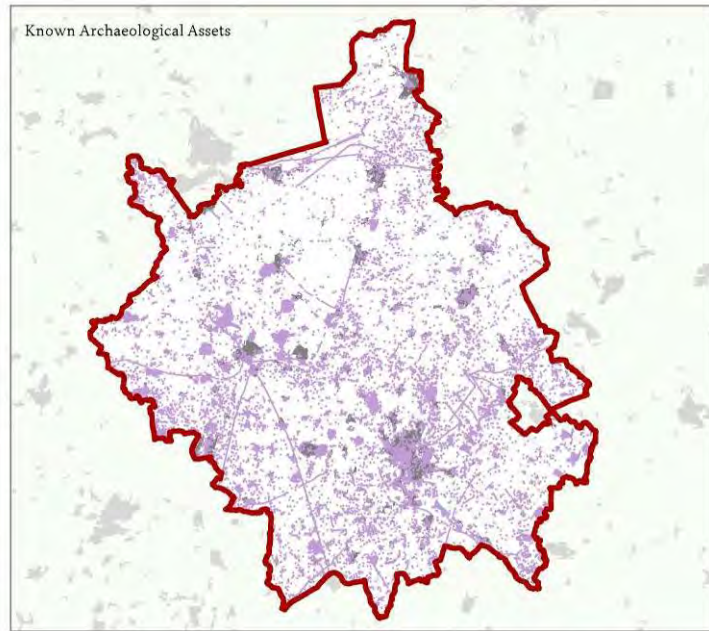
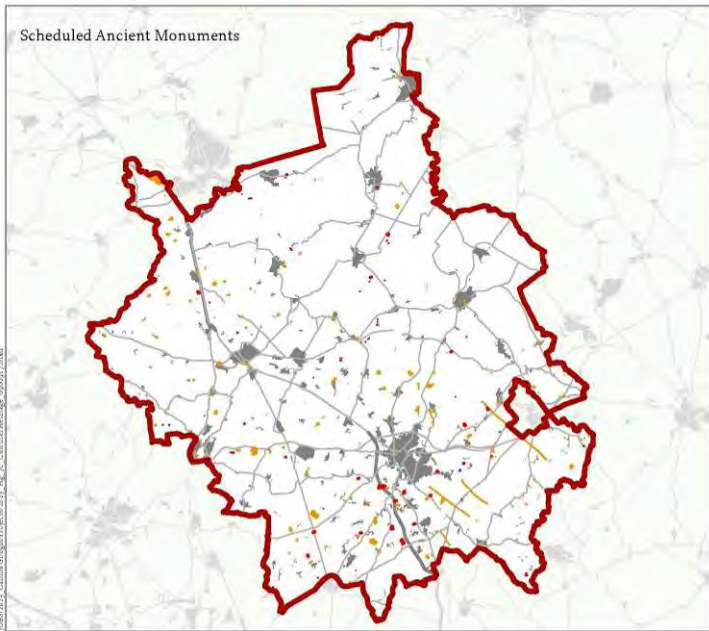
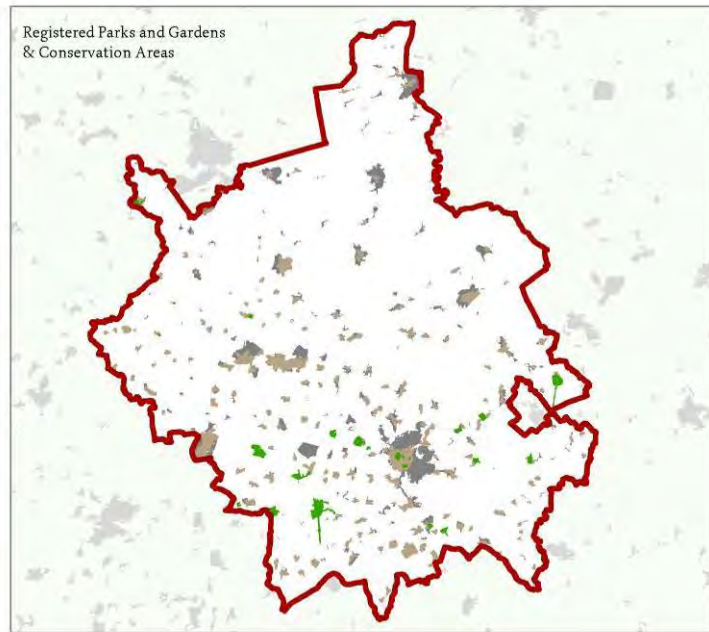
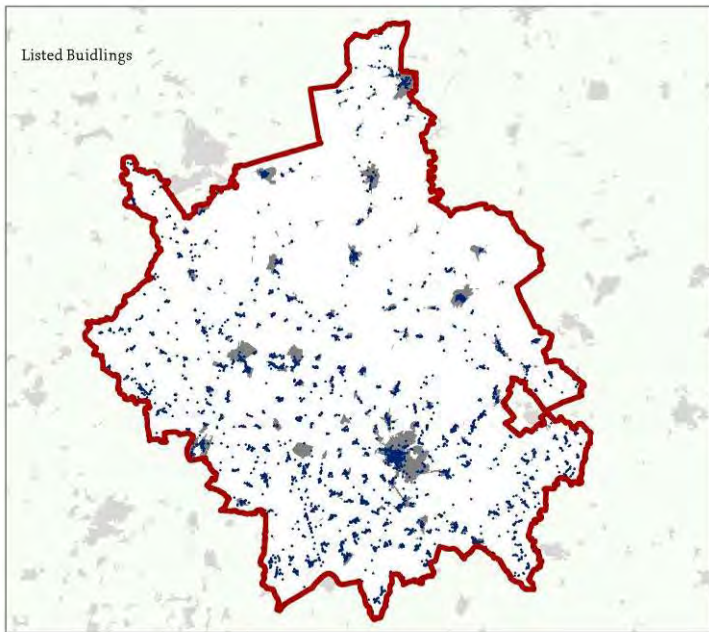
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Figure 8.2 is based on discernable patterns in the landscape of the county, based on historic landscape type, hydrology, geology and topography. From these datasets it is possible to identify large scale areas of unique character. Subsequently utilising detailed historic environment data allows an even more focused assessment.

Figure 8.3 Cultural heritage designations (Next page)



- LEGEND
-  Study Area Boundary
 -  Listed Building
 -  Registered Parks and Gardens
 -  Conservation Area
 -  Scheduled Monument
 -  Scheduled Monument at Risk (2010)
 -  Known Archaeological Asset



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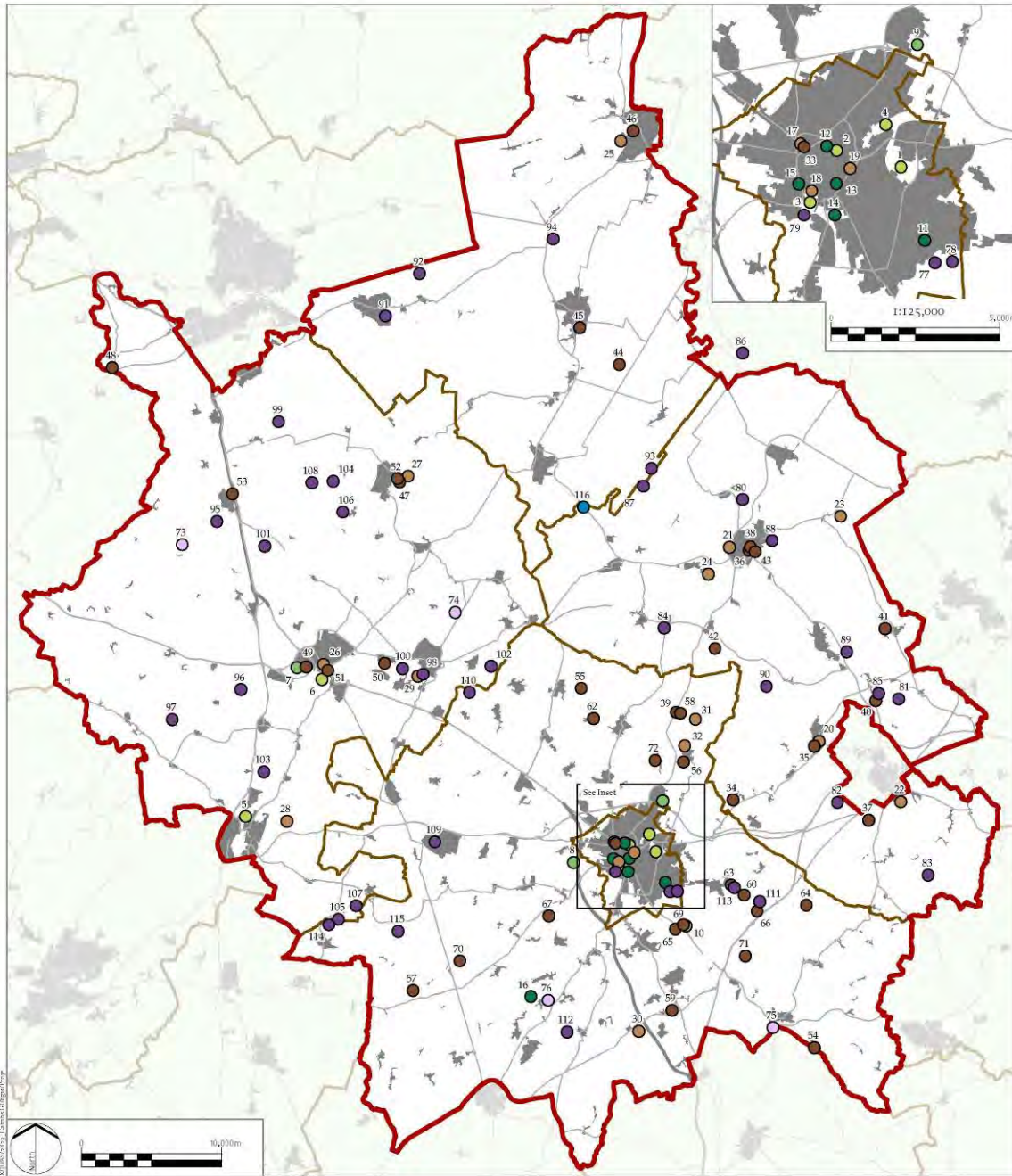
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Figure 8.3 shows the extent of the known historic environment, both designated (i.e. listed buildings, scheduled monuments etc) and non-designated (historic environment information - mainly archaeological - from the county HER). A key point is that spaces in the non-designated map do not indicate an absence of remains, simply an absence of discovery.

Figure 8.4 Destinations (Next page)



LEGEND

Study Area Boundary

Destination

- Common
 - 1 Colbams Common
 - 2 Midsomer Common
 - 3 Sheeps Green & Cox Fen
 - 4 Stourbridge Common
 - 5 StNeots Common
 - 6 Fortholme Common
- Country Park
 - 7 Hinchingsbrook Country Park
 - 8 Coton Countryside Reserve
 - 9 Milton Country Park
 - 10 Wandlebury Country Park
- Park or Garden
 - 11 Cherry Hinton Hall
 - 12 Jesus Green
 - 13 Parkers Piece
 - 14 Cambridge University Botanic Gardens
 - 15 The Backs (River Cam)
 - 16 Docwra's Manor Garden
- Museum
 - 17 Cambridge and County Folk Museum
 - 18 Fitzwilliam Museum
 - 19 Museum Of Technology
 - 20 Burwell Museum
 - 21 Ely Museum, Stained Glass Museum
 - 22 National Horse Racing Museum
 - 23 Prickwillow Drainage Engine Museum
 - 24 RAF Wixford Display
 - 25 Wobech & Fenland Museum
 - 26 Blacked Out Britain War Museum & The Cromwell Museum
 - 27 Ramsey Rural Museum
 - 28 StNeots Museum
 - 29 The Morris Museum
 - 30 Duxford Imperial War Museum
 - 31 Farmland Museum
 - 32 Waterbeach Station Museum
- Historic Site or Feature
 - 33 Cambridge Castle
 - 34 Anglesy Abbey
 - 35 Burwell Castle
 - 36 Cherry Hill castle
 - 37 Devil's Dyke
 - 38 Ely Cathedral
 - 39 Farmland Museum and Denny Abbey
 - 40 Fordham Abbey
 - 41 Isleham Priory Church
 - 42 Stesham Old Engine
 - 43 Ely Riverside
 - 44 Stonea Camp
 - 45 Match Sconce
 - 46 Peckover House
 - 47 Booth's Hill
 - 48 Elton Hall
 - 49 Hinchingsbrook House
 - 50 Houghton Mill
 - 51 Hunlington Castle
 - 52 Ramsey Abbey Gatehouse
 - 53 Sawtry Moat and Shrunken Medieval Village
 - 54 Barlow Hills Roman barrows
 - 55 Belars Hill
 - 56 Car Dyke
 - 57 Clopton Deserted Medieval Village
 - 58 Denny Abbey
 - 59 Duxford Chapel
 - 60 Fleam Dyke
 - 61 Fort
 - 62 Giant's Hill
 - 63 Hall Orchard moated site
 - 64 Lark Hill
 - 65 Magog Down
 - 66 Mutlow Hill
 - 67 Radio Astronomy Observatory
 - 68 Tumuli
 - 69 Wandlebury Camp
 - 70 Wimpole Hall
 - 71 Worsted Street Roman Road
 - 72 Worms Meadow
- Activity Centre
 - 116 Mepal Outdoor Centre
- Nature Reserve
 - 77 Cherry Hinton Chalk Pits
 - 78 Limekiln Close
 - 79 Paradise Local Nature Reserve
 - 80 Chettisham & Mureth Meadows
 - 81 Chippenham Fen
 - 82 Devil's Dyke
 - 83 Ditton Park Wood
 - 84 Dughouse Grove
 - 85 Fordham Woods
 - 86 Hundred Foot Bank (Wildfowl and Wetlands Trust)
 - 87 Ouse Washes
 - 88 Roswell Pits
 - 89 Scham Meadows
 - 90 Wicken Fen
 - 91 Lattersey
 - 92 Nene Washes (RSPB)
 - 93 Welches Dam Ouse Washes (RSPB)
 - 94 Rings End Pocket Park & Nature Reserve
 - 95 Aversley Wood
 - 96 Brampton Wood
 - 97 Grafton Water
 - 98 Hemingford Meadow
 - 99 Holme Fen
 - 100 Houghton Meadows
 - 101 Hones Wood
 - 102 Needingworth Quarry
 - 103 Faxon Pits
 - 104 Ramsey Heights
 - 105 Saglej Wood
 - 106 Upwood Meadows
 - 107 Waresley & Granden Woods
 - 108 Woodwalton Fen
 - 109 Camboorne Reserve
 - 110 Fen Drayton
 - 111 Fleam Dyke
 - 112 Fowlmere
 - 113 Fulbourn Fen
 - 114 Gamlingay Wood
 - 115 Hayley Wood
- Wildlife Centre
 - 73 Hamerton Zoo Park
 - 74 The Raptor Foundation
 - 75 Linton Zoological Gardens
 - 76 Shepreth Wildlife Park

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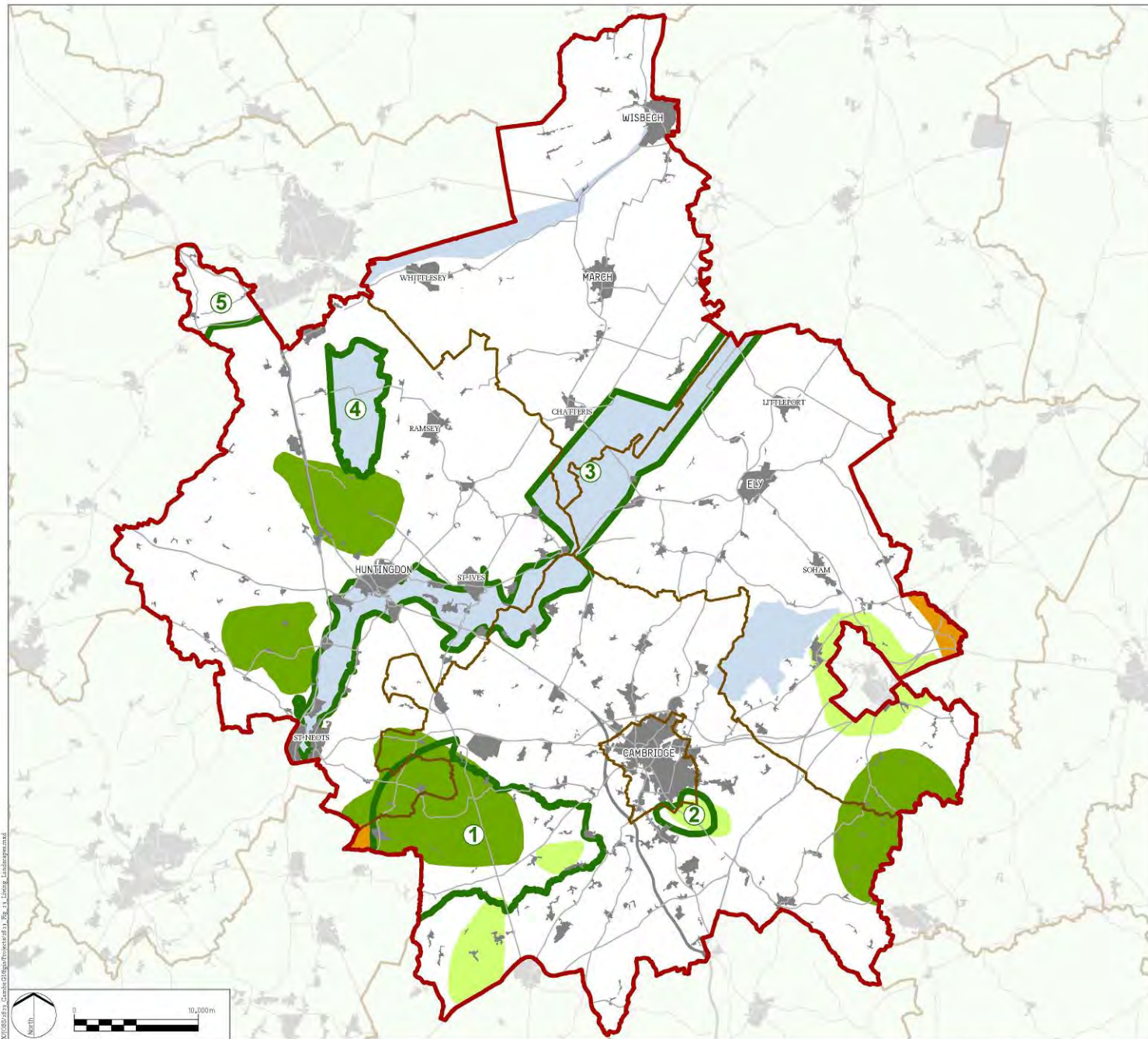
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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, National Trust, Cambridgeshire and Peterborough Biological Records Centre, East Cambridgeshire District Council, Fenland District Council, Huntingdonshire District Council, South Cambridgeshire District Council & Cambridge City Council.

Over 100 strategic destinations were identified within Cambridgeshire, including commons, country parks, parks or gardens, museums, historic sites or features, wildlife centres, nature reserves and activity centres. Key destinations are principally located in the south of the county, in and around the city of Cambridge. These destinations are shown in Figure 8.4. In the north of the county, destinations are less frequent, and consist mainly of historic sites or features and nature reserves; there are no country parks and very few strategic parks and gardens. As with the south of the county, destinations are principally located within or near to urban areas, although there are a number of destinations, namely nature reserves that are more isolated and potentially less accessible.

Figure 8.5 Wildlife Trust's Living Landscapes projects and Biodiversity Partnership's Year Vision (Next page)



LEGEND

Study Area Boundary

Biodiversity Partnership's 50 Year Vision Target Habitats

- Chalk and Limestone Grassland
- Habitats Including Meadows
- Acid Grassland and Heath
- Woodlands and Hedgerows

Wildlife Trust Living Landscapes (within Cambridgeshire)

- 2. Gog Magogs
- 1. West Cambridgeshire Hundreds
- 3. Ouse Valley
- 4. Great Fen
- 5. Nene Valley

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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Wildlife Trust

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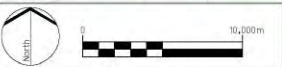
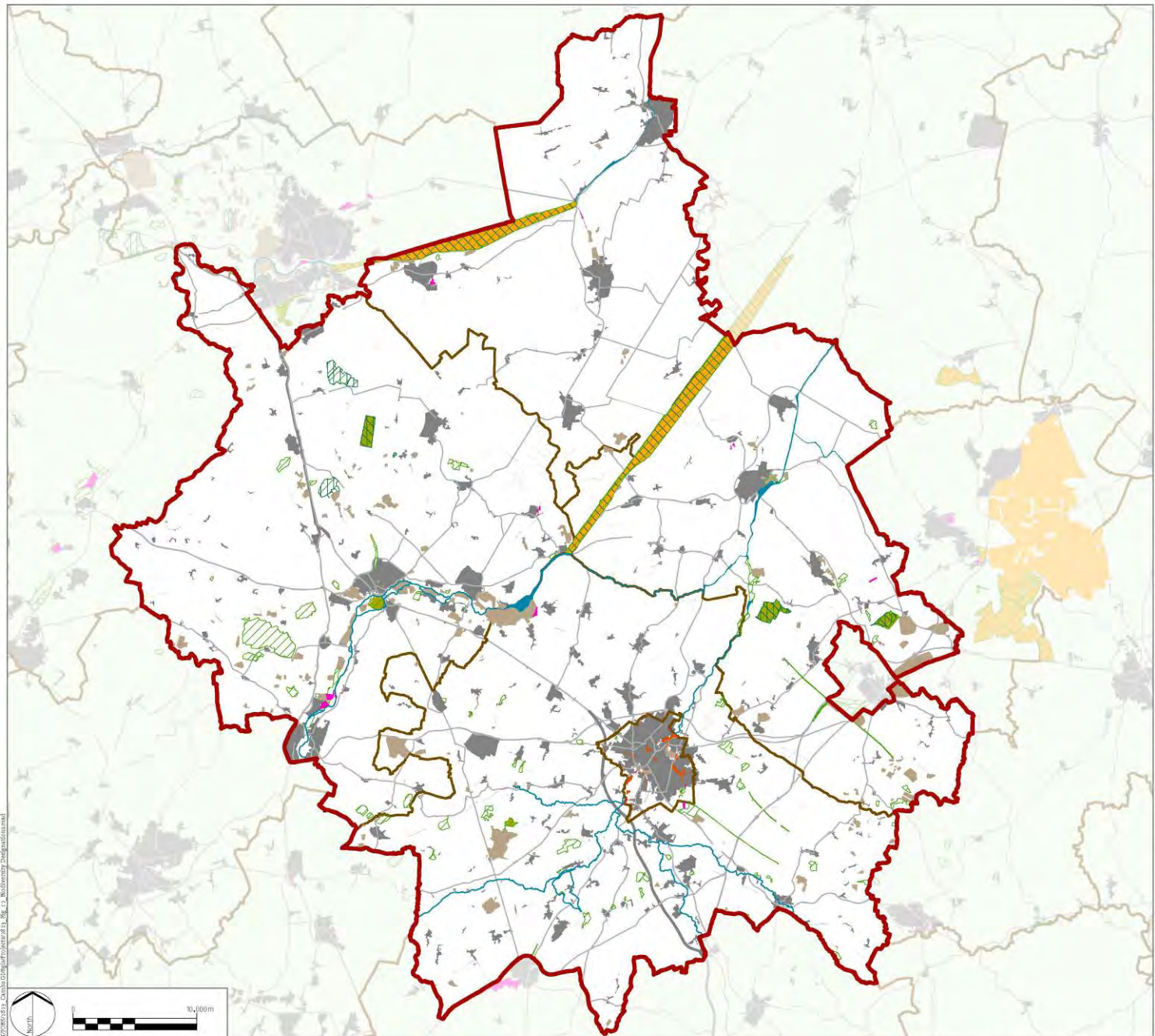


Figure 8.5 illustrates extracts from the Wildlife Trust's Living Landscapes Projects and Biodiversity Partnership's 50 Year Vision plan. The Cambridgeshire and Peterborough Biodiversity Partnership have identified areas for large-scale habitat creation to support Biodiversity Action Plans for habitats and species - reflecting in part the location of existing habitats. The Wildlife Trust has identified similar areas called 'living landscapes'. Some of these areas are subject to large-scale habitat restoration which is in effect recreating a particular historic landscape - medieval fen.

Figure 8.6 Nature conservation designations (Next page)



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LEGEND

- Study Area Boundary
- International/ European Designations**
- RAMSAR Site
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- National Designations**
- Site of Special Scientific Interest (SSSI)
- Local Designations**
- County Wildlife Site (CWS)
- River County Wildlife Site (RCWS)
- Local Nature Reserve (LNR)
- City Wildlife Site (Cambridge Only)

Note: Data correct to Summer 2009. Due to scale of mapping, data shown is for illustrative purposes only.

For details, reference should be made to the relevant Local Planning Authority Local Wildlife Trust or Natural England for up-to-date information.

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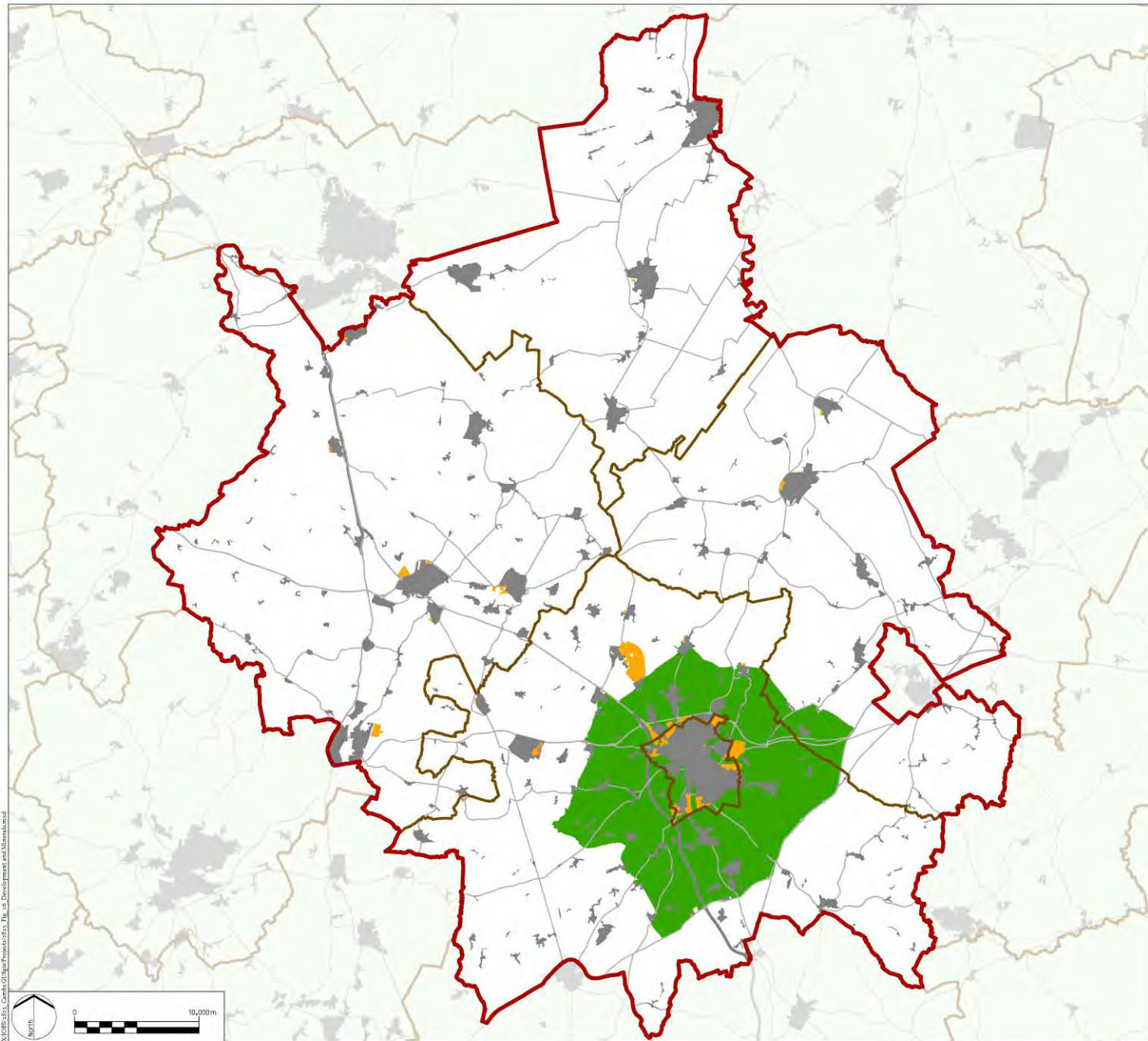
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Nature Conservation Designations

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 Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Natural England, DEFRA & Cambridgeshire and Peterborough Biological Records Centre.

Figure 8.6 illustrates sites designated internationally, nationally and locally for their nature conservation importance. Heritage sites often have nature conservation designations or are managed in such a way as to maintain and improve the biodiversity of the site. Comparing nature conservation designations with heritage sites can highlight where these opportunities exist.

Figure 8.7 Major developments and Cambridge Green Belt



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LEGEND

- Study Area Boundary
- Green Belt
- Major Development Sites*

* Major Development Sites are correct as of September 2010 and comprises locations/sites:

- Allocated in Local Plan or LDF
- With Outline Planning Permission
- With Unimplemented Full Planning Permission
- Under Construction
- Completed between 01 July and 30 September 2010
- Where residential development sites are 100 dwellings or more

NB: Please refer to Cambridge Insert Plan for further detail of settlement boundaries and major developments in and around Cambridge.

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Major Development Sites and the Cambridge Greenbelt

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Heritage features may form part of the Green Infrastructure network providing a historic context and 'sense of place' for development and its residents. Major developments may impact on known and unknown archaeological and heritage features.

Major developments and the Cambridge Green Belt are shown in Figure 8.7.

Developing the Heritage Theme Map

The heritage theme was developed by analysis of the above key baseline datasets, in particular heritage assets (listed buildings, registered parks and gardens, conservation areas and scheduled ancient monuments). These were compared with the other baseline data to highlight areas where heritage assets could support the delivery of Green Infrastructure. This highlighted:

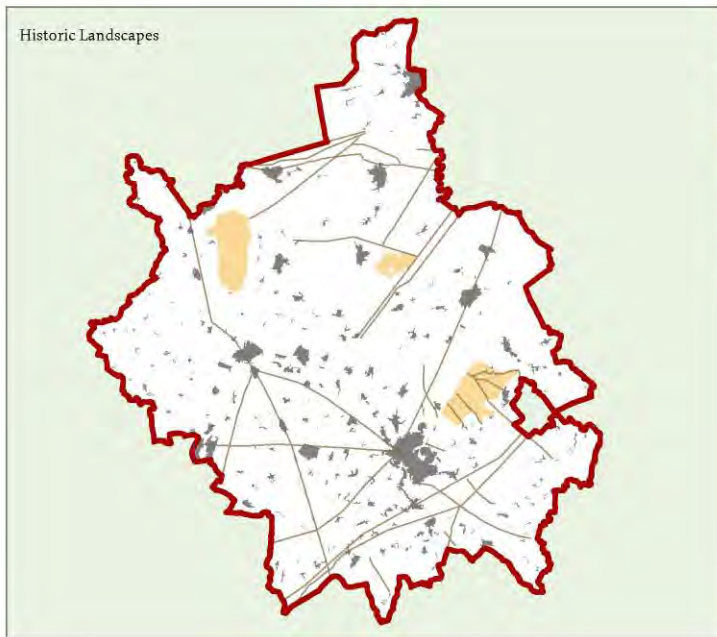
- Areas where heritage assets and nature conservation sites coincide
- Areas where heritage assets and major housing growth sites coincide
- Areas where historic landscapes are being restored or where there are significant linear heritage features

Figure 8.8 identifies areas where heritage assets and nature conservation sites coincide (top) as they can have complementary management and are often publicly accessible, and where heritage assets and major housing growth sites coincide (bottom). Heritage assets can be used to provide part of the Green Infrastructure network for development and can help with place-making.

Figure 8.8 Heritage opportunity analysis (Next page)

Figure 8.9 shows areas where habitat restoration is recreating a particular historic landscape - medieval fen. It also shows linear heritage features such as lodes, Roman roads, medieval drains and linear earthworks such as Devil's Dyke and Fleam Dyke. These can form significant landscape features and can contribute to the network of Green Infrastructure, in particular through movement and habitat corridors.

Figure 8.9 Heritage opportunity analysis (Next page)



- LEGEND
-  Study Area Boundary
 -  Settlement
 -  Fenland Restoration
 -  Linear Features

Historic Landscapes
 This map identifies areas where there are historic landscape features



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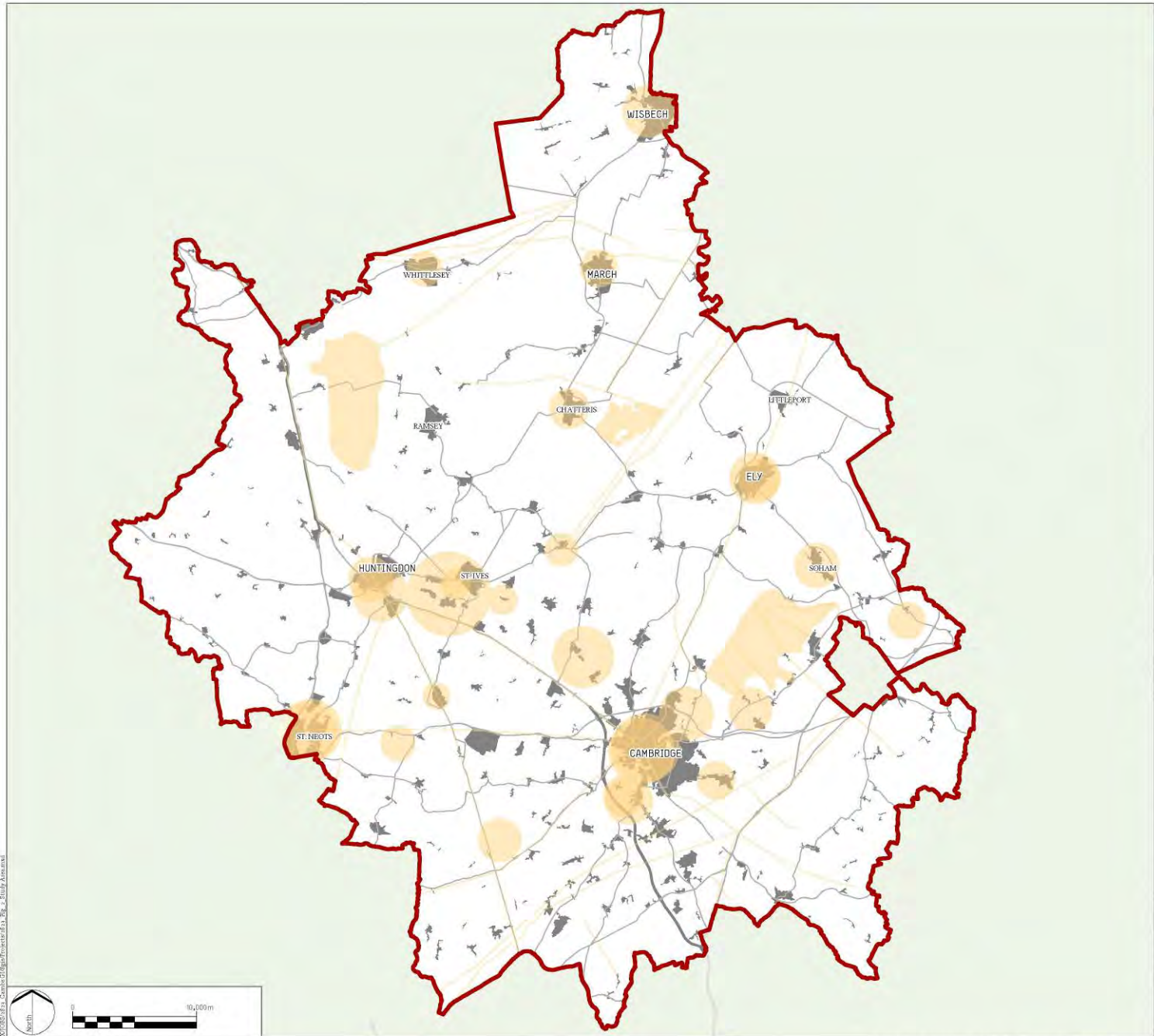
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 Heritage Opportunity Analysis (2)

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In bringing these together on a single map areas of concentration can be identified - Figure 8.10 shows this. The darker the highlighted area the more opportunity there is for heritage assets to support Green Infrastructure.

Figure 8.10 Combined Heritage opportunities (Next page)



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LEGEND

- Study Area Boundary
- Settlement
- Opportunity Areas

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 Heritage Opportunities

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Sources: Ordnance Survey, Open Street Map & 2001 Census Area Data.

5 Issues and Opportunities

The historic environment is a finite and non-renewable resource, which cannot be recreated or relocated, unlike a natural habitat. This naturally constrains some forms of activities that would damage or irretrievably alter a historic asset. There is evidence of millennia of human interventions shaping the character of the Cambridgeshire landscape. Historic and archaeological sites, in both urban and rural locations, make an important contribution to sense of place, sense of time and local identity and distinctiveness; for example patterns in the landscape are created by roads, tracks, hedges and drainage ditches, as well as the more tangible heritage assets such as churches and historic buildings and the street plans they create. The historic environment is all around us; it is the legacy of the interaction between humanity and the environment.

Archaeology is a very popular activity with the public. Local history and archaeology contribute to the quality of life through informing and engaging local communities, and promoting healthy access to the countryside by making available places to visit. Information on the heritage of new and old settlements helps create a sense of connection and community, a sense of place and pride.

There are many opportunities to achieve multi-functional benefits through, for example, the relationship between biodiversity and historic sites/habitats, although some tensions exist, for example, between conservation and public access on a small number of sites.

The broader historic environment can support the Green Infrastructure Strategy through informal recreation and countryside access initiatives. Green infrastructure opportunities are most readily found in relation to historic landscape and archaeological sites though they do include historic buildings and structures. Opportunities include:

- Multi-functional opportunities e.g. which combine heritage assets, biodiversity and public access, and collectively give a richer experience, including sites, areas and linear features such as historic routeways.
- Use of Nature Reserves and similar designations.
- Heritage as an access route to landscape and biodiversity
- Use of heritage sites as gateways e.g. Wimpole, Denny Abbey and Farmland Museum.
- On site, static and digital interpretation and presentation.
- Interpretation and access to groups of heritage assets and areas including local and important concentrations, collections of similar types.
- Trails and other organisation of experiences including long distance footpaths.

- Improved presentation of sites through management, conservation and enhancement.
- Sites which provide public access
- Opening up and facilitating access to individual and groups of assets
- Heritage assets as landscape features/landmarks for Green Infrastructure.

Green infrastructure action in relation to heritage should focus on public access and experience, interpretation (on site and remote), and the presentation of assets through management and enhancement. Equally, Green Infrastructure can consider heritage aspects even when it is not one of the most important aspects of a site.

The key issues and challenges facing the historic environment and heritage include:

- Impact of Climate Change on sites, landscapes and buildings.
- Impact of development on sites, buildings, landscapes and settings of sites.
- Impact of farming on archaeological sites/historic landscape.
- Some conflicts between conservation and public access on some sites.
- Lack of visibility of some heritage assets leading to lack of awareness and profile.
- Perception of heritage as a threat to development rather than as an asset to be utilised.
- Lack of funding for presentation, use and interpretation of heritage discovered through development process.

The Green Infrastructure Strategy presents an opportunity to overcome some of these issues through integrating broader heritage management considerations and securing the long-term protection and enhancement of heritage assets. It can help support initiatives that further promote heritage in Cambridge and Ely, and other markets towns and villages within the county. This may be through particular heritage themes or focus on particular time periods, dependent on local conditions.

However, consideration has to be given to ensuring that access does not compromise the survival or state of repair of heritage assets or other factors such as biodiversity interest. The provision of enhanced interpretation of heritage assets, through leaflets, guided walks and on site boards should also be considered where such interventions are regarded appropriate. The recently completed Northstowe Countryside Access Project (see Case Studies for further information) is an example of success that could be rolled out in other locations in both urban and rural areas.

Other opportunities of benefit to heritage and Green Infrastructure that may arise include:

- Potential to designate heritage assets (e.g. Ancient Woodland, moated sites, listed buildings) that have high biodiversity value as Local Nature Reserves.
- Community heritage schemes and surveys.

- Conservation and enhancement of threatened historic environment land/sites (including Scheduled Monuments at Risk).
- Increasing economic activity and tourism.
- Promoting a sense of place for new developments and existing communities.
- Potential (but not required) developer funding for public information and interpretation.
- Development of walks and trails, and interpretation of groupings of heritage assets and historic areas and landscapes.
- On site, online, telephone and remote interpretation.

A unique opportunity also exists to build on the centuries of episodic fenland reclamation to improve countryside access and tourism across the north of the county.

However, there is a need for carefully managed change with regard to historic assets, the benefit of which must be considered against the impact on the significance of the asset, with the higher the significance the greater the benefit required.

With some sites, especially those with the highest level of national designation (i.e. Scheduled Monuments, Grade I & II* listed buildings and Registered Parks and Gardens) the level of significance is a serious material consideration and constraint on any use. For example, restoration works on a moated site with a view to improving the water level to increase the habitat potential would need to take into account the possibility of archaeological deposits and dating evidence in the moat, and undertake (and pay for) investigative works that may well end up prohibiting such a use. Where dealing with heritage sites, it is imperative to get advice from the relevant historic environment professionals at county, district or national (English Heritage) level.

A further constraint can apply in the setting of historic assets. Part of the importance of many sites can arise from the environment around them, and practices that would alter these in a way that was detrimental to the asset would not normally be permitted. An example would be the planting of trees near a barrow (burial mound) site that would screen the asset from a nearby public access route, even if the actual planting was not on the designated area itself.

Works to designated assets have to be undertaken to certain standards and often by those with suitable skills or experience. This is especially true with structures or buildings, where well-intentioned (but wrong) interventions can leave a legacy of damage that will cost a lot of money in the future to rectify. An example would be the use of cement rather than lime mortar in re-pointing a stone structure, something that was often done in the past and is responsible for extensive damage to stone structures today.

Conversely, there are some works that can be done by the unskilled or by voluntary labour, such as scrub and grass clearance on scheduled

monuments. Even in these cases however there will be guidance and best practice to follow, so the key requirement would be to always take advice from a historic environment professional. The requirements for works to designated assets can result in costs that are significantly higher than equivalent works for non-designated assets.

6 Funding Opportunities

Heritage is fortunate in having access to a dedicated funding stream: the **Heritage Lottery Fund (HLF)**. Current levels of funding for HLF are currently lower due to a dilution of the original Lottery themes, but the current government has promised to revert to the original core values, including heritage, with a possible corresponding increase in funds. The core themes of HLF are partnerships, local people and local projects, with simpler funding streams for projects under £50,000 and also for youth related projects. Projects that involve local communities and bring benefit to those and wider communities are often looked upon favourably, and Cambridgeshire has an excellent track record in delivering local heritage and environmental projects.

Environment Stewardship Schemes are a key mechanism for the distribution of payments to farmers and landowners, and currently distributes some £400m per annum. There are a variety of schemes applicable to farmland, organic farming, and woodlands, but the current main mechanism for funding are the Entry Level and Higher Level Stewardship Schemes. Two of the main themes for Environmental Stewardship are to protect historic features and to promote learning and access to the countryside. Special projects on the historic environment can be used to enhance heritage sites, introduce interpretation and improve access. Additionally, specialist funding is available to restore and find alternative uses for farm and other rural buildings.

Management Agreements (also known as Section 17 agreements) can be offered by English Heritage to enhance, protect and promote nationally important sites. Quite often, small sums of money spent wisely and appropriately can bring real benefits to heritage sites, and the provision of suitable interpretation materials raises the profile and use.

Planning Gain (Section 106 agreements) can also be used for heritage purposes. This can include monument works, improving access to and interpretation of sites, or be used for local/community events to promote well being, knowledge and a sense of place for current, expanding and new communities.

Worts Meadow, Landbeach

A scheduled monument that is part of the county council's farms estate, Worts Meadow is an area of grassland on the edge of the village of Landbeach that contains a moated site, remains of mediaeval housing and a large fish pond. The site is popular locally and has public access. A series of works over the past 24 months has seen improvements to the access and interpretation, site management works, the creation of a new newt habitat, changes to the agri-cultural use of the land and the establishment of a Friends Group. The site has undergone consultation to become a Local Nature Reserve.

Funding: Cambridgeshire County Council, South Cambridgeshire District Council, Housing Growth Fund, Environmental Stewardship Scheme, English Heritage

Devil's Dyke Walk

Devil's Dyke is a major landscape feature in the county. It is an Anglo-Saxon earthwork that runs from Reach to Woodditton, and is a public Right of Way. SHAPE East¹, with help from Cambridgeshire County Council and English Heritage, have produced downloadable podcast guided walk that goes through the history, use and importance of the dyke, plus information on its wildlife and biodiversity. It is intended to complement the interpretation boards already on the site, and to provide an informational background to those using the dyke as an amenity.

Funding: English Heritage, SHAPE East

North Cambridgeshire Sites and Access

This project has focussed on several sites north of Cambridge that lie on or adjacent to public access routes. In addition to Worts Meadow (above) the project has looked at Horningsea Kilns and Waterbeach Abbey Scheduled Monuments. At Horningsea Kilns, access to the right of way across the site has been improved and an interpretation board installed. At Waterbeach Abbey, the site is undergoing improvements and interpretation installed. The next stage is to link these sites with others in the area to a trail that can be accessed from the nearest Park & Ride site or from Mere Way from Cambridge.

Funding: Housing Growth Fund, English heritage

¹ **SHAPE EAST** is an educational charity and architecture centre working with communities, schools, professionals, local authorities and the general public to increase their understanding of the importance of good planning, urban design, architecture and the built environment.

Cambridgeshire Green infrastructure Strategy Appendix 9

Landscape

Contents

- 1 Introduction and definition
- 2 Baseline information and datasets, including policy
 - Policy
 - Local Development Framework Documents
 - Geology
 - Additional Information
 - Landscape Assessments
 - District Scale Assessment
- 3 What this information tells us
- 4 Spatial analysis
- 5 Issues and Opportunities
- 6 Annex 1: Countryside Quality Counts findings for Cambridgeshire

1 Introduction

This section identifies the baseline datasets and relevant policies for the Green Infrastructure Theme 'Landscape', which forms an important component of Green Infrastructure in Cambridgeshire. The data sets are drawn together to identify the general and spatial issues that relate to this Theme. Conclusions are then made about how the issues can be mapped and overlaid to highlight the opportunities that exist.

The spatial analysis of Landscape information and opportunities were then combined with the other six Themes, together with other important issues and asset data in Cambridgeshire, to inform and develop the Strategic Network of Green Infrastructure.

Definition

For the purpose of this Strategy we have used the European Landscape Convention landscape definition:

"An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors." (Council of Europe 2000).

2 Baseline information and datasets, including policy

Policy

Planning Policy Statement (PPS) 7: Sustainable Development in Rural Areas

PPS7 sets out the Government's planning policies for rural areas. A key objective of PPS7 is to raise the quality of life and the environment in rural areas through good quality, sustainable development that respects the local distinctiveness and the intrinsic qualities of the countryside.

Planning Policy Statement (PPS) 1: Delivering Sustainable Development

PPS1 sets out the overarching planning policies on the delivery of sustainable development through the planning system. It does not specifically reference Green Infrastructure, however, it requires planning authorities to ensure that development integrates urban form and the natural environment and creates and sustains an appropriate mix of uses, including green space.

Planning Policy Statement: Climate Change - Supplement to PPS 1

The supplement to PPS1 sets out how planning should contribute to reducing emissions and stabilising climate change. In particular, it states that when selecting land for development planning authorities should take into account "the contribution to be made from existing and new opportunities for open space and green infrastructure to urban cooling, sustainable drainage systems, and conserving and enhancing biodiversity".

Planning Policy Statement: Eco Towns - Supplement to PPS 1

Although there are currently no short-listed eco-towns in Cambridgeshire, and the standards set out in this supplement are more demanding than would normally be required for new development, it provides a useful overview of the role of Green Infrastructure:

"Forty per cent of the eco-town's total area should be allocated to green space, of which at least half should be public and consist of a network of well managed, high quality green/open spaces which are linked to the wider countryside. Planning applications should demonstrate a range of types of green space, for example community forests, wetland areas and public parks. The space should be multi-functional, e.g. accessible for play and recreation, walking or cycling safely, and support wildlife, urban cooling and flood management. Particular attention should be given to land to allow the local production of food from community, allotment and/or commercial gardens".

Planning Policy Guidance (PPG) 2: Green Belts

PPG2 defines the role of Green Belts. The fundamental aim of Green Belt policy is to protect the countryside by preventing urban sprawl and encouraging sustainable patterns of urban development and the Green Infrastructure Strategy may help deliver these objectives.

Planning Policy Statement (PPS) 12: Local Spatial Planning

PPS 12 highlights the importance of spatial planning in ensuring the necessary social, physical and Green Infrastructure is delivered. It defines Green Infrastructure as "*a network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities*".

European Landscape Convention¹

Article 5 of the European Landscape Convention is as follows:

Each Party undertakes:

¹The European Landscape Convention - also known as the Florence Convention - promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues. <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>

a) To recognise landscapes in law as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity;

b) To establish and implement landscape policies aimed at landscape protection, management and planning through the adoption of the specific measures set out in Article 6;

c) to establish procedures for the participation of the general public, local and regional authorities, and other parties with an interest in the definition and implementation of the landscape policies mentioned in paragraph b above;

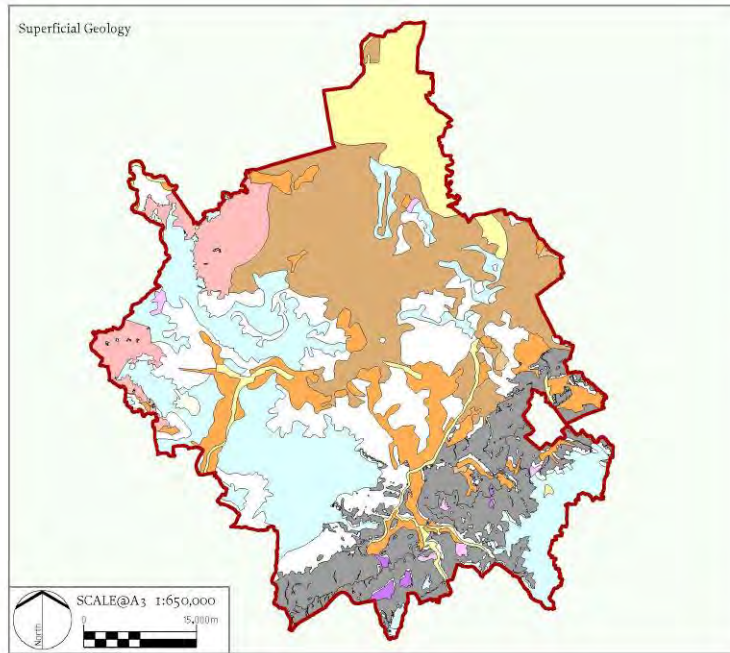
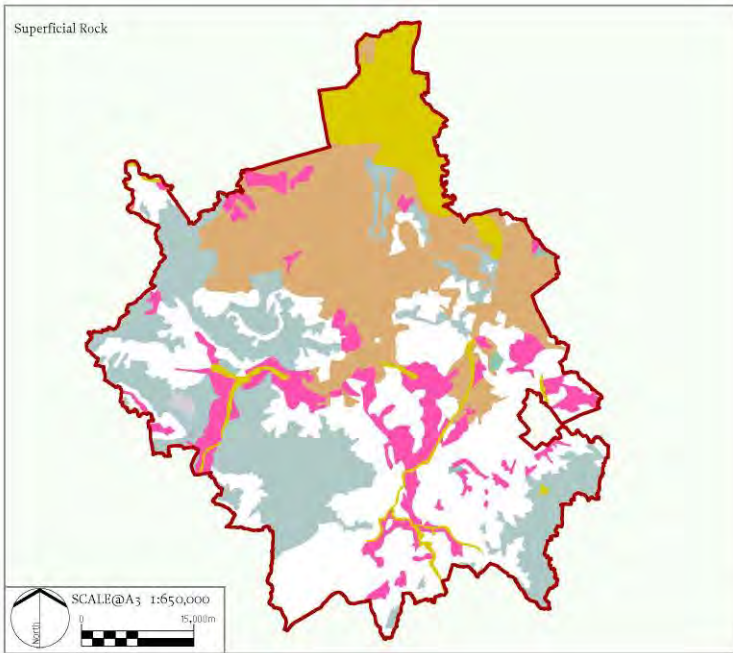
d) To integrate landscape into its regional and town planning policies and in its cultural, environmental, agricultural, social and economic policies, as well as in any other policies with possible direct or indirect impact on landscape.

As the policy has been ratified in the UK it should be used to develop landscape policy (under supervision from Defra and Natural England) and the role of the Green Infrastructure Strategy in protecting, managing and promoting the value of all landscapes.

Local Development Framework Documents

The Planning and Sustainable Growth Appendix No. 4 includes full references to emerging Local Development Frameworks for each of the Cambridgeshire Districts and how they address Green Infrastructure and Landscape.

Figure 9.1 Geological conditions underlying Cambridgeshire (Next page)



- LEGEND
- Study Area Boundary
 - Superficial Rock**
 - Clay
 - Clay, Silt And Sand
 - Diamicton
 - Peat
 - Sand And Gravel



- | Bedrock Geology | Superficial Geology |
|--|---|
| Gault Formation and Upper Greensand Formation (Undifferentiated) - Mudstone, Sandstone and Limestone | Alluvium |
| Great Oolite Group - Sandstone, Limestone & Agrillaceous Rocks | Glacial Sand and Gravel |
| Grey Chalk Subgroup - Chalk | Lacustrine Deposits |
| Inferior Oolite Group - Limestone, Sandstone, Siltstone and Mudstone | Peat |
| Kellaways Formation and Oxford Clay Formation (undifferentiated) - Mudstone, Siltstone and Sandstone | River Terrace Deposits |
| Lias Group - Mudstone, Siltstone, Limestone And Sandstone | Sand and Gravel of Uncertain Age and Origin |
| Lower Greensand Group - Sandstone and Mudstone | Till |
| Wealden Group - Sandstone And Siltstone, Interbedded | |
| West Walton Formation, Amptihill Clay Formation And Kimmeridge Clay Formation (undifferentiated) | |
| White Chalk Subgroup - Chalk | |

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Geological Conditions Underlying Cambridgeshire

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©Cambridgeshire County Council, 2010. All rights reserved. Mineral Safeguarding areas based on data courtesy of the British Geological Survey and others through consultation. Please note that in the case of dispute the definitive Mineral Safeguarding Area are depicted in the Adopted Cambridgeshire and Peterborough Minerals and Waste Plan.
Sources: Ordnance Survey, 2001 Census Area Data & British Geological Survey

Figure 9.1 shows the geological conditions underlying Cambridgeshire. Solid geologies range from the various Clay formations that underlie much of Huntingdonshire to the Chalk that characterises the upland areas of South Cambridgeshire. The solid geology is overlain by thin drift deposits of the Quaternary age. These are either associated with glacial, interglacial and periglacial phases, such as the Boulder Clays covering much of the west of the county, and those that formed in post glacial periods, including the alluvial deposits flooring the river valleys and the estuarine clays and silts laid down across the north of the county.

Additional Information

Natural Areas

Natural Areas are sub-divisions of England, each with a characteristic association of wildlife and natural features. Each Natural Area has a unique identity resulting from the interaction of wildlife, landform, geology, land use and human impact. 'Natural Area' data was utilised in 1996 by English Nature (EN) and English Heritage, who published their 'Natural Areas' map based on these natural features and habitats.

This data later formed part of the first national landscape assessment (see below)

Living Landscapes

In response to the threat that climate change represents to plants and animals, The Wildlife Trust has published a report that captures a new and ambitious approach to landscape scale conservation and enhancement.

The Wildlife Trust is identifying key areas to protect wildlife by enlarging, improving and joining them up. There are currently over 100 Living Landscapes schemes around the U.K. Five major schemes have been identified within Cambridgeshire.

50 Year Vision

The Biodiversity Partnership for Cambridgeshire & Peterborough has produced a 50 year wildlife vision to show how they hope the county will look in 2050. It identifies areas of large-scale habitat creation to support Biodiversity Action Plans (BAPs) for habitats and species.

For a more detailed description of the above please see the Biodiversity Appendix No. 5.

Minerals and Waste

Mineral extraction presents an opportunity to enhance a landscape and provide Green Infrastructure assets through post-extraction restoration. Restoration can be back to farmland or other pre-extraction uses and this can be enhanced

through appropriate landscape planting (such as hedgerows) and management. Identification of mineral extraction sites or clusters of sites shows where there is potential for landscape character to be enhanced.

Landscape Assessments

The diversity of Cambridgeshire's landscape has been captured in landscape character assessments, which can be undertaken at national, regional, county and district scale.

National Assessments

A national Landscape Character Assessment was first put forward by the Countryside Commission (CC) who began to map and assess the countryside of England in the early 1990's. This was based on twelve sets of data, including Landform, Geology, Farming patterns, Settlements, Archaeology, Ecology and Vegetation cover. From this data was produced the first 'Countryside Character' map was produced. The Cambridgeshire Landscape Guidelines (published in 1991 - See Below) were based on this map.

In 1996 this map was combined with data produced by English Nature (EN) and English Heritage, who had published their own 'Natural Areas' map based on natural features and habitats.

The Combined map was composed of 159 'Joint Character Areas' (JCA's) and was adopted by Natural England (formally CC and EN who merged in 2006). It covers the entire country. This map was updated in 2005, and the JCA's renamed 'National Character Areas' (NCA's).

To supplement the maps, a set of eight regional volumes were published describing the 159 NCAs. The character descriptions of each NCA highlight the influences which determine the character of the landscape, for example land cover, buildings and settlement.

The NCAs are a widely recognised national spatial framework, used for a range of applications. Examples include the targeting of Natural England's Environmental Stewardship scheme and the Countryside Quality Counts project.

The NCAs are a widely recognised national spatial framework, used for a range of applications. Examples include the targeting of Natural England's Environmental Stewardship scheme and the Countryside Quality Counts project. This initiative provides a systematic assessment of how the countryside is changing and helps us to understand where and to what degree change is affecting the Landscape Character. This in turn can inform decision-making and policies for achieving sustainable development and an enhanced character and quality of countryside and landscape.

Table 9.1 Countryside Quality Counts findings for main National Character Areas in Cambridgeshire.

| NCA No. | Type | Overall Assessment | Comment |
|---------|---|--------------------|--|
| 46 | The Fens | Enhancing | Although development continues to transform the character of the area locally, enhancements in woodland, agriculture, coastal and other aspects of character suggest that overall the character of the area has been strengthened. |
| 53 | Bedfordshire Greensand Ridge | Maintained | The character of the farmed landscape continues to weaken, and these pressures are added to by those arising from locally concentrated development. However, woodland character has been stable. The character of the area has probably been maintained or is weakening only slowly. |
| 85 | Breckland | Maintained | Changes in agriculture, semi-natural habitats and woodland suggest that the overall character of the area has been maintained or strengthened. However, development is significant and may be weakening character locally. |
| 86 | South Suffolk and North Essex Clayland | Maintained | Although development has had a major impact throughout, the characteristics of the farmed landscape and woodlands have been maintained or possibly strengthened. The overall assessment is that character has been maintained. |
| 87 | East Anglian Chalk | Maintained | Although development has had a major impact throughout the characteristics of the farmed landscape and woodlands have been maintained or strengthened |
| 88 | Bedfordshire and Cambridgeshire Claylands | Maintained | Although development has had a major impact throughout, the characteristics of the farmed landscape and woodlands have been maintained or strengthened |
| 89 | Northamptonshire Vales | Neglected | Changes in agriculture are now slower than before 1999, suggesting that character is more stable but weakened. However, the impacts of development and changes in the elements associated with rivers are continuing to transform the |

| | | | |
|--|--|--|--|
| | | | character of the landscape. While woodland planting and management has strengthened this resource, overall the character of the area appears to remain weakened. |
|--|--|--|--|

Regional Scale Assessment

Landscape East (formerly known as the East of England Landscape Forum) published an Agreed Landscape Character Assessment for the East of England region in January 2009. This sits between the NCAs and more detailed landscape character assessments, such as found in the Cambridgeshire Landscape Guidelines.

The regional typology is most useful for

- Advising reviews of regional strategies and maps
- Assisting with monitoring of landscape change in the region
- Providing some additional perspective on the rarity and importance of some local types and areas
- Helping architects of agri-environment schemes to better understand how to design those schemes for landscape benefits
- Providing an agreed basis for some potentially contentious studies e.g. concerning the sensitivity of landscape to development, sea-level rise and other major changes.

County Scale Assessment

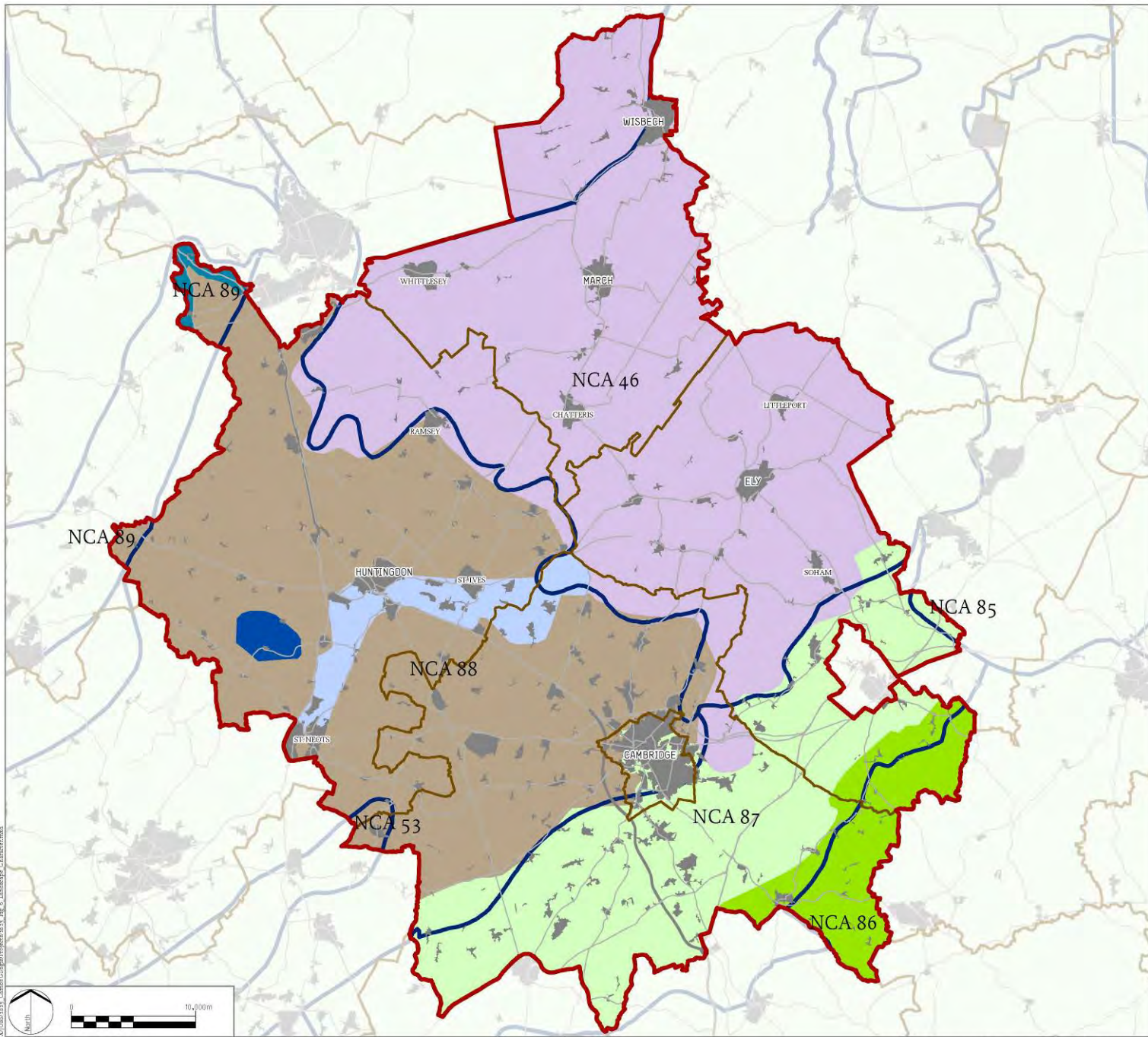
In 1991, Cambridgeshire County Council published "The Cambridgeshire Landscape Guidelines", which are a landscape character assessment for the county².

Based on the earlier Countryside Commission's 'Countryside Character Map' the assessment identifies and describes seven landscape character areas found in various parts of the county. It sets out principles for landscape improvement management and plant species guidelines for each area.

It also provides guidelines on how the landscape should be restored, enhanced and maintained and how development can mitigate against its impact on the landscape. A brief summary of the landscape character areas follows and these are shown in Figure 9.2.

Figure 9.2 Landscape character assessment for Cambridgeshire (Next page)

²Landscape Design Associates, Cambridgeshire Landscape Guidelines, Cambridgeshire County Council, 1991



LEGEND

Study Area Boundary

National Landscape Character Areas

National Landscape Character Areas

- NCA 46 The Fens
- NCA 53 Bedfordshire Greensand Ridge
- NCA 85 Breckland
- NCA 86 South Suffolk and North Essex Clayland
- NCA 87 East Anglian Chalk
- NCA 88 Bedfordshire and Cambridgeshire Claylands
- NCA 89 Northamptonshire Vales

Cambridgeshire Landscape Guidelines Landscape Character Areas

- South East Clay Hills
- Grafham Water
- Chalklands
- Nene Valley
- Western Claylands
- Fenlands
- Ouse Valley

Note: East of England Regional Landscape Character Types are not illustrated or available (accurate to 30 October 2009).

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Sources: Ordnance Survey; Open Street Map, 2001 Census Area Data, Cambridgeshire County Council & Natural England.

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Area 1: South East Clay Hills

This is an undulating area at about 100-120m above sea level running across the elevated hilltops. Small villages and hamlets have developed in more sheltered locations, usually along the spring-line in the shallow valleys. The character of the landscape derives from the scattering of farmsteads and small settlements interspersed with farm woodlands. Field sizes are large but are united by the gently rolling landform and woodlands.

Principles for landscape improvement and management include:

- Management of existing woodlands
- Creation of new woodlands
- Planting woodland belts and widened hedgerows
- Hedgerow management
- Enhance village edges
- Footpath corridor improvements

Area 2: Chalklands

The area is characterised by smooth rolling chalk hills sometimes retaining impressive historic monuments and routeways including three great linear dykes which span the chalkland from the fen edge to the higher claylands. The hills are dissected by the two gentle valleys of the Granta and Rhee, which converge to form the River Cam just south of Cambridge. The area was used for sheep farming well into the nineteenth century, leading to the creation of botanically rich grasslands which now only survive in well-protected locations.

The majority of the chalkland is devoted to growing cereal crops, despite the frequently poor, thin soils. It is a broad scale landscape of large fields, low mechanically trimmed hedges and few trees. The eastern part of the area has a number of woodlands and shelter belts which help to break up the long distance views and give some form and character. Certain high points have beech 'hangers' which are prominent and characteristic features in the open landscape.

The essentially geometric pattern of hedged enclosures is further subdivided to the south west of Newmarket, where the racehorse industry has imposed a distinctive pattern of small, tree-lined paddocks which imparts a well wooded character locally.

Principles for landscape improvement and management include:

- Planting new beech hangers
- Management and creation of chalk grasslands
- Management of existing shelter belts
- Planting new mixed woodlands and shelter belts
- Creation of landscape corridors along river valleys
- Hedgerow reinforcement and management
- Footpath corridor improvements

- Road corridor improvements
- Conservation of linear dykes

Area 3: Western Claylands

Dense woodland and heavy soils are thought to have deterred prehistoric farmers, and even Roman settlements are not common in the landscape. During the medieval period, population pressure and improved plough technology led to more significant levels of settlement, many of which have since been deserted or have shrunk to tiny hamlets or single farms. As such ridge and furrow, deserted medieval villages and other settlement earthworks are features of this now sparsely populated landscape.

The landscape is gently undulating and is subdivided by the shallow Ouse Valley. It is characterised by large scale arable farms with open fields, sparse trimmed hedgerows and watercourses often cleared of bankside vegetation. Scattered woodlands are also frequent, and a considerable number of these are ancient semi-natural woodlands and of considerable importance in the county context. Increased mechanisation has led to the removal of hedgerows and amalgamation of fields. In addition, marginal land has been brought into production by drainage and other improvements. Larger farm units have also led to the need for large storage buildings that can be prominent in the landscape. Small villages and hamlets are scattered through the landscape, often with grass paddocks on their fringes.

Principles for landscape improvement and management include:

- Management of existing woodlands
- Creation of new woodlands
- Planting of woodland belts
- Creation of landscape corridors in valley bottoms
- Hedgerow reinforcement and management
- Management of road margins
- Footpath corridor improvements
- Enhancement of village approaches
- Urban fringe enhancements

Area 4: Ouse Valley

Light well drained gravel soils along the valley and the importance of rivers as transport corridors resulted in the Ouse being the focus of settlement from the prehistoric period up until modern times. The meandering river in its shallow valley bisects the claylands that form the western edge of Cambridgeshire. The margins of the river consist of a mosaic of flood plains and grazing meadows, working and disused gravel pits and lakes, sprawling housing areas and industrial estates.

Principles for landscape improvement and management include:

- Creation of a riverside landscape corridor

- Plantations of riverside willows and poplars
- Pollarding of bankside willows
- Planting small copses and large hedgerows
- Creation of meadows
- Woodland planting along edges of development

Area 5: Grafham Water

Grafham water is an example of a major new man-made landscape feature. It was created by flooding a shallow valley and is now one of England's largest man-made lakes. It is a locally important centre for water-based recreation. The reservoir retains a secluded character and is separated from the surrounding area by low, intensively farmed hills and small woods which are not sufficient to create a sense of concealment or mystery about the size of the lake.

Principles for landscape improvement and management include:

- Linking together existing woodlands
- Management of existing woodlands
- Creation of sheltered margins and reservoir sides
- Creation of marginal meadows and copses
- Stream corridor enhancement
- Footpath corridor improvements
- Enhancement of public car parks and picnic areas

Area 6: Nene Valley

Like the Ouse Valley, the Nene was an important focus for early settlement, reaching national significance in the Roman period. The character of the Nene Valley changes as it moves through from the shallow undulations of the clay/limestone junction west of Peterborough to the flatter fen edge to the east. Generally field patterns are still evident with a fairly good cover of hedgerows and trees. Riverside vegetation of trees and diverse marginal and aquatic plants are to be found, notably in the backwaters. East of Peterborough the landform flattens and the river has been adapted to the rectilinear drainage patterns of the Fens. The old course of the Nene meanders south to disappear in a series of small drains around Farcet, whereas the new cut heads directly east across the Fens. The fen edge consists of large open arable fields with sparse tree cover.

Principles for landscape improvement and management of the Nene west of Peterborough include:

- Management of Existing Woods
- Creation of small copses
- River corridor improvements
- Railway corridor improvements
- Footpath corridor improvements

Area 7: Fenland

The Fens are a complex landscape covering several hundred square miles in the north and east of the county. The area has undergone continual transformation since the last ice age 10,000 years ago and with each relative change in sea level the balance between saltmarsh, fen, bog and woodland has altered. Large scale drainage work in the Fenland stems from the human desire to manage these potentially productive lands and has been undertaken in three principal phases spanning the last 2,000 years.

Fen islands and edges are exciting archaeological areas because their build up of peat has protected earlier sites. The lowest levels are still wet and therefore preserve organic materials and other evidence stretching back to the prehistoric communities that exploited the rich natural resources.

Fenland is a landscape of contrasts and variety. Superimposed on the regimented and highly organised drainage patterns is a more haphazard pattern of settlement and tree cover. It is a large open landscape and although appearing monotonous is in fact characterised by continuous change as the visual characteristics of one fen merge into the next. The open landscape provides distant views where the scattering of clumps and individual trees merge together to produce a feeling of a more densely tree-covered horizon. There are also many 'islands' which rise above the Fens. These range in size from the dominant Isle of Ely to much smaller features that are elevated by just one or two metres. These islands are significant, as the focus of settlement and are made more prominent by their associated tree cover.

Principles for landscape improvement and management include:

- Tree and hedge planting around agricultural buildings and farmsteads
- Planting isolated trees and clumps
- Planting avenues and tree belts
- Planting new woodlands on fen islands
- Enhancement of settlement fringes
- Management of dykes and drains to enhance landscape and conservation value and creation of linear corridors
- Recreating wet fenland

District Scale Assessment

Huntingdonshire Landscape and Townscape SPD 2007

This Supplementary Planning Document (SPD) provides information on the visual character of Huntingdonshire's landscape and market towns. It was prepared following a detailed landscape townscape assessment carried out by Landscape Design Associates in 2001. Huntingdonshire District Council hope that the material contained in the SPD will raise the general level of awareness and understanding of the special qualities of the district, and assist in

considering future priorities for the conservation, enhancement and regeneration of the area's countryside, villages and towns.

The SPD provides a detailed analysis of the landscape of Huntingdonshire. It identifies individual landscape character areas and describes these in terms of their history, character and sensitivity to change. In addition, landscape conservation and management priorities are identified in response to the intrinsic character of each area. For instance, small villages are distributed fairly evenly throughout the district and most are nucleated in form, clustered around a church and village green. The SPD comments that; "the Ouse Valley is a landscape, which is under pressure, in particular, from recreational pressures and development. Future management should focus upon the protection and enhancement of the river channel and its floodplain. This should include Protection and enhancement of a 'Green Corridor' along the river Great Ouse, particularly where it passes through settlements."

In St Neots, the 'Hen Brook' character area includes the open space on either side of the brook, St Neots Cemetery, allotments and areas of public open space to the north east. Together, these areas provide an important network of green spaces within the heart of the residential area, which is well used by local residents both as a means of access and for informal recreation. Priory Park is a large park situated on rising land to the north eastern fringe of the town. The park contains numerous magnificent mature trees principally Oak and Lime set within an undulating landscape that falls significantly toward the urban edge of St. Neots to the south. The park is segregated from the adjacent urban edge by a belt of dense tree and shrub planting along the western boundary.

Godmanchester contains a 'Northern Green Fringe' which provides the landscape setting to the northern periphery of the town located between the recent residential development at Pavilion Close and Fox Grove, and the A14. The area contains a number of rural edge uses and a network of landscape and public open space. The Green Fringe provides a valuable buffer between the A14 and the northern edge of Godmanchester and should be protected from large scale development.

St Ives contains Warner's Park, a small area of distinctive character that provides an important area of greenspace within the urban fabric of the town. The River Great Ouse and its extensive flood meadows are also key features of the southern gateway to the town and provide a green setting for the town.

2003 Landscape Character Assessment for Cambridge

The Cambridge Landscape Character Assessment was adopted by Cambridge City Council as a material consideration for planning in January 2003. The Character Assessment aimed to understand and identify the 'Defining Character' of Cambridge and present this as a number of identifiable areas

which together define the character of the City. Green Infrastructure forms a prominent part of the Cambridge landscape. Two of the defining character areas identified were “Green Corridor” and “River Corridor”.

Five Green Corridors exist in Cambridge, which are highly significant elements of the landscape. Each has its own individual character which combines to inform the overall character of the City.

The Character Assessment maps and describes much of the Green Infrastructure within Cambridge, makes an assessment of the current function and importance of this Green Infrastructure and how it relates both to existing and planned development. For each of the “Character Areas”, a vision, together with their issues and opportunities are presented. These considerations will have informed the current (i.e. 2010/11) Green Infrastructure issues and priorities for Cambridge (Chapter 5 of the Strategy). The Character Assessment is a powerful tool both in informing the development of the Green Infrastructure Strategy and in guiding implementation of parts of the Green Infrastructure Strategy. The Character Assessment goes on to address local open spaces, woodland and hedgerows. It also identifies the Cam river corridor as an integral part of Cambridge and its character.

3 What this information tells us

The diversity of the Cambridgeshire landscape is a result of the complex interplay of a wide range of physical and cultural influences.

The geological structure of the county, including the range of solid geological formations and superficial deposits that are present, and the effects of geomorphologic processes, are the principal factors in determining the character and diversity of the landscape. In addition to shaping the physical and hydrological structure of the county, this ‘geo-diversity’ has also had a significant effect in influencing the county’s economy and patterns of settlement, industrial, agricultural and cultural activity. For example, the built character of the region’s towns and villages, as well as the range of wildlife habitats and farming regimes can all be attributed, to varying degrees, to variations in the underlying geology.

The information provides guidelines on how the landscape should be restored, enhanced and maintained.

The information tells us that:

- The distinct patterns in the landscape have been shaped by man and nature.
- Biodiversity has adapted to and become established in Cambridgeshire's landscapes.

The information tells us that the Cambridgeshire landscape as it is at present is important and it provides guidelines on how the landscape should be restored, enhanced and maintained.

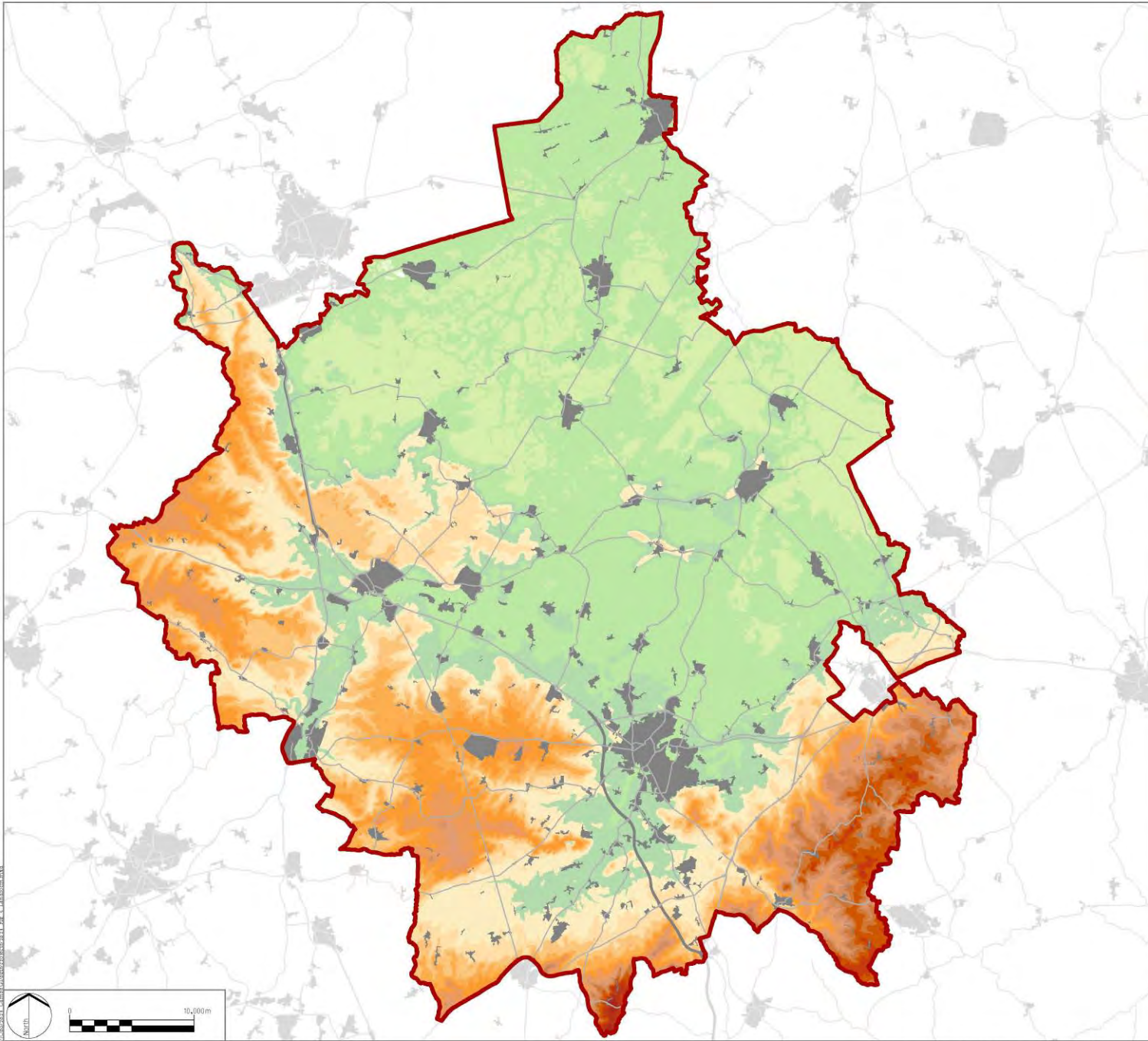
4 Spatial analysis

The above landscape information together with the following baseline information maps has informed development of the landscape theme map.


Landform:

Figure 9.3 illustrates the landform of Cambridgeshire. Landform influences and reflects the landscape character of an area and so the mapping of Cambridgeshire's landform provides additional context for the county's landscape character.

Figure 9.3 Landform features in Cambridgeshire (Next page)



LEGEND

 Study Area Boundary

Landform

| | | | |
|---|-----------------|---|-----------------|
|  | 140m - 150m AOD |  | 50m - 60m AOD |
|  | 130m - 140m AOD |  | 40m - 50m AOD |
|  | 120m - 130m AOD |  | 30m - 40m AOD |
|  | 110m - 120m AOD |  | 20m - 30m AOD |
|  | 100m - 110m AOD |  | 10m - 20m AOD |
|  | 90m - 100m AOD |  | 0 - 10m AOD |
|  | 80m - 90m AOD |  | -10m - 0m AOD |
|  | 70m - 80m AOD |  | -20m - -10m AOD |
|  | 60m - 70m AOD |  | -30m - -20m AOD |

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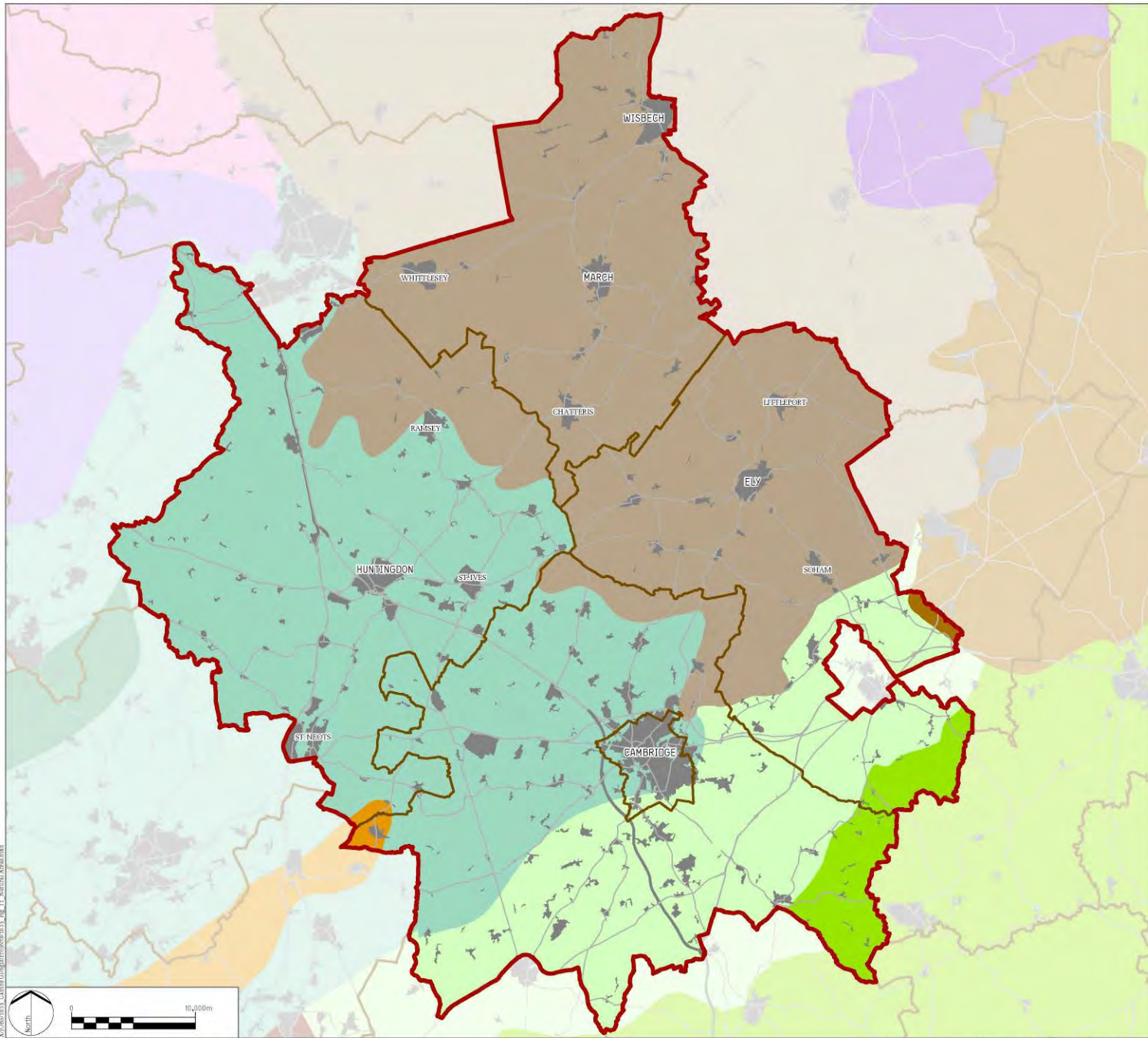
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Sources: Ordnance Survey, Open Street Map, Intermap Technologies Inc & 2001 Census Area Data.

Figure 9.4 illustrates the extent of different Natural Areas in the County. Natural Areas relate strongly to landscape character and so their identification across Cambridgeshire provides additional context for the county's landscape character.

The Cambridgeshire and Peterborough Biodiversity Partnership has identified areas for large-scale habitat creation to support Biodiversity Action Plan (BAP) habitats and species - reflecting in part the location of existing habitats. The Wildlife Trust has identified similar areas called 'living landscapes'. These show where large-scale habitat creation would be best located, based on the existing habitats in Cambridgeshire. Large-scale habitat improvement and creation provides benefits to landscape character as the natural habitats in a particular area are part of, and contribute to, the landscape character of that area. Therefore in improving and creating new habitats and links between them, landscape character can be improved.

Figure 9.4 Natural areas in Cambridgeshire and Figure 9.5 Wildlife Trust's Living Landscape projects and Biodiversity Partnership's 50 Year Vision (Next page)



LEGEND

-  Study Area Boundary
- Natural Areas**
-  The Pens
-  West Anglian Plain
-  Bedfordshire Greensand Ridge
-  East Anglian Chalk
-  East Anglian Plain
-  Breckland

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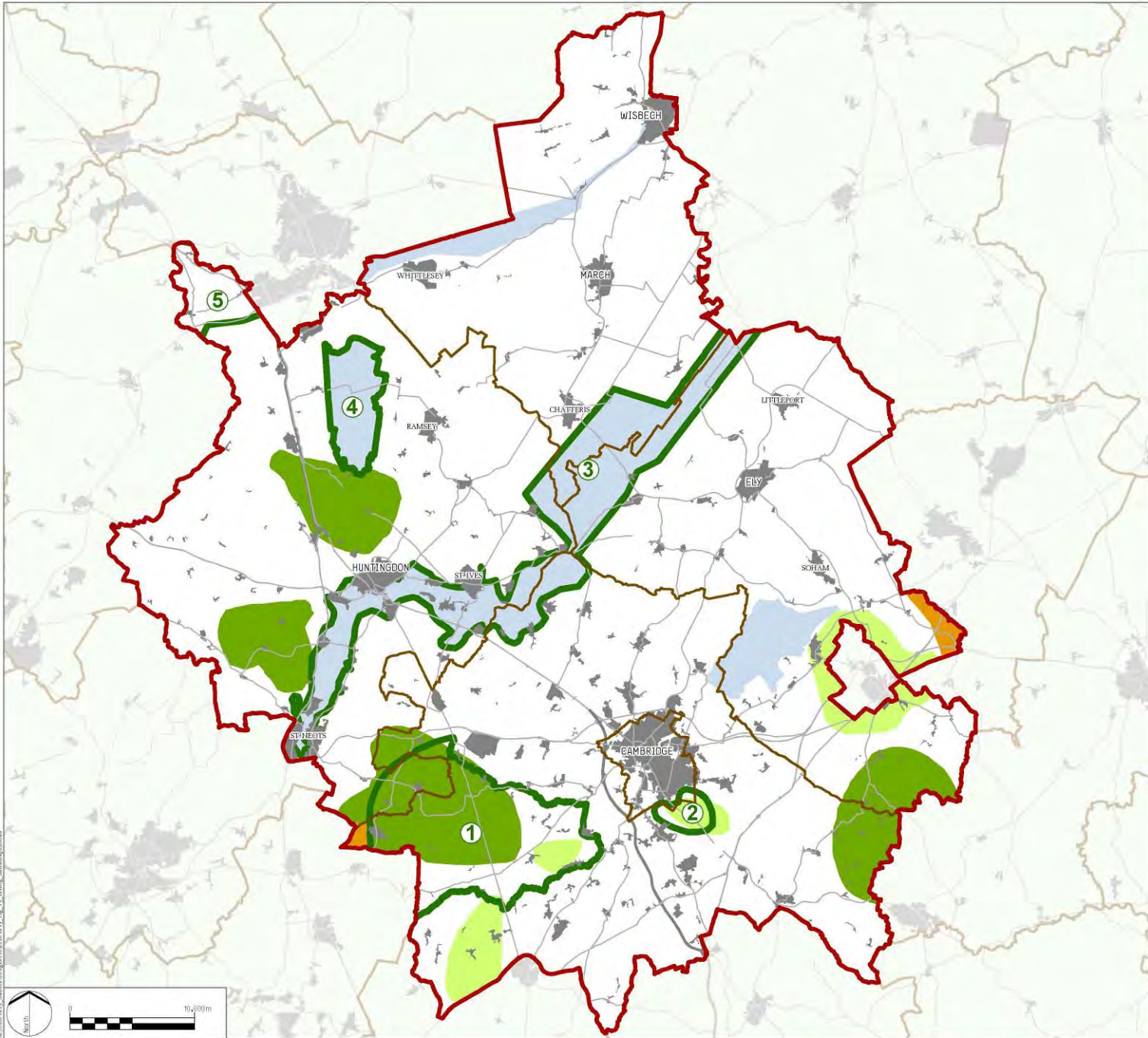
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- LEGEND**
- Study Area Boundary
- Biodiversity Partnership's 50 Year Vision Target Habitats**
- Chalk and Limestone Grassland
 - Habitats Including Meadows
 - Acid Grassland and Heath
 - Woodlands and Hedgerows
- Wildlife Trust Living Landscapes (within Cambridgeshire)**
- 2 1. West Cambridgeshire Hundreds
 - 2. Gog Magogs
 - 3. Ouse Valley
 - 4. Great Fen
 - 5. Nene Valley

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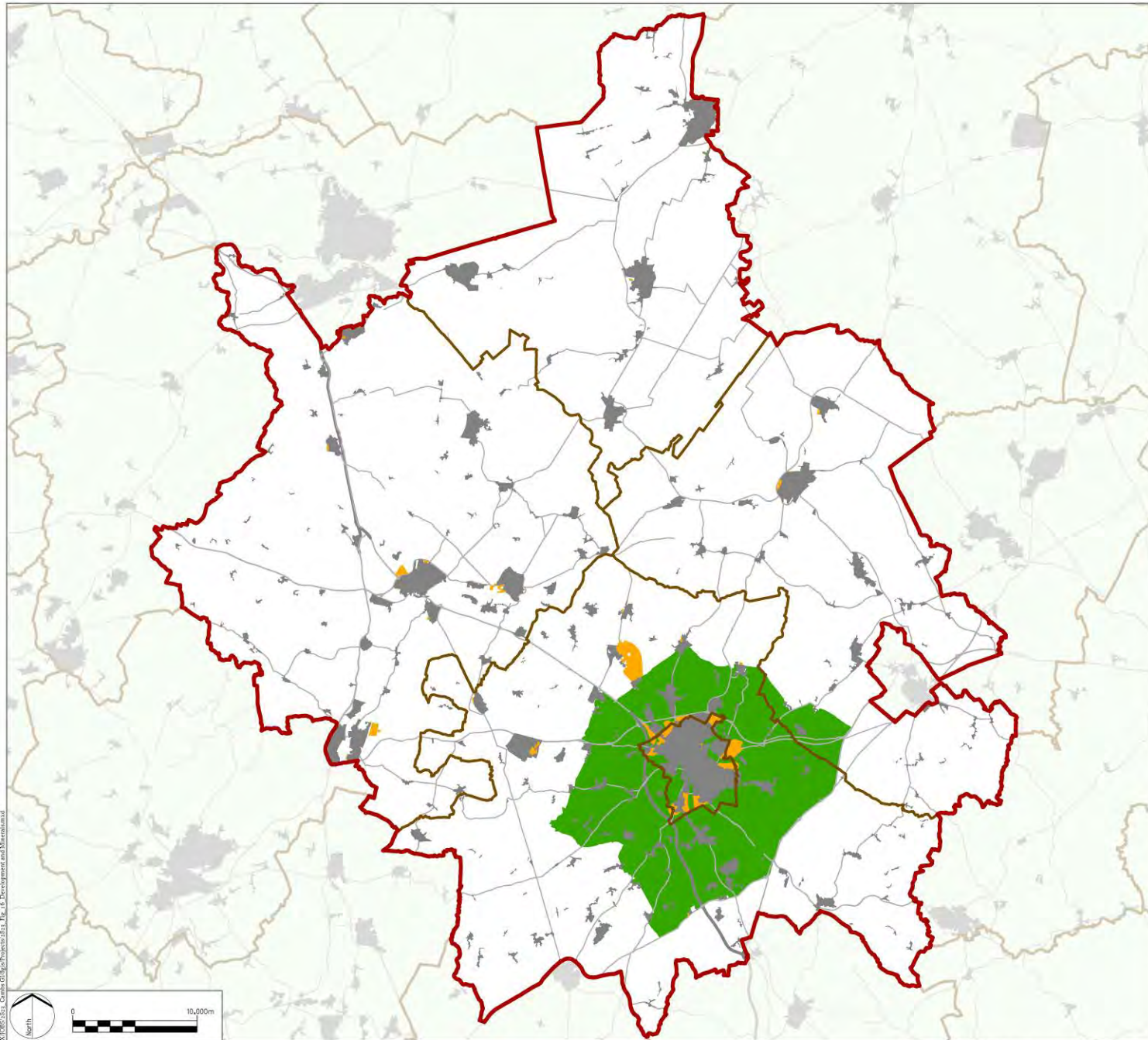
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Wildlife Trust's Living Landscapes Projects and Biodiversity Partnership's 50 Year Vision

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Although development can result in a substantial change to the area in which it occurs, its design, landscaping and Green Infrastructure provision can enhance landscape character. Areas of landscaping often have multi-functional roles and can therefore also provide wider Green Infrastructure benefits such as public access and biodiversity. Figure 9.6 illustrates major development areas (as of late 2009) and therefore highlights those areas where opportunities exist for enhancing landscape character.

Figure 9.6 Major development sites and Cambridge Greenbelt (Next page)



LEGEND

- Study Area Boundary
- Green Belt
- Major Development Sites*

* Major Development Sites are correct as of September 2010 and comprises locations/sites:

- Allocated in Local Plan or LDF
- With Outline Planning Permission
- With Unimplemented Full Planning Permission
- Under Construction
- Completed between 01 July and 30 September 2010
- Where residential development sites are 100 dwellings or more

NB. Please refer to Cambridge Insert Plan for further detail of settlement boundaries and major developments in and around Cambridge.

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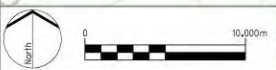
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Major Development Sites and the Cambridge Greenbelt

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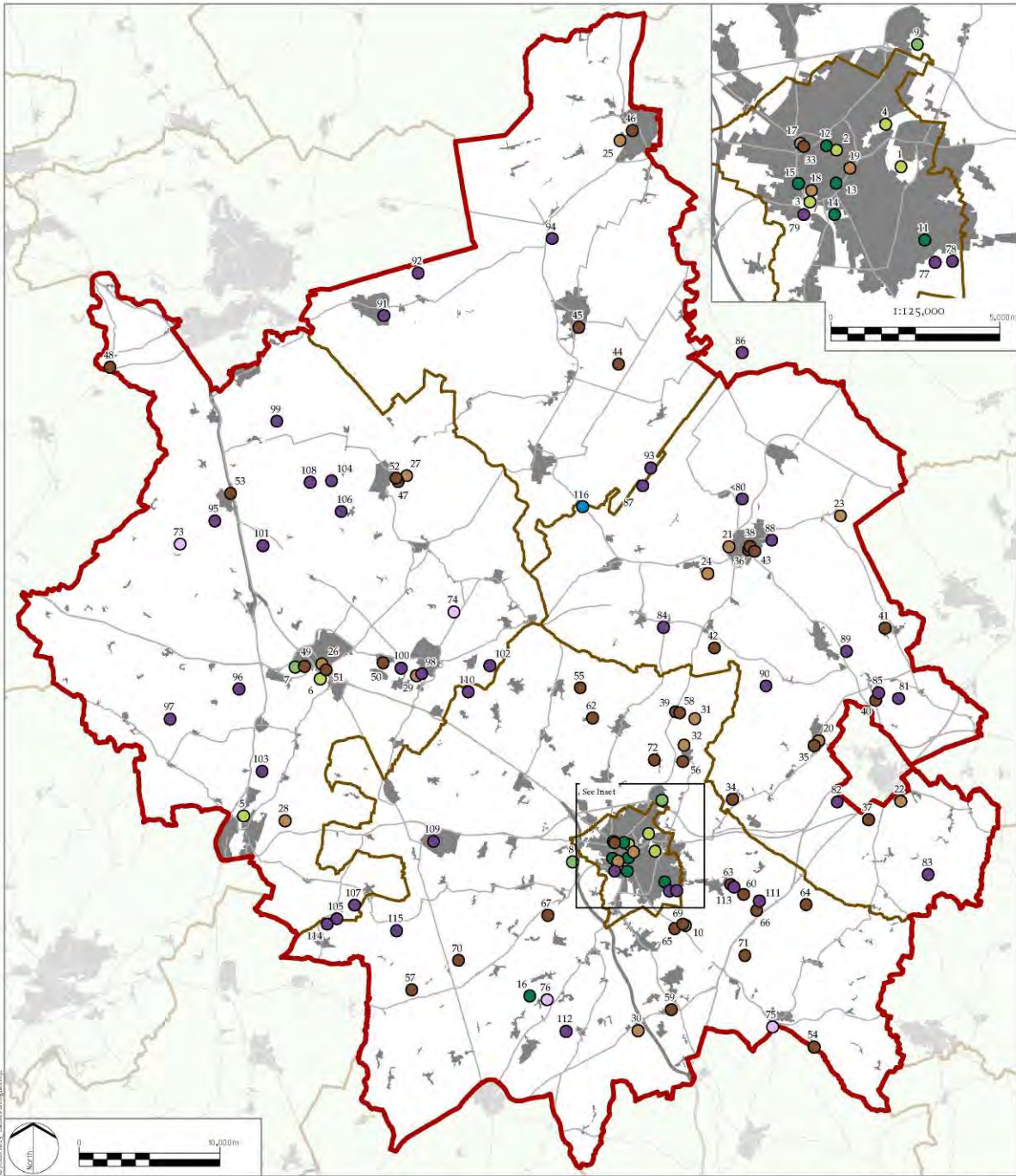
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Minerals and Waste:

Mineral extraction presents an opportunity to enhance landscape character and provide Green Infrastructure assets through post-extraction restoration. Figure 9.7 shows minerals and waste sites within Cambridgeshire (as at November 2010). Restoration can be back to farmland or other pre-extraction uses, and this can be enhanced through appropriate landscape planting (such as hedgerows) and management. Restoration can also create substantial areas of new wildlife habitat, for example at Needingworth Wet Fen. Waterbodies can also be created, and these often have a good amenity value through fishing and/or watersports. Both these types of restoration can have positive benefits for landscape character. Identifying mineral extraction sites or clusters of sites allows areas where landscape character can be enhanced to be identified.

Figure 9.7 Minerals and waste within Cambridgeshire (Next page)



LEGEND

Study Area Boundary

Destination

Common

- 1 Coldhams Common
- 2 Midsummer Common
- 3 Sheep Green & Coe Fen
- 4 Stouridge Common
- 5 St Neots Common
- 6 Portholme Common

Country Park

- 7 Hinchingbrooke Country Park
- 8 Colton Countryside Reserve
- 9 Milton Country Park
- 10 Wandsbury Country Park

Park or Garden

- 11 Cherry Hinton Hall
- 12 Jesus Green
- 13 Parkers Piece
- 14 Cambridge University Botanic Gardens
- 15 The Backs (River Cam)
- 16 Docwra's Manor Garden

Museum

- 17 Cambridge and County Folk Museum
- 18 Fitzwilliam Museum
- 19 Museum Of Technology
- 20 Burwell Museum
- 21 Ely Museum, Stained Glass Museum
- 22 National Horse Racing Museum
- 23 Prickwillow Drainage Engine Museum
- 24 RAF Witchford Display
- 25 Wisbech & Fenland Museum,
- 26 Blackcut British War Museum & The Cromwell Museum
- 27 Ramsey Rural Museum
- 28 St Neots Museum
- 29 The Horris Museum
- 30 Duxford Imperial War Museum
- 31 Farland Museum
- 32 Waterbeach Station Museum

Historic Site or Feature

- 33 Cambridge Castle
- 34 Anglesey Abbey
- 35 Burwell Castle
- 36 Cherry Hill castle
- 37 Devils Dyke
- 38 Ely Cathedral
- 39 Farland Museum and Denny Abbey
- 40 Fordham Abbey
- 41 Ickham Priory Church
- 42 Strettham Old Engine
- 43 Ely Riverside
- 44 Stonea Camp
- 45 March Stone
- 46 Peckover House
- 47 Booth's Hill
- 48 Elton Hall
- 49 Hinchingbrooke House
- 50 Houghton Hill
- 51 Hunston Castle
- 52 Ramsey Abbey Gatehouse
- 53 Sawtry Moat and Shrunken Medieval Village
- 54 Bardlow Hills Roman barrows
- 55 Belair's Hill
- 56 Car Dyke
- 57 Clopton Deserted Medieval Village
- 58 Denny Abbey
- 59 Duxford Chapel
- 60 Fleam Dyke
- 61 Fort
- 62 Giants Hill
- 63 Hill Orchard moated site
- 64 Lark Hill
- 65 Magog Down
- 66 Matlow Hill
- 67 Radio Astronomy Observatory
- 68 Tamuli
- 69 Wandsbury Camp
- 70 Wimpole Hall
- 71 Worsted Street Roman Road
- 72 Worts Meadow

Wildlife Centre

- 73 Hamerton Zoo Park
- 74 The Raptor Foundation
- 75 Linton Zoological Gardens
- 76 Shepreth Wildlife Park

Nature Reserve

- 77 Cherry Hinton Chalk Fits
- 78 Limekiln Close
- 79 Paradise Local Nature Reserve
- 80 Chetisham & Hurst's Meadows
- 81 Chippenham Fen
- 82 Devils Dyke
- 83 Ditton Park Wood
- 84 Doghouse Grove
- 85 Fordham Woods
- 86 Hundred Foot Bank (Wildflower and Wetlands Trust)
- 87 Ouse Washes
- 88 Rowell Fits
- 89 Soham Meadows
- 90 Wicken Fen
- 91 Lattersey
- 92 Nene Washes (RSPB)
- 93 Welches Dam Ouse Washes (RSPB)
- 94 Kings End Pocket Park & Nature Reserve
- 95 Aversley Wood
- 96 Brampton Wood
- 97 Grafton Water
- 98 Hemingford Meadow
- 99 Holme Fen
- 100 Houghton Meadows
- 101 Monks Wood
- 102 Needingworth Quarry
- 103 Paston Pits
- 104 Ramsey Heights
- 105 Sagle Wood
- 106 Upwood Meadows
- 107 Wareley & Gramden Woods
- 108 Woodwalton Fen
- 109 Camboorne Reserve
- 110 Fen Drayton
- 111 Fleam Dyke
- 112 Fowlmere
- 113 Fulbourn Fen
- 114 Gamlingay Wood
- 115 Hayley Wood

Activity Centre

- 116 Mepal Outdoor Centre

LDĀ DESIGN

PROJECT TITLE

Cambridgeshire Green Infrastructure Review and Second Edition

DRAWING TITLE

Green Infrastructure Destinations in Cambridgeshire

ISSUED BY **Oxford**

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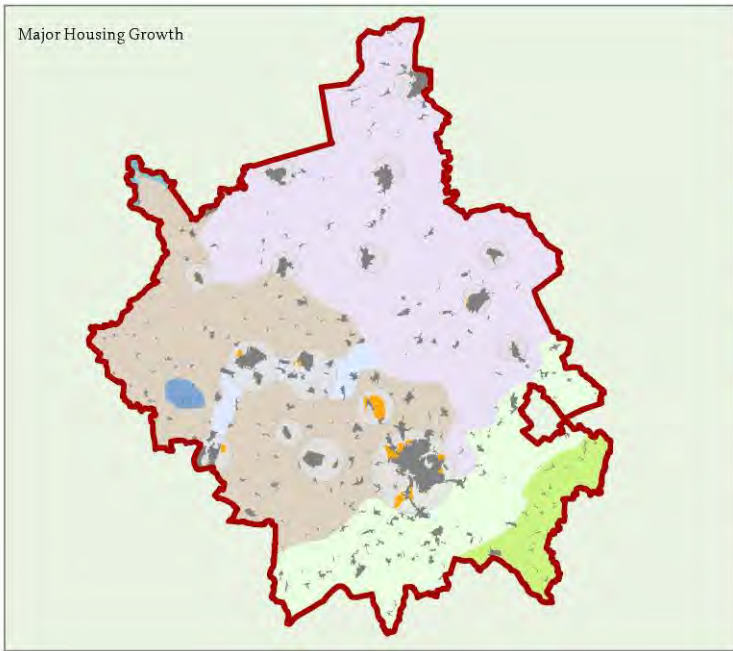
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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, National Trust, Cambridgeshire and Peterborough Biological Records Centre, East Cambridgeshire District Council, Fenland District Council, Huntingdonshire District Council, South Cambridgeshire District Council & Cambridge City Council.

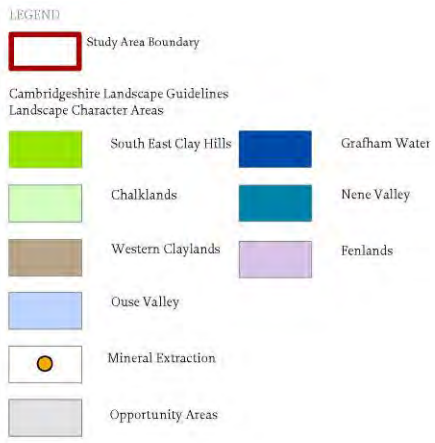
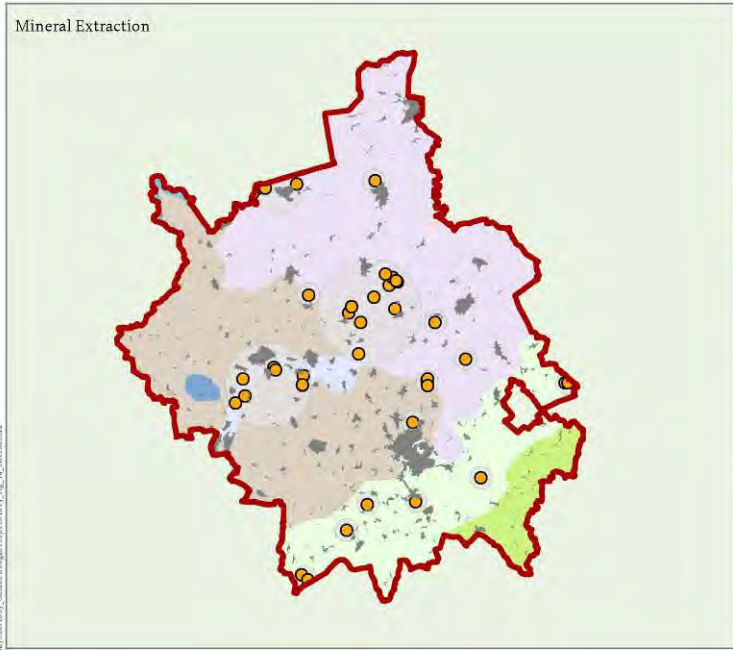
The landscape theme was developed by examining these key baseline datasets. Figure 9.10a and Figure 9.10b show the outputs from this analysis. Analysis highlighted where landscape character could be enhanced by the following:

- Areas of major housing growth and development
- Areas of mineral extraction
- Areas of targeted biodiversity and habitat improvement through the Biodiversity Partnership's 50-year Vision

Figure 9.10a and 9.10b Landscape opportunity analysis (Next page)



Major Housing Growth
This map identifies areas where major housing growth may provide an opportunity for landscape enhancement.



Mineral Extraction
This map identifies areas where mineral extraction sites may provide an opportunity for landscape enhancement.



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Landscape Opportunity Analysis (1)

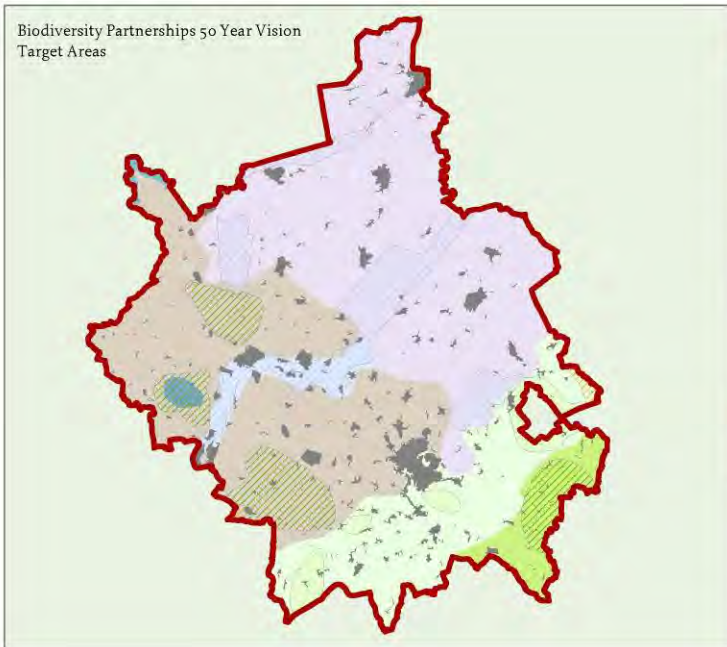
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LEGEND

Study Area Boundary

Settlement

Cambridgeshire Landscape Guidelines
Landscape Character Areas

South East Clay Hills

Chalklands

Western Claylands

Ouse Valley

Grafham Water

Nene Valley

Fenlands

Biodiversity Partnership's 50 Year Vision Target Habitats

Chalk and Limestone Grassland

Habitats Including Meadows

Acid Grassland and Heath

Woodlands and Hedgerows

Biodiversity Partnerships 50 Year Vision Target Areas

This map identifies areas where the Biodiversity Partnerships 50 Year Vision target areas may provide an opportunity for landscape enhancement.



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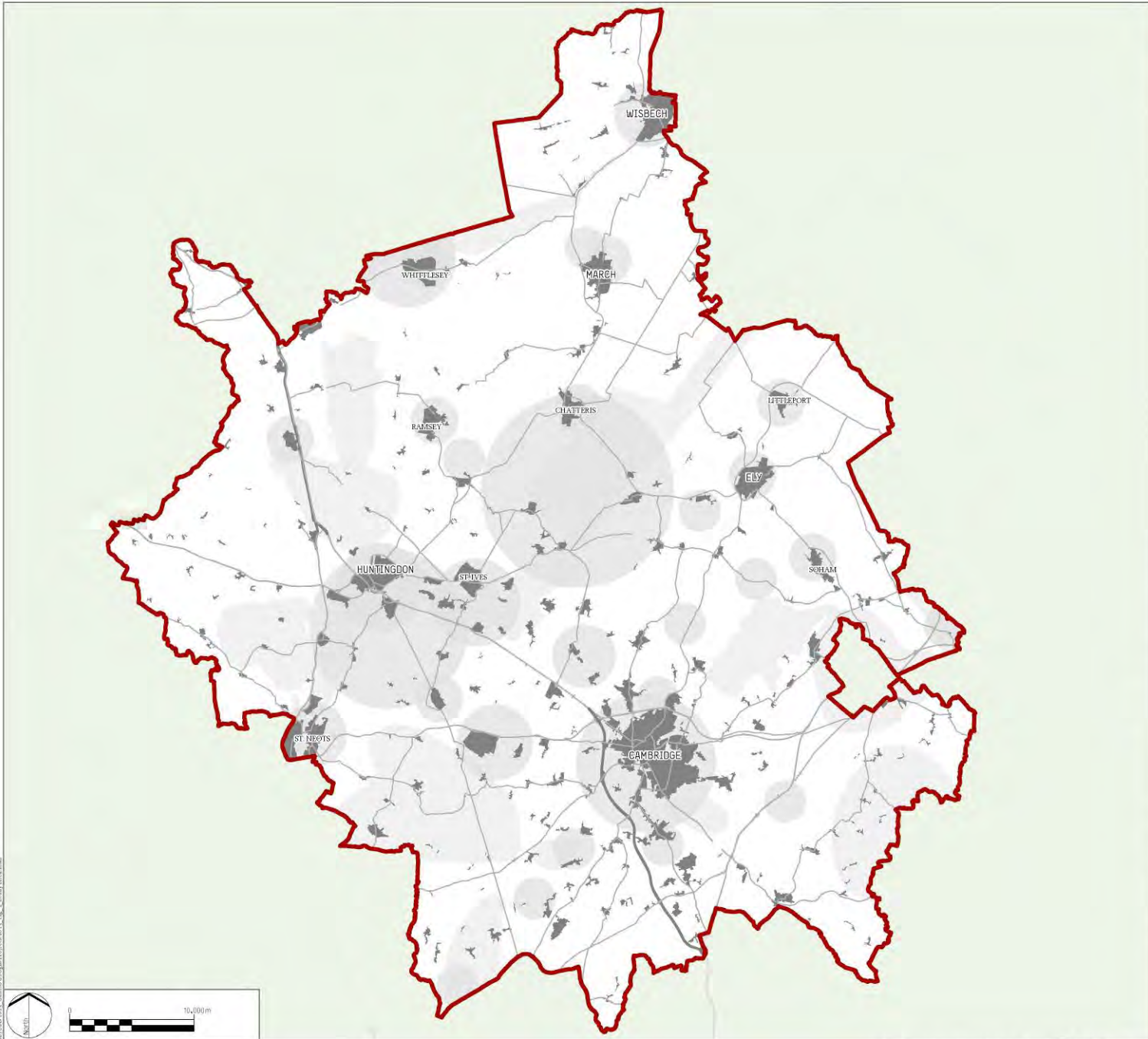
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In bringing these together on a single map areas of concentration can be identified - Figure 9.11 shows the combined landscape opportunities: the darker the highlighted area the more opportunity there is for Landscape enhancement.

Figure 9.11 Combined landscape opportunities (Next page)



LEGEND

- Study Area Boundary
- Settlement
- Opportunity Areas

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5 Issues and opportunities

Long-term investment in Green Infrastructure is required to achieve landscape-scale benefits. One way to achieve this may be through making the most of the opportunities presented by new developments.

Green Infrastructure planning and design presents an opportunity to respond to Countryside Quality Counts (CQC) findings at the strategic level through the promotion of initiatives that plan positively for landscape change over the long-term. The long-term intention is to bring all landscapes in the county into a favourable and improving state based on CQC criteria.

Changing land uses and new development in both rural and urban contexts can threaten and erode landscape character at both the macro and micro scale. However, both can strengthen landscape character and create new landscapes ensuring that key landscape characteristics are protected and enhanced.

There are benefits in aligning with other initiatives such as the RSPB's Futurescapes³ or Wildlife Trust's Living Landscapes. This may provide more opportunities for securing funding.

Although there are Registered Parks and Gardens within Cambridgeshire, there are no designated special landscapes such as Areas of Outstanding Natural Beauty (AONBs), which does make it challenging to develop a large-scale landscape focused project.

³ Futurescapes is the RSPB's contribution to landscape-scale conservation, a growing movement among UK conservation groups to provide more rich habitats for wildlife and diverse, green spaces for people to enjoy in our countryside, not only in protected areas but far beyond. (<http://www.rspb.org.uk/futurescapes/>)

Cambridgeshire Green infrastructure Strategy Appendix 10

Publicly Accessible Open Space

Contents

- 1 Introduction
- 2 Baseline information and datasets, including policy
- 3 What this information tells us
- 4 Spatial analysis
- 5 Issues and Opportunities

1 Introduction

This section identifies the baseline datasets and relevant analysis for Publicly Accessible Open Space, which is an important component of Green Infrastructure in Cambridgeshire.

Publicly Accessible Open Space takes a variety of forms from very natural areas through to largely managed open spaces for recreation uses, such as outdoor sports. Whilst the whole spectrum of open space has a value to the public in providing for outdoor recreation and the health and wellbeing benefits it brings, in terms of identifying where new publicly accessible open space is required to be provided to meet the needs of existing or proposed communities, it is necessary to identify an appropriate method for making that assessment.

For the purposes of the Strategy, provision of Publicly Accessible Open Space is assessed using the definitions contained with Natural England's 'Nature nearby: Accessible Natural Greenspace Guidance';

“Accessible greenspace - places that are available for the general public to use free of charge and without time restrictions (although some sites may be closed to the public overnight and there may be fees for parking a vehicle). The places are available to all, meaning that every reasonable effort is made to comply with the requirements under the Disability Discrimination Act (DDA 1995). An accessible place will also be known to the target users, including potential users who live within the site catchment area.

Natural greenspace - Places where human control and activities are not intensive so that a feeling of naturalness is allowed to predominate. Natural and semi-natural greenspace exists as a distinct typology but also as discrete areas within the majority of other greenspace typologies.”¹

The general and spatial issues that relate to this Theme have been considered and conclusions have been made about how the issues can be mapped and overlaid to highlight the opportunities that exist for the Publicly Accessible Open Space Green Infrastructure Theme. Drawing this information together provided a map of Publicly Accessible Open Space opportunities that was then combined with the other six Themes, as well as other important issues and

¹ Nature Nearby: Accessible Natural Greenspace Guidance, March 2010. Natural England p8.

assets in Cambridgeshire, to inform and develop the Strategic Network of Green Infrastructure.

Whilst the Strategy therefore focuses on Publicly Accessible Natural Greenspace, this should not be taken to undermine the value of more formal open space as Green Infrastructure in addressing a number of the issues and benefits identified in the Strategy.

2 Baseline information and datasets, including policy

Publicly Accessible Open Space is important for providing areas for recreation and enjoyment by communities at different scales and distances from people’s homes. One way of measuring Open Space provision is through the application of standards. Tables 10.1, 10.2 and 10.3 summarise national, neighbouring authority and Cambridgeshire Local Authority standards that are relevant to Green Infrastructure.

Planning Policy Guidance (PPG) 17: Open Space, Sport and Recreation – this highlights the requirement to undertake open space audits and strategies which can inform Green Infrastructure Strategies at both the strategic and local scale.

Table 10.1 National standards relevant to Green Infrastructure

| National Standard | Accessible natural Greenspace Standards (ANGSt) |
|-------------------------|---|
| Promoting Organisation | Natural England |
| What are the standards? | <ul style="list-style-type: none"> - An accessible natural green space of at least 2 hectares in size, no more than 300 metres (5 minutes walk) from home. - At least one accessible 20 hectare site within two km of home. - One accessible 100 hectare site within five km of home. - One accessible 500 hectare site within ten km of home. - One hectare of statutory Local Nature Reserves per thousand population. |

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| Implications | Advantages | Disadvantages |
| | Nationally promoted Identifies general areas of deficiency and need Provides incentive and benchmarking Useful for advocacy and as an aspiration. Has been applied across the East of England to provide more local comparisons. | - Only looks at accessible natural/semi-natural green spaces rather than wider - Green Infrastructure assets. - May be issues around what is classified as 'accessible' - linear vs. open access? Assumes full mobility on part of population Feasibility given existing land resources and uses Catchment area ignore barriers or access routes This does not acknowledge local circumstances, such as Cambridge's unique situation with significant amounts of land owned and managed by Colleges. |
| Conclusion | ANGSt has its limitations due to classification used, existing land resources and catchment areas. However, is a useful measure to identify broad deficits. Allows comparison with other areas if the same methodology is used and one acknowledges that not all Green Infrastructure sites would have been included. | |

With data supplied by District Councils and other organisations, Natural England undertook a full ANGSt analysis of the county in autumn/winter 2010.²

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| National Standard | Planning and Design for Outdoor Sport and Play (formerly 6-acre Standard) |
| Promoting Organisation | Fields in Trust |

² Analysis of accessible natural greenspace provision for Cambridgeshire and Peterborough. Natural England. 2011.

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| <p>What are the standards?</p> | <p>Provision of helpful advice and information on a whole host of areas including:</p> <ul style="list-style-type: none"> - LAPS, LEAPS and NEAPS - Ensuring open spaces meet the sustainability agenda - The design principles of successful play areas - Benchmark standards of provision of open spaces for sport and play - Importance of local assessment <ul style="list-style-type: none"> • 6 acres/2.4 ha of “playing space”/1000 (24 sq m/person) • 12 sq m of (grass) pitches/person • 4 sq m “other” outdoor sports facilities/person • 8 sq m “children’s playing space”/person • 2.5 sq m equipped play areas (LEAPs and NEAPs)/person • 5.5 sq m amenity space/person <p>+ some guidance on quality and accessibility</p> | |
| <p>Implications</p> | <p>Advantages</p> <p>Contains design principles. Useful for benchmarking. Provides certainty for developers and LPAs. Definite identification of needs.</p> | <p>Disadvantages</p> <p>Focuses largely on formal open space at a local level. There is a charge to buy the standard and its design principles due to Fields in Trust charging for access. First developed in 1928, but updated regularly - still relevant? Does it take artificial pitches, floodlighting and the full range of sports into account? Single issue standard - not multifunctional? Distance and catchments for standards?</p> |
| <p>Conclusion</p> | <p>More limited than ANGSt, restricted types of space as it focuses largely on formal open space at a local level, no catchments.</p> | |

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| | At a District or local level it can be used to identify gaps in provision, potentially to identify requirements for open space in new developments, and areas where multi-functionality could be built in on a site by site basis. |
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| National Standard | Local Nature Reserve (LNR) standard | |
| Promoting Organisation | Natural England | |
| What are the standards? | One hectare of statutory Local Nature Reserves per thousand population (considered part of ANGSt). An LNR must meet at least 1 of 3 criteria and it is recommended that they have a recommended minimum size of 2ha. To qualify for LNR status, a site must be of importance for wildlife, geology, education or public enjoyment. It must offer opportunities for education. | |
| Implications | Advantages | Disadvantages |
| | Publicly accessible Provides some level of protection - shown on planning documents Useful for benchmarking Explicitly involves the local community | Only land owned by a Local Authority (including a Parish Council) or where the Local Authority has a vested interest (such as leasing) can be declared a LNR. Look at sites individually, not as part of network? Only create LNRs on certain land and for certain reasons. |
| Conclusion | Limited due to availability of land that is appropriate, but good for community engagement and local provision. Can support networks but they can be created in isolation. Requires Local Authority commitment. Easy to measure and compare to other areas. Distribution of LNRs where there is appropriate land and few existing nature conservation opportunities. | |

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| National Standard | Ecotowns 40% green space target |
| Promoting Organisation | Commission for Architecture and the Built Environment CABI |
| What are the | 40% of an Ecotown should be composed of green |

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| standards? | <p>and open spaces. Approaches to embedding sustainable behaviours among the community. Planned in a way which supports low carbon living and, in particular, minimises Carbon emissions from transport. Incorporate environmentally sustainable approaches to managing waste, wastewater, drainage and flooding, in line with PPS25: Development and Flood Risk (e.g. Sustainable Urban Drainage Systems). Integrate green space and features to enhance biodiversity.</p> | |
| Implications | Advantages | Disadvantages |
| | <p>Multifunctional. Promotes networks. Provides benchmark and certainty in Ecotowns.</p> | <p>Uncertainty of what will happen to Ecotowns under the Coalition Government. Only applies to Ecotowns. This figure of 40% includes private gardens - not all publicly accessible space. Distribution of open space and public/private split.</p> |
| Conclusion | <p>Limited to Ecotowns, not look at distribution in area or public/private split. As envisaged, trying to raise bar for developers - better design, multifunctional, and exemplar for local area. May be relevant to Northstowe.</p> | |

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| National Standard | Green Flag Award Criteria for quality |
| Promoting Organisation | Keep Britain Tidy, BTCV and GreenSpace |
| What are the standards? | <p>All Parks and Gardens should be of 'good' quality or higher (scoring at least 50%). They should be clean and well-maintained sites that are visually attractive and provide opportunities for leisure and relaxation. The sites should have well-defined boundaries. They should also be safe and secure with appropriate lighting and provision of ancillary facilities, including benches and litter bins where appropriate. Sites should have appropriate, well designed and accessible interpretative signage where necessary e.g. parks with historic/heritage</p> |

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| | <p>features. Management plans should also be designed and implemented where appropriate. This standard reflects the Green Flag Award criteria for quality and will ensure that the high quality of sites is maintained, with the additional aim of achieving Green Heritage Status where possible. It will also help to ensure that the sites continue to attract visitors and provide benefits in terms of leisure, relaxation and well-being. Appropriate signage will help people to understand the significance of their cultural and natural heritage, thus adding to the visitor experience.</p> | |
| <p>Implications</p> | <p>Advantages</p> | <p>Disadvantages</p> |
| | <p>Nationally recognised. Good benchmark and impetus to maintain quality. Looks at quality, is detailed and looks at cultural aspects. Must have community buy-in and uses.</p> | <p>Need to pay to enter scheme - disincentive. Only looks at parks - what sort of multi-functionality is examined? Do you have to keep entering to keep the award - on-going cost? Tends to concentrate resources on achieving Green Flag for one major park and ignores smaller peripheral open space resources. Suited to open spaces with significant levels of formal infrastructure, e.g. a Victorian Park.</p> |
| <p>Conclusion</p> | <p>No 'standard' as such, but does look strongly at quality. Good for benchmarking and an incentive, but is there an ongoing cost?</p> <p>Cambridge doesn't have any Green Flag Awards and the City Council have not found it constructive to apply as it is not suited to the types of parks and open spaces that they have. Milton Country Park was awarded a Green Flag Award in 2010. According to the Green Flag website, Ely's Jubilee Gardens and Wisbech's St. Peter's Church Gardens and Wisbech Park have all received Green Flag Awards too.</p> | |

Table 10.2 Neighbouring Local Authority standards relevant to Green Infrastructure

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| Neighbouring Local Authority | Bedfordshire |
| The standard | In South Bedfordshire and Luton, this standard is that there should be 51m ² per person of publicly accessible green space. There's no equivalent standard for Bedford or Mid Bedfordshire. Policy NE17 - Open Spaces of the Local Plan was adopted by Bedford Borough Council in October 2002. |
| Notes | 1. Not permitting proposals which would be likely to have an impact on the open space in terms of its function as part of the wider open space network and/or as a wildlife corridor, its setting, its existing or potential contribution to the townscape or its value as a wildlife resource unless the proposals are able to provide a replacement of at least equal value, in terms of the above qualities; 2. Seeking in association with the development, the provision and/or the enhancement of open space and the creation of areas having high ecological value. |

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| Neighbouring Local Authority | North Hertfordshire |
| The standard | The North Hertfordshire District Green Infrastructure Plan (GIP) was completed in August 2009. The GIP does not contain standards but has an Action Plan which sets out GI projects with their benefits, cost band and priority. North Hertfordshire, do however have access and quantity standards for Green Space within North Hertfordshire which were used to inform the GIP. More information can be found within the North Hertfordshire Green Space Standards August 2009. |

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| Neighbouring Local Authority | Essex |
| The standard | As of yet there isn't a county wide GI plan but there is an Essex County Council Green Infrastructure audit that was completed last |

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| | <p>year. Essex County Council have consulted their members and internal staff as well as external GI organisations (FC, EWT, NT, BTCV, RSBP, NE).</p> <p>There are full, but unimplemented GI plans for growth areas in Essex - GreenArc and Harlow, Thames Gateway and the Harwich area which were all produced and paid for in an earlier funding round.</p> |
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| Neighbouring Local Authority | South Holland |
| The standard | Have no Green Infrastructure standards |

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| Neighbouring Local Authority | South Norfolk |
| The standard | <p>The submitted Joint Core Strategy (prepared by South Norfolk, Broadland and Norwich City Council in association with Norfolk County Council) includes a mention of the requirement to provide Green Infrastructure in policies 1, 9 and 12. The Joint Core Strategy policies do not set standards for delivery; rather they seek to focus on Green Infrastructure priority areas as identified in the figures on pages 35 and 69 of the Joint Core Strategy.</p> <p>The Joint Core Strategy and Green Infrastructure Strategy & Delivery Plan can be viewed via the following link: http://www.gndp.org.uk/</p> |

Table 10.3 Cambridgeshire's Local Authority standards relevant to Green Infrastructure

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| Cambridgeshire Local Authority | Cambridge City Council |
| The standard | Open Space and Recreation Standards |
| What are the standards? | <p>Outdoor Sports Facilities - (Playing pitches, courts and Greens) - 1.2 hectares per 1,000 people.</p> <p>Indoor Sports Provision - (Formal provision such as sports halls and swimming pools) - 1 sports hall for 13,000 people. 1 swimming pool for 50,000 people</p> <p>Provision for children and teenagers -</p> |

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| | <p>(Equipped children's play areas and outdoor youth provision) - 0.3 hectares per 1,000 people</p> <p>Informal Open Space - (Informal provision including recreation grounds, parks and natural greenspaces) - 1.8 hectares per 1,000 people</p> <p>Allotments - 0.4 hectares per 1,000 people (for Urban Extensions only)</p> <p>These standards are contained in the Cambridge Local Plan, Cambridge East and North West Cambridge Area Action Plans.</p> |
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| Cambridgeshire Local Authority | South Cambridgeshire District Council |
| The standard | Public open space standards SF/11 |
| What are the standards? | <p>The minimum standard for outdoor play space and informal open space is 2.8 hectares per 1,000 people, comprising:</p> <p>Outdoor Sport¹ - 1.6 hectares per 1,000 people</p> <p>Children's Playspace² - 0.8 hectares per 1,000 people</p> <p>Informal Open Space³ - 0.4 hectares per 1,000 people</p> <p>Cambridge East and North West Cambridge Area Action Plans contain their own standards, using those for Cambridge City Council.</p> |

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| Cambridgeshire Local Authority | Hunts District Council |
| The standard | <p>Planning Policy CS9 - Strategic Green Infrastructure Enhancement</p> <p>Planning Policy CS10</p> |
| What are the standards? | <p>Planning Policy CS9 - Strategic Green Infrastructure Enhancement</p> <p>Areas of Strategic Green space Enhancement, along with new and enhanced green corridors connecting them with areas of population growth in order to form a</p> |

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| | <p>coherent network, are identified as follows and depicted in Figure 5.1 'Policy CS9 Strategic Greenspace Enhancement', which is available upon request from Huntingdonshire District Council.</p> <p>Planning Policy CS10 Contributions that may be required include the following:</p> <ul style="list-style-type: none"> • affordable and key worker housing; • open space and recreation (including leisure and sports facilities); • strategic green infrastructure and biodiversity enhancement/ mitigation; • transport (including footpaths, bridleways, cycleways, highways, public transport, <p>the above list is available in full from Huntingdonshire District Council</p> |
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| Cambridgeshire Local Authority | Fenland District Council |
| The standard | Planning Policy R4 - Open space contributions from housing developments |
| What are the standards? | <p>On developments of 10 or more dwellings or 0.4 hectare (1 acre) the developer will be required to provide and maintain an area of local amenity open space at the minimum rate of 40 square meters per dwelling, the standard to be applied as follows:</p> <p>i) between 10-50 dwellings or 0.4-2.0 hectares (1.0-5.0 acres) the following options would be available a at the local planning authorities discretion.</p> <p>a) provide open space within the site or, b) provide the open space in a central location elsewhere in the settlement which would serve several residential estates or, c) enhance existing public open space in the settlement, where adjoining or in close proximity to the site</p> <p>ii) over 50 dwellings or 2.0 hectares (5 acres) provision at the agreed level will normally need to be provided within the development site.</p> |

3 What this information tells us

There are few national standards relevant to Green Infrastructure that can be applied spatially to Cambridgeshire other than Natural England's Accessible Natural Greenspace Standards (ANGSt). PPG17 supports the development of local standards of open space that can contribute to the delivery of Green Infrastructure at a local scale.

Most Local Authorities do not have a countywide standard for Green Infrastructure, but neighbouring Green Infrastructure strategies do need to be taken into account, particularly when developing cross-boundary links.

In Cambridgeshire itself there are no consistent standards across the county, local standards based on PPG17 vary depending on the District Council's particular needs.

Given the variety of local standards across Cambridgeshire, the lack of county-wide standards in neighbouring authorities and the desirability of consistency nationally, Natural England's Accessible Natural Greenspace Standards (ANGSt) have been used to examine the level of publicly accessible open space provision in Cambridgeshire, recognising that it only considers natural open space.

"The ANGSt model was developed in the early 1990's and was based on research into minimum distances people would travel to the natural environment. Natural England reviewed the standard in 2008 and concluded that the standard was still useful, but that further guidance was required to explain how the standard should be applied. The "Nature Nearby" report, published in March 2010, provides this additional clarity..."³

"ANGSt seeks to enable planners and greenspace managers to identify deficiencies in greenspace provision at various size thresholds, and to use this evidence to identify opportunities to improve provision through the land use planning system."⁴

With data supplied by District Councils and other organisations, Natural England undertook a full ANGSt analysis of the county (along with Peterborough) in the Autumn/Winter of 2010. Indicative results were provided to inform the development of the Strategic Green Infrastructure Network for Cambridgeshire. Detailed ANGSt analysis for each district, describing in more detail where there

³ Analysis of accessible natural greenspace provision for Cambridgeshire and Peterborough. Natural England. 2011. p5.

⁴ Ibid. p5.

are areas of deficiency in provision, is included in the full Natural England report, due for publication summer 2011⁵.

“Using the best data available and by applying the Natural England recommended Accessible Natural Greenspace Standard (ANGSt) for provision, [the] report sets out current levels of accessible natural greenspace (ANG) provision in the Cambridgeshire and Peterborough local authorities. It identifies areas where there are deficiencies in different sizes of [ANG], and provides a good evidence base for targeting future improvements to provision through the planning system in all the local authorities.”⁶

“The report is intended for use by planners, greenspace managers and others involved in greenspace planning and...is one of a suite of six county reports produced by and for Natural England in 2010/11.”⁷

4 Spatial analysis

Figure 10.1 shows all the Accessible Natural Greenspace within Cambridgeshire and Peterborough and also Accessible Natural Greenspace that lies within a 10km buffer zone of the county and unitary authority boundary, as Greenspace adjacent to these areas can be used by residents of Cambridgeshire. The map shows the different ANGSt standard thresholds by colour.

Natural England’s summary conclusions are that in Cambridgeshire and Peterborough:

- 20.0 % of households have access to an accessible natural greenspace of at least 2 hectares within 300 metres
- 62.0 % of households have access to an accessible natural greenspace of at least 20 hectares within 2 kilometres
- 58.3 % of households have access to an accessible natural greenspace of at least 100 hectares within 5 kilometres
- 30.8 % of households have access to an accessible natural greenspace of at least 500 hectares within 10 kilometres
- 5.5 % of households have access to all the areas of accessible natural greenspace within the standard
- 17.3 % do not have access to any of the accessible natural greenspace within the standard⁸

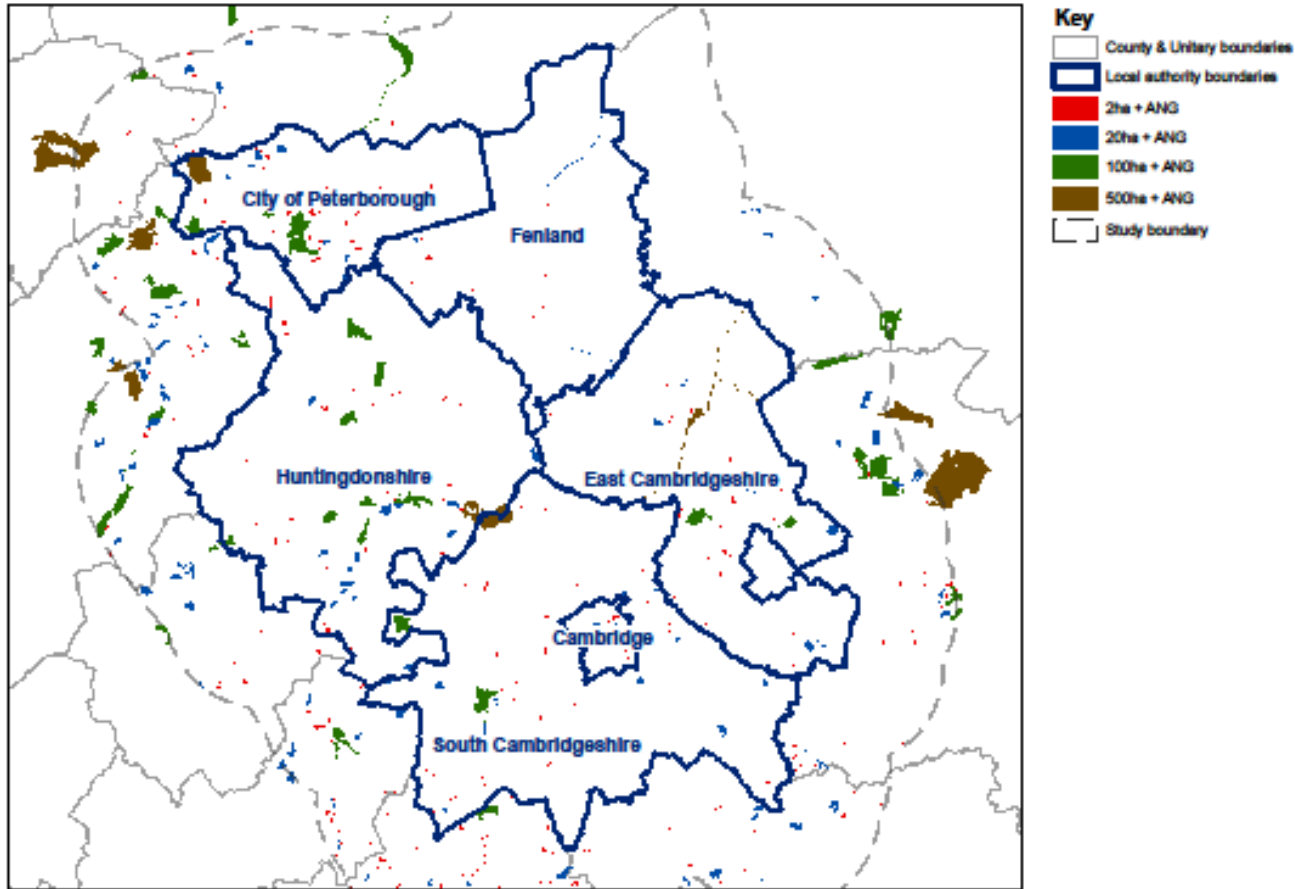
Figure 10.1 Accessible Natural Greenspace within Cambridgeshire and Peterborough (Next page)

⁵ Ibid.

⁶ Ibid. p4.

⁷ Ibid. p5.

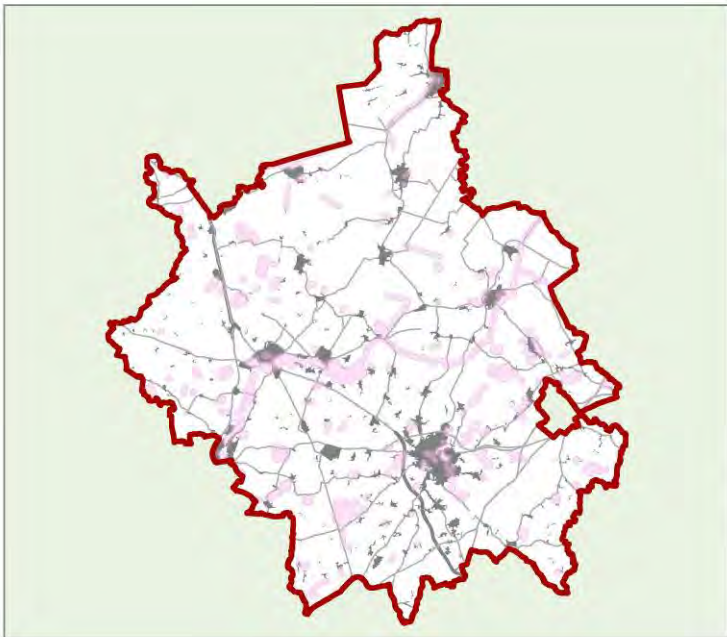
⁸ Analysis of accessible natural greenspace provision for Cambridgeshire and Peterborough. Natural England. 2011. p4.



Map produced by Natural England. © Crown Copyright and database right 2011. Ordnance Survey 100022021. The site data used in this map was supplied from many local authorities and organisations for a full list please refer to the Analysis of accessible natural greenspace provision for Cambridgeshire and Peterborough. Natural England. 2011.

Figure 10.2 shows the 2ha plus deficiency for Cambridgeshire. This shows that the majority of the county has a deficit of access to this size of space. Notable clusters of where the standard is met are around Cambridge, along the Ouse Valley and a few of the other waterways, around some of the market towns or settlements and near key Green Infrastructure sites.

Figure 10.2 2ha plus deficiency for Cambridgeshire (Next page)



Natural Green Space
 This map identifies areas of Natural Green Space that are at least 2ha in size.

NB: Natural England are the creators of this data, using information supplied by Natural England, the Local Authorities, Forestry Commission, Local Biological Record Centres, Woodland Trust and National Trust.



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Natural Green Space
 This map identifies areas of deficiency in Natural Green Space that are at least 2ha in size.

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ANGSt 2ha plus deficiency for Cambridgeshire

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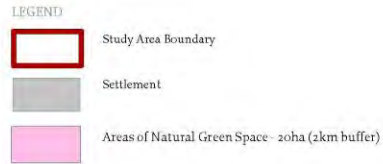
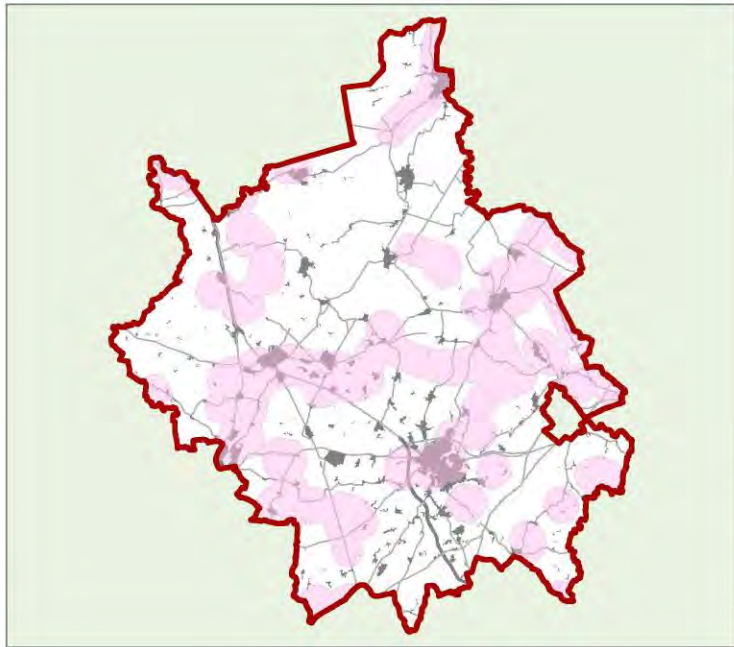
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Figure 10.3 shows the 20ha plus deficiency for Cambridgeshire. This shows that a large part of the county has a deficit of access to this size of space. Notable clusters of where the standard is met are around Cambridge, along the Ouse Valley and the Rivers Cam and Ely Ouse around some of the market towns or settlements and near key Green Infrastructure sites.

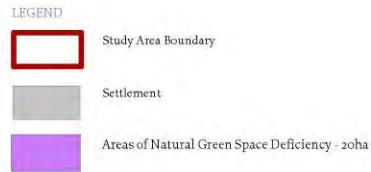
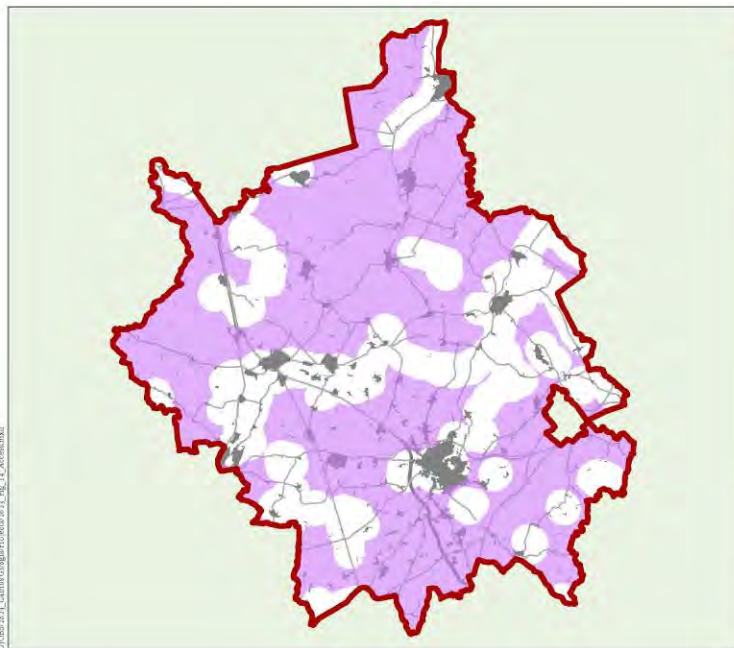
Figure 10.3 20ha plus deficiency for Cambridgeshire (Next page)



Natural Green Space
 This map identifies areas of Natural Green Space that are at least 20ha in size.
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Natural Green Space
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ANGSt 20ha plus deficiency for Cambridgeshire

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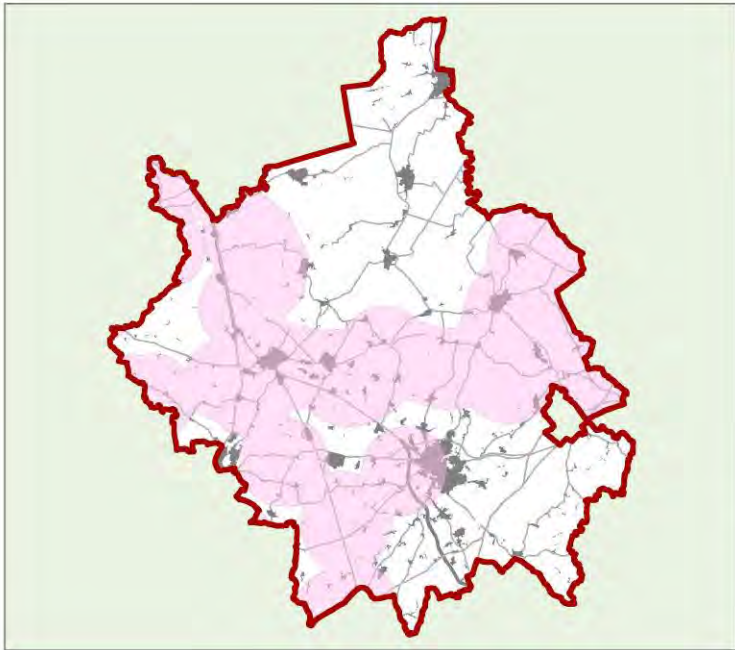
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Figure 10.4 shows the 100ha plus deficiency for Cambridgeshire. This shows that the key areas of the county that have a deficit of access to this standard are in the north and south/southeast of the county.

Figure 10.4 100ha plus deficiency for Cambridgeshire (Next page)

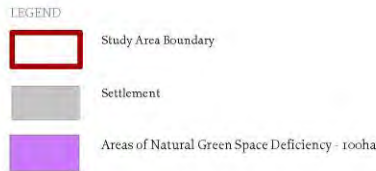
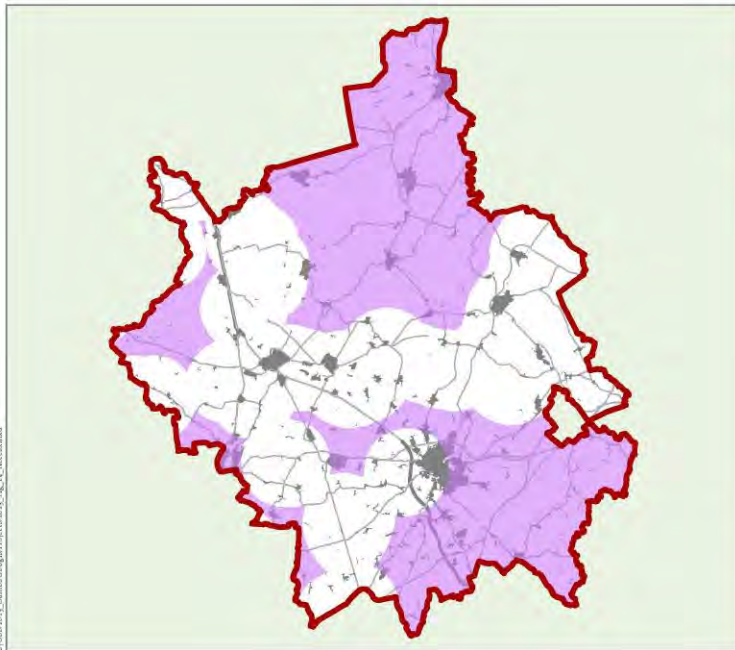


Natural Green Space
 This map identifies areas of Natural Green Space that are at least 100ha in size.

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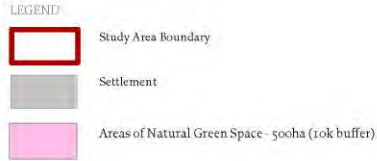
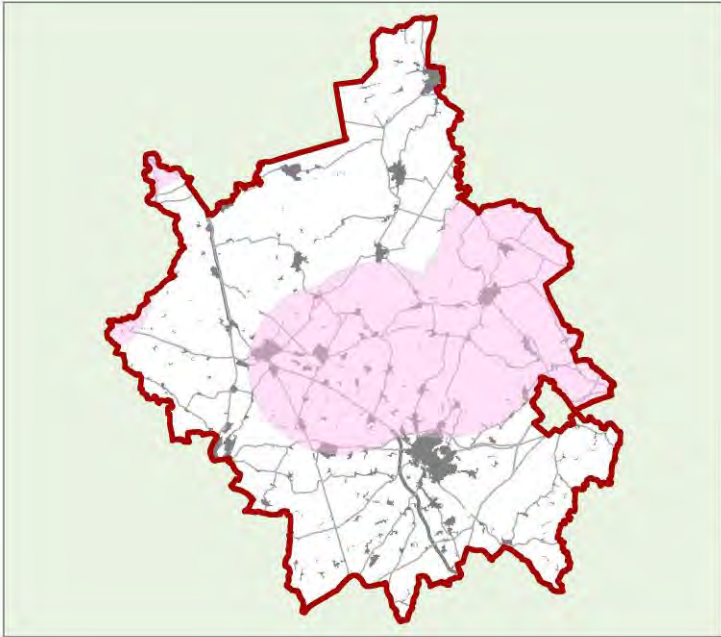
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Figure 10.5 shows the 500ha plus deficiency for Cambridgeshire. This shows that the key areas of the county that have a deficit of access to this standard are in an arc around the north, west and south/southeast of the county.

Figure 10.5 500ha plus deficiency for Cambridgeshire (Next page)

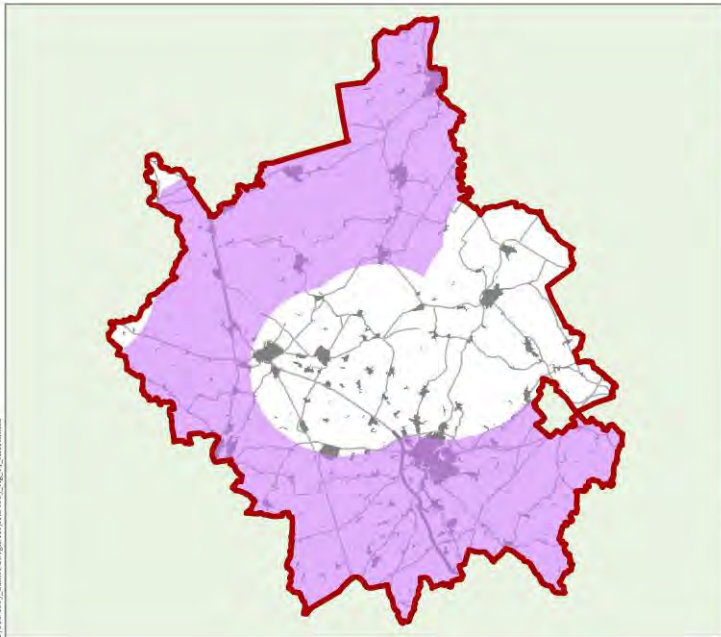


Natural Green Space
 This map identifies areas of Natural Green Space that are at least 500ha in size.

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Natural Green Space
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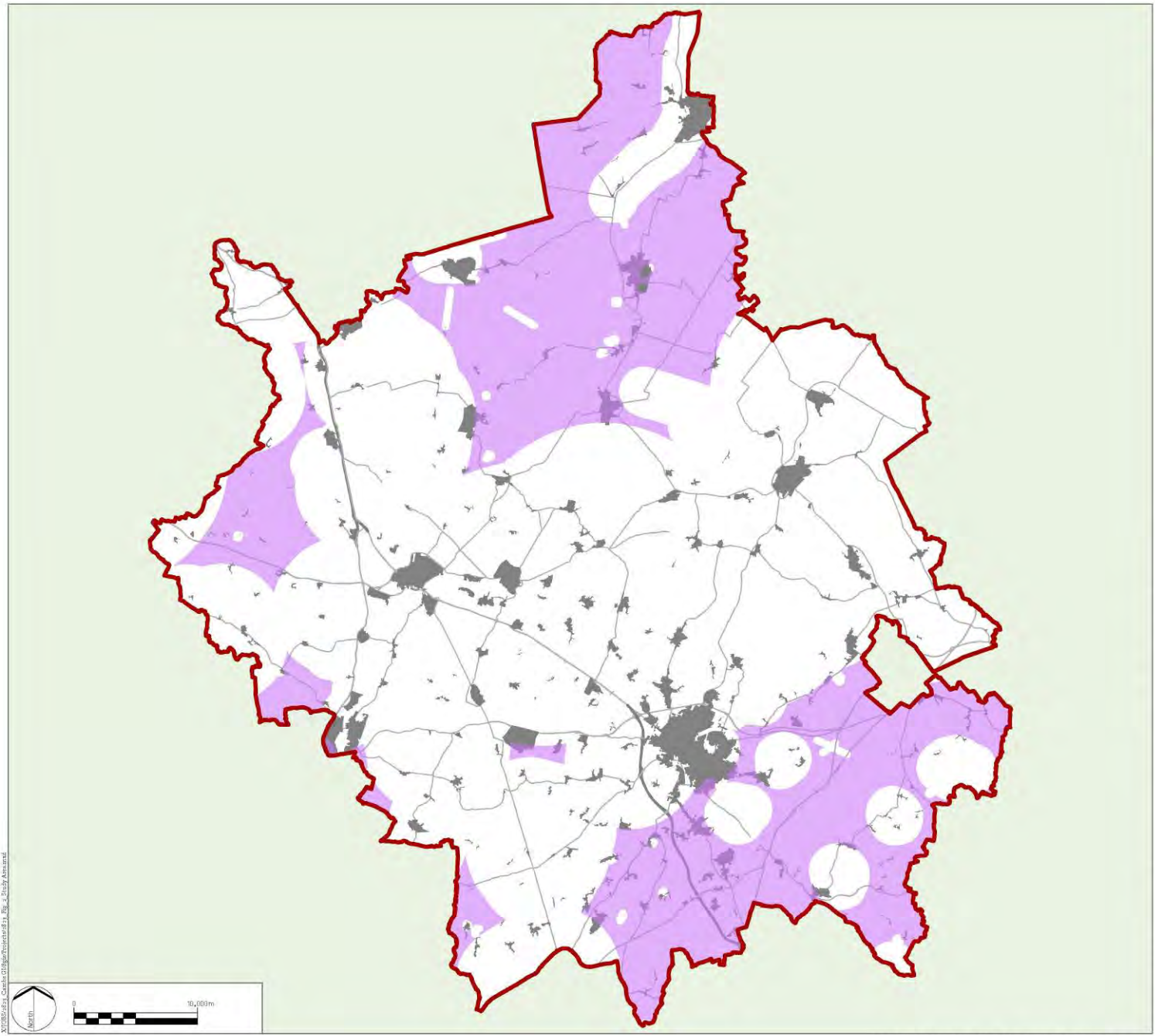
Figure 10.6 shows the combined ANGSt deficiency for Cambridgeshire and this represents the Publicly Accessible Open Space Theme for the Strategy. This shows areas of the county where none of the standards are met and has been produced by overlapping the areas of deficiency from the individual standards together and extracting where deficiencies against all for standards coincide. There are two main areas in the north and south of the county and a slightly smaller area in west.

- In the north the majority of Fenland District and an area of northeast Huntingdonshire down to Ramsey are deficient in ANGSt.
- In the south the area of ANGSt deficiency covers an area east and south of Cambridge, running to the county border with Suffolk, Essex and Hertfordshire, lying in the southern portion of East Cambridgeshire District below Newmarket and part of South Cambridgeshire District.
- The third substantial area lies within Huntingdonshire District and runs from the Spaldwick/Catworth area north to Glatton.

There are also several smaller areas identified that are deficient in against all ANGSt:

- Between Cambourne and Caldecote
- In the Tadlow to Guilden Morden area
- To the southwest of Abbotsley
- The southern part of St Neots
- An area between Hail Weston and Great Staughton

Figure 10.6 combined ANGSt deficiency for Cambridgeshire (Next page)



LEGEND

- Study Area Boundary
- Settlement
- Areas of Natural Green Space - All Deficiency

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ANGSt combined ANGSt deficiency for Cambridgeshire

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Sources Ordnance Survey, Open Street Map & 2001 Census Area Data.

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The Theme for Publicly Accessible Open Space is based on this 'all deficiency' Accessible Natural Greenspace Standards (ANGSt) analysis. The Theme map therefore shows areas where none of the ANGSt are met in Cambridgeshire. At a strategic scale the Green Infrastructure Strategy should seek to address these areas where they coincide with the Strategic Network. Strategic Areas and Target Areas may have deficiencies against individual Standards.

Analysis at the Strategic Area level highlights the following:

Strategic Area 1: at present the Area has a total deficiency in ANGSt at the 100ha plus and 500ha plus standards and a significant deficiency in ANGSt at the 2ha plus and 20ha plus standards.

Strategic Area 2: at present the Area has an almost total deficiency in ANGSt at the 500ha plus standard and a significant deficiency in ANGSt at the 2ha plus standard. The 20ha plus standard is deficient to the east and south of the Area. The 100ha standard is well met in the Area.

Strategic Area 3: at present the Area has a deficiency in ANGSt at the 100ha plus and 500ha plus standard at the southern (St Neots) and northern (Chatteris and Ouse Washes) parts of the Area. The 20ha plus standard is deficient in the north of the Area and there is a significant deficit in the 2ha plus standard away from the corridor of market towns along the Ouse Valley. Opportunities to address deficiencies include through co-ordinating public access links, signage and promotion throughout the Great Ouse Wetland (see 4.3.3 case study)

Strategic Area 4: at present the Area has a significant total deficiency in ANGSt at the 2ha plus standard away from the market towns and Ely Ouse corridor. The 100ha plus and 500ha plus standards are well met and at the 20ha plus standard there are only pockets of deviancy within the Area.

Strategic Area 5: at present the Area has a significant deficiency in ANGSt at the very local 2ha plus standard and a small deficiency to the south of the Area at the 20ha plus standard.

Strategic Area 6: at present the Area is deficient in ANGSt at the 500ha plus standard around Cambridge and to the south, west and east of the Area and at the 100ha plus standard to the south, east and then in an arc around the Longstanton/Oakington area. There are significant deficiencies in ANGSt at the 20ha plus standard away from Cambridge and the far west of the Area, and at the 2ha plus standard there are significant deficiencies across the whole Area.

5 Issues and Opportunities

Issues

- The ANGSt analysis provides a baseline for the county. Planned future development, with resultant population growth, may be located in areas that already have a deficit against some or all of the standards, or they may adversely alter the standards.
- Conversely well-planned and delivered development can create new Accessible Natural Greenspace that addresses deficits in Cambridgeshire.
- It should be remembered that the definition of Accessible Natural Greenspace does not encompass all Green Infrastructure assets that may exist in Cambridgeshire, for example, more formal open spaces such as sports pitches or Public Rights of Way.
- Given the particular local circumstances in Cambridge, with significant amounts of land owned and managed by the Colleges of the University of Cambridge, many open spaces form part of the character of the City and provide leisure facilities for many Cambridge residents and visitors to the City, but do not meet the criteria for ANGSt. It is therefore difficult to apply ANGSt in Cambridge meaningfully.

Opportunities

- Planned development offers opportunities to create new Accessible Natural Greenspace to address deficits or to mitigate against new areas of deficit.
- Where appropriate, making areas of Natural Greenspace that are currently inaccessible to the public or that do not meet the criteria for accessibility can help address deficits at different ANGSt scales.
- Green Infrastructure investment across the county through the creation or improvement of new sites that meet the definition of Accessible Natural Greenspace can help address deficits in ANGSt.

Constraints

- The ANGSt assessment does not take account of the impact that planned growth will have on provision of Publicly Accessible Open Space and it is possible that if this was taken into account other areas of deficiency would be identified.

Cambridgeshire Green Infrastructure Strategy Appendix 11

Rights of Way

Contents:

- 1 Introduction and definition
- 2 Baseline information
 - Policy relevant to countryside access
 - Countryside Access Assets
- 3 What this information tells us
- 4 Detailed spatial analysis
- 5 Issues and opportunities

While green infrastructure has an intrinsic value in terms of biodiversity and wider environmental management, and recognising that some habitats can be damaged by inappropriate access, a major part of the value of green infrastructure relates to how people interact with it. This is recognized in most definitions. How people get to it to interact with it is a key issue - the Rights of Way theme addresses this issue.

This Appendix identifies the baseline datasets, relevant policies and countryside access assets, which are an important component of Green Infrastructure in Cambridgeshire. For present purposes, Rights of Way is defined as including walking, cycling and riding, not water-based navigation; the waterways are primarily addressed elsewhere in the Strategy and appendices. The routes considered in this analysis include formally designated Public Rights of Way, permissive paths, road verges, long distance pedestrian and cycle routes, and cycleways. These are drawn together to identify the general and spatial issues that relate to this Theme. Conclusions are then made about how this information can be mapped and overlaid to highlight the opportunities that exist for the Rights of Way Green Infrastructure Theme.

Mapping of Rights of Way opportunities were then combined with the other six Themes, as well as other important issues and assets in Cambridgeshire, to inform and develop the Strategic Network of Green Infrastructure.

1 Introduction and definition

Traditional approaches to people accessing Green Infrastructure (given the limited nature of rural public transport and the location of Green Infrastructure sites) have necessarily emphasised the motor car. A more sustainable approach is now required. This should include effective provision of walking, riding and cycling access (as well as water-based access) from where people live to the wider countryside and provision of wider linear access networks to link settlements and main attraction/gateway sites, so as to reduce the need to drive both locally and longer distances.

2 Baseline information and datasets including relevant policies

Policy relevant to Countryside Access

Countryside and Rights of Way (CROW) Act 2000

This legislation moves the duty on Highway Authorities from simple legal and physical management of historic public rights of way towards consideration of managing networks of linear and area access to suit the needs of contemporary lifestyles.

A Greener Future, Department for Transport, 2009

This document sets out the Government's transport carbon reduction strategy, enabling the UK to meet the requirements of the carbon budgets set under the Climate Change Act 2008. Although it does not specifically refer to the role of Green Infrastructure, the Green Infrastructure Strategy can support the delivery of low-carbon transport choices, such as walking and cycling and reduce the need for motor transport.

Cambridgeshire Local Transport Plan 2006 - 2011 (LTP2), Cambridgeshire County Council, 2006

The Local Transport Plan set out targets and strategies for transport, ensuring that large-scale development can take place in the county in a sustainable way. Although it does not specifically reference Green Infrastructure, one of the long-term strategies is 'widening choice', including an *"enhanced network of cycle and pedestrian routes both in towns and linking to surrounding villages and Countryside"*. The Rights of Way Improvement Plan (below) is a constituent part of the Plan.

The Local Transport Plan is currently being revised to produce LTP3 and the Strategic Environmental Assessment (SEA) Environmental Report for the LTP3 recognises that; "new transport projects have the potential to impact on the sites of ecological or geological value and more generally on the network of linked multi-functional green spaces, comprising the local Green Infrastructure, through land-take for infrastructure

development and through construction and operational impacts as noise, vibration, dust and drainage.”¹

In response, the proposed LTP3 SEA objectives include: “Protect and enhance biodiversity, green infrastructure and geodiversity, in particular designated sites and characteristic habitats and species.”²

The draft LTP3 also includes; “Challenge 7: Protecting and enhancing the natural environment by minimising the environmental impact of transport... Environmental issues such as protecting biodiversity and impacts on the landscape will be considered at the design stage of transport projects and we will support the provision of green infrastructure. Furthermore, we will reduce carbon emissions through a programme of smarter choices measures, improvements to sustainable travel options and the management of car use.”

As well as identifying and minimizing threats such as the fragmentation of Green Infrastructure, opportunities identified for the LTP3 include the enhancement of Green Infrastructure through improved countryside access and cycle routes.³

Cambridgeshire Rights of Way Improvement Plan, Cambridgeshire County Council, 2005

Under the Countryside and Rights of Way Act 2000 (CROW), highway authorities must produce a Rights of Way Improvement Plan (ROWIP) that contains an assessment of:

- The extent to which local rights of way meet the present and likely future needs of the public
- The opportunities provided by local rights of way for exercise and other forms of open air recreation and enjoyment
- The accessibility of local rights of way to blind or partially sighted persons and others with mobility problems⁴

The ROWIP contains an assessment of the extent to which local rights of way and other countryside access meet the present and likely future needs of the public. The Plan ultimately seeks to “secure an improved network of local rights of way and access opportunities”⁵. As required by Statute, the Plan was based on extensive consultation during preparation, and on production of the draft Plan, giving confidence in the final document. There are eight Guiding Principles of the Plan:

GP1 “Countryside access provision should be physically accessible to the widest possible range of people. Management and improvement of the existing

¹ Strategic Environmental Assessment (SEA) Environmental Report, Atkins, November 2010. p11-12

² Strategic Environmental Assessment (SEA) Environmental Report, Atkins, November 2010. p15

³ Strategic Environmental Assessment (SEA) Environmental Report, Atkins, November 2010. p50

⁴ Cambridgeshire Rights of Way Improvement Plan, Cambridgeshire County Council, 2005. piv.

⁵ Cambridgeshire Rights of Way Improvement Plan, Cambridgeshire County Council, 2005. pii.

Cambridgeshire rights of way network should aim to increase that accessibility, while new countryside access provision should generally be planned to avoid imposing restrictions. Where an existing path may not be fully accessible to those with limited mobility due to limits imposed by external constraints, such route limitations should be effectively communicated to users."

GP2 "Countryside access provision should be safe for users. Where significant potential conflict with motor traffic or railways can be demonstrated, then measures to reduce risk will be considered. Where rights of way are subsumed within urban development, then planners will be encouraged to ensure that path design is open and unthreatening. Safety-critical path infrastructure will be regularly inspected."

GP3 "New development should not damage countryside access provision, either directly or indirectly. New settlements should be integrated into the rights of way network, and improved provision made for the increased population. Where appropriate, development should contribute to the provision of new links and/or improvement of the existing rights of way network".

GP4 "Up to date, accurate, comprehensive and integrated access information should be made available to all users of countryside access provision."

GP5 "Countryside access provision should build on the platform of the historical network to meet the needs of today's users and land managers."

GP6 "Management and improvement of countryside access should consider the needs of land management, conservation, heritage and concern about rural crime."

GP7 "The Definitive Map and Statement should be an accurate, comprehensive, up-to-date and accessible record of the public rights of way network in Cambridgeshire. Proposals for legal changes to the network should be promptly resolved and cost effective."

GP8 "The countryside access experience in Cambridgeshire should be straightforward, enjoyable and inspiring."⁶

Green Infrastructure is referenced in relation to new development (guiding principle GP3), stating that the pressures that new developments can place on the environment may require new Green Infrastructure provision. Other key objectives of the ROWIP that Green Infrastructure can support are to make the countryside more accessible (GP1), improving connectivity to ensure a comprehensive rights of way network (GP5) and management of PRow and consideration of biodiversity issues (GP6).

⁶ Cambridgeshire Rights of Way Improvement Plan, Cambridgeshire County Council, 2005. pii.

Countryside Access Assets

Sites

Sites such as those operated by Natural England, the Wildlife Trust, the Woodland Trust, Cambridgeshire Past Present and Future and other organisations are considered as specific green infrastructure elsewhere in this analysis, but sight should not be lost of the important role which such sites can play in wider access networks. Communicating this linkage to potential new users can be a significant issue.

Public Rights of Way (PROW)

Cambridgeshire has an extensive Public Rights of Way (PROW) network (over 3,000km or 1,800 miles). Much of this is well used by local people. Cambridgeshire is not traditionally a 'destination county'⁷ by comparison with counties such as Derbyshire or Cornwall, but promoted long distance paths such as the Nene Way and Ouse Valley Way now seem to be attracting more visitors, albeit based on limited available evidence. However, there are significant local variations in the extent, quality and connectivity of the network, only partly alleviated by complementary permissive access. See figure 11.1

Public Rights of Way (PROW) are highways which allow the public to pass and re-pass over land which is usually privately owned and managed. Footpaths, bridleways, restricted byways and byways are all highways, differing from roads only in the type of traffic entitled to use them.

- Byways Open to All Traffic (BOATs) provide rights to walk, ride a horse, cycle and drive any road-legal vehicle. While legal rights are similar to those of unclassified roads, byways are maintained principally for the use of riders and pedestrians.
- Restricted Byways provide rights for pedestrians, cyclists, horse riders and horse drawn carriage vehicles but not mechanically propelled vehicles.
- Public Bridleways allow users the right to walk, ride or lead a horse. Cyclists may use bridleways, though technically 'not as of right', and must give way to other users.
- Public Footpaths have the most restrictive rights, and provide users with the right to walk with any 'normal accompaniment' (e.g. dog, pram or a wheelchair). However, there is no right to ride or wheel a bicycle, nor to ride or lead a horse.

The Cambridgeshire PROW network is mapped and managed by the County Council's Rights of Way & Access Team. Additional management is provided by the Highway Divisions (surfaced routes and cycle paths) and through partner organisations including districts, parishes and farmers. There are separate management responsibilities for land managers. While externally-funded project work in recent years has helped to

⁷ 'Destination counties' traditionally have a strong tourist identity because of their distinct landscape, culture and/or features.

improve networks, current pressures on public finances necessarily present a threat to the availability of routes to users.

Permissive Paths

Permissive Routes are paths accessible by permission of the owner. Public access can be terminated upon notice. It is the responsibility of the landowner to maintain these paths.

Environmental Stewardship (ES) was until recently a way of providing for extensive permissive footpath and bridleway access. One of the scheme's primary objectives was the promotion of public access and understanding of the countryside⁸. ES offered financial incentives to landowners who set aside land for environmental improvement and public access under Higher Level Stewardship (HLS). Only capital payments for structures such as bridges will now be available - no ongoing incentives will be available. Existing Countryside Stewardship and Environmental Stewardship path schemes will continue until the end of the agreement terms, but permissive access will necessarily decrease as a result of these changes by DEFRA.

The Cambridgeshire County Council register of Permissive Path Agreements (PPAs) records around 100 permissive routes, though this is known to be incomplete. The County Farms Estate (CFE) provides extensive permissive access (more than 44km of path and 260Ha of open access), much of this through Environmental Stewardship. Also of significance are the Anglian Water permissive routes that complete a loop around Grafham Water. Routes subject to Permissive Path Agreements are shown on the County's internal GIS system. The public website currently only shows CFE permissive access, though work is in progress to show more.

Verges

Verges at the side of the roads, maintained by the Highway Authority, provide a significant access resource. The Authority has a duty to maintain them so that they are suitable for the use of horse riders where this is thought to be necessary. In Cambridgeshire verge improvements for walkers, cyclists and horse riders to improve PROW network connections and to provide safer alternatives to using roads have been successfully developed over recent years. An example is a verge route linking two bridleways between Rampton and Willingham, part of a wider scheme to improve safe access to the historic Aldreth Causeway.

Long Distance Pedestrian and Cycle Routes and Bridleways

There are no National Trails in Cambridgeshire although the Trans-European Route E2 follows the line of the Hereward Way, Fen Rivers Way and the Roman Road Link through Cambridgeshire. Major routes currently recorded on OS maps and at least partly in Cambridgeshire include (see figure 11.1):

- Icknield Way - this lies in the south of Cambridge from the Hertfordshire border to Suffolk

⁸ Natural England, Entry Level Stewardship Handbook Second Edition, 2008

- Nene Way (source to sea) - this lies in the north of the county and links Peterborough and Wisbech along the Nene Washes and on to Sutton Bridge and The Wash.
- The Ouse Valley Way - this runs from Syresham in Northamptonshire to Kings Lynn in Norfolk and enters Cambridgeshire at St Neots, running along the Ouse, the Old West River and the Ely Ouse to the Norfolk border north of Littleport.
- Three Shires Way (part of National Bridle route) - comes into the west of the county from Northamptonshire and connects with the circuit around Grafham Water.
- Fen Rivers Way - this runs from Cambridge along the River Cam and Ely Ouse past Ely and on to Kings Lynn in Norfolk
- Hereward Way - this lies in the north of the county and links Peterborough and the fenland market towns of Whittlesey and March.
- Roman Road Link - this runs along the Roman Road from Cambridge to Linton and the County border at Horseheath.

Cycleways

Most cycleways provided in Cambridgeshire have addressed urban demand. However, the National Cycle Network, developed by Sustrans in partnership with the Highway Authority, provides promoted rural routes, mostly either off-road or on quieter roads. The Lodes Way at Wicken Fen provides an example of recent good practice. The National Byway provides a complementary network.

3 What this information tells us

The Rights of Way network (including promoted 'long distance' routes and permissive routes) forms a pervasive network of linear sustainable access routes across Cambridgeshire. The network allows people to access the countryside and specific Green Infrastructure sites by a variety of means.

The local network can improve people's health and can reduce the need to travel by car or other forms of motorised transport - helping to mitigate against climate change by reducing carbon emissions.

Long distance paths provide economic benefits.

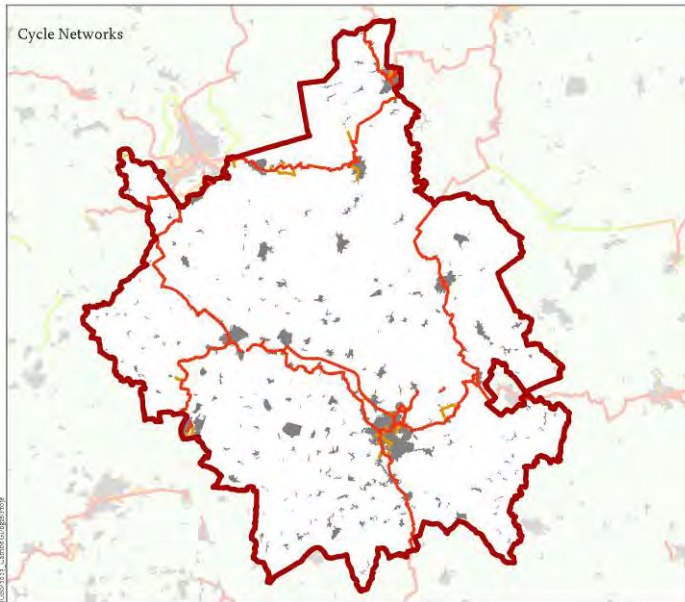
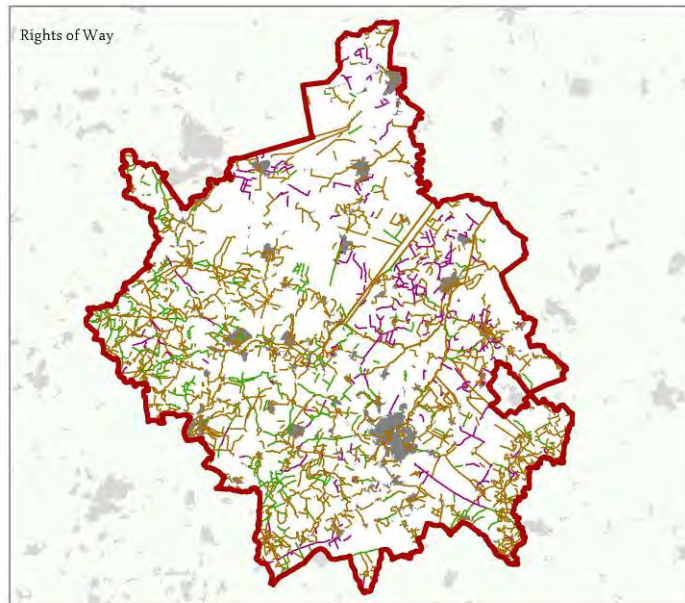
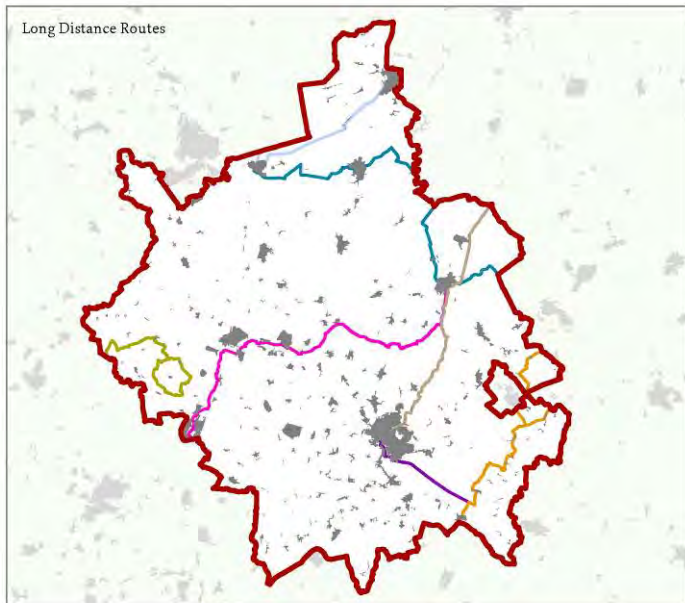
4 Detailed spatial analysis

The information above together with the following baseline information maps has informed the development of the Rights of Way Theme Map.

Rights of Way, Cycling Routes and Navigable Waterways

Figure 11.1 shows the distribution of linear assets across Cambridgeshire. The Public Rights of Way network is illustrated in the top right map, long distance routes are shown in the top left map, cycle routes and navigable waterways in the bottom two maps.

Figure 11.1 Rights of Way, Cycling Routes and Navigable Waterways (Next page)



LEGEND

- Study Area Boundary
- Long Distance Routes**
 - Ouse Valley Way
 - Fen Rivers Way
 - Hereward Way
 - Three Shires Way
 - Roman Road Link
 - Icknield Way
 - Nene Way
- Rights of Way**
 - Footpath
 - Bridleway
 - Byways Open to all Traffic (BOATs)
 - Restricted Byway
- Cycle Networks**
 - Sustrans National Route
 - Sustrans Regional Route
 - National Cycle Network Link
 - Local Cycle Network not available in digital format
- Navigations**
 - Principal River Channel
 - Navigable Waterway

North arrow and scale bar (0 to 20,000m).

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Countryside Access Sites

There is a variety of publicly accessible Green Infrastructure sites in Cambridgeshire and the map below illustrates their distribution and type. As well as being publicly accessible, these sites have a variety of multi-functional benefits.

Woodland Trust reserves in Cambridgeshire range in size from substantial established ancient woods, such as Archers Wood, through to smaller new plantations such as Whitethorn Wood.

National Nature Reserves in Cambridgeshire mostly offer public access but some have restricted access due to nature conservation considerations.

The Wildlife Trust has a wide range of reserves in Cambridgeshire which are mostly open to the public. Neighbouring County Trusts have reserves adjacent to Cambridgeshire, which serve communities near to the county boundary.

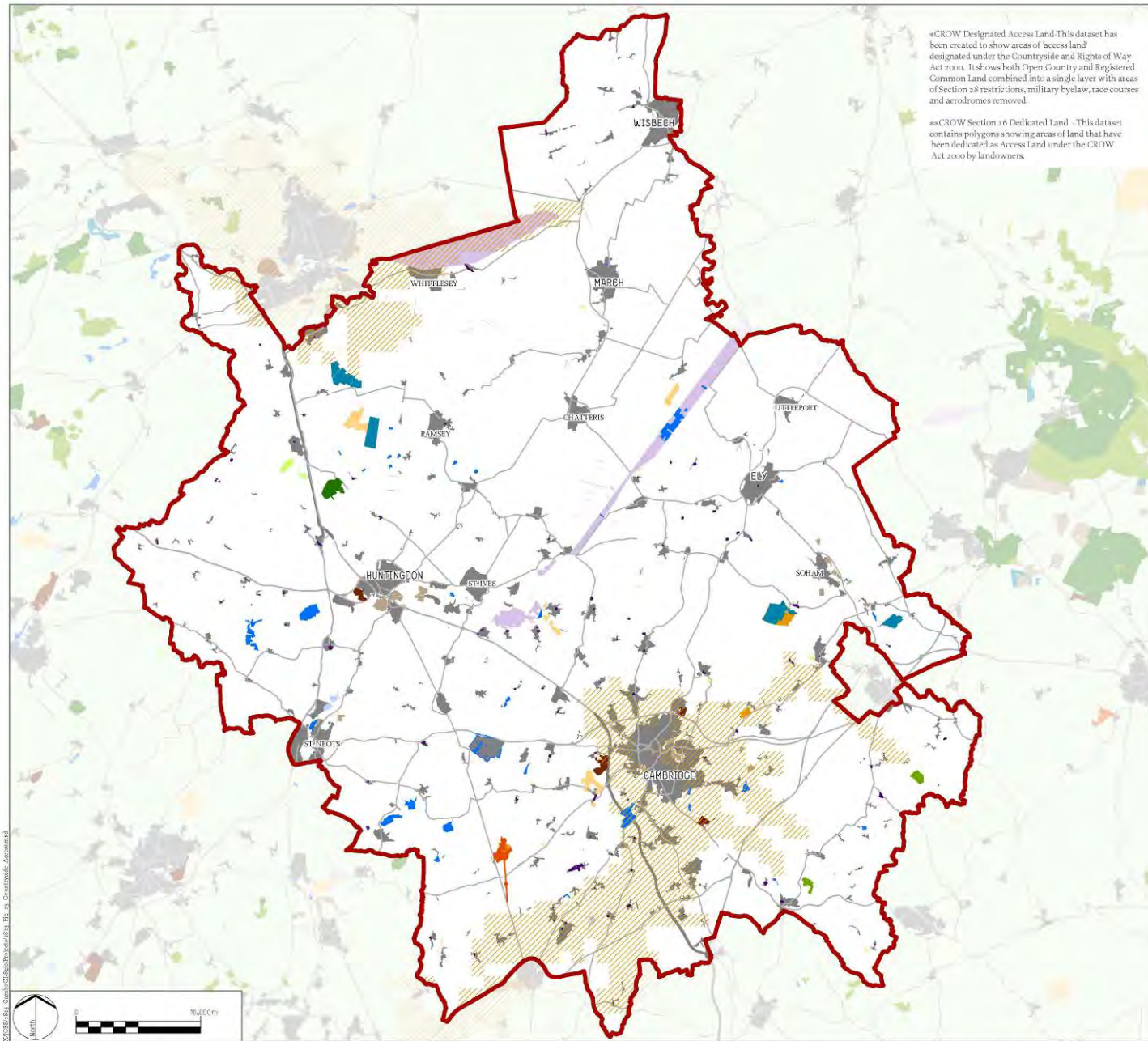
The RSPB runs reserves at Fowlmere, Fen Drayton Lakes and the Ouse Washes, where the Wildfowl Trust also operates. Wandlebury Country Park and Coton Countryside Reserve are run by Cambridge Past, Present and Future.

In addition, there are several Country Parks including Milton, Wandlebury and Hinchingsbrooke. The National Trust owns land at Wimpole, Anglesey Abbey, and Wicken Fen and Anglian Water offers Grafham Water for recreational purposes.

In addition there is a wide range of County Farms access sites available. However, these are not illustrated on the following map.

Finally, the navigable waterways, including the River Cam, River Great Ouse, River Nene and Middle Level Navigations, provide publicly accessible linear routes across the county. Many areas have towpaths or other associated footpaths, cycleways or bridleways.








Figure 11.2 Countryside Access (Next page)



*CROW Designated Access Land - This dataset has been created to show areas of 'access land' designated under the Countryside and Rights of Way Act 2000. It shows both Open Country and Registered Common Land combined into a single layer with areas of Section 28 restrictions, military byelaw, race courses and aerodromes removed.

*CROW Section 16 Dedicated Land - This dataset contains polygons showing areas of land that have been dedicated as Access Land under the CROW Act 2000 by landowners.

LEGEND

-  Study Area Boundary
-  Access Land Open Country/ Registered Common Lands
-  Section 16 Dedicated Land**
-  Village Green/Town Green
-  Forestry Commission Land
-  Woodland Trust Sites
-  Local Nature Reserve (LNR)
-  National Nature Reserve (NNR)
-  National Trust Land (Access 24 hrs)
-  National Trust Land (Access Limited)
-  RSPB Reserve
-  Wildlife Trust Nature Reserve
-  Country Park
-  Environmental Stewardship Agreements
Higher Level Stewardship and Organic
Entry Level Plus Higher Level Stewardship
-  Higher Level Stewardship Target Areas

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 Sources: Ordnance Survey, 2001 Census Area Data, Natural England, National Trust, Woodland Trust, Forestry Commission, RSPB, Cambridgeshire County Council & DEFRA.

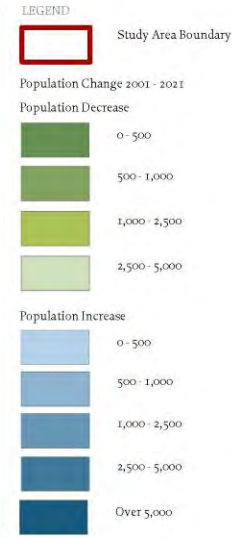
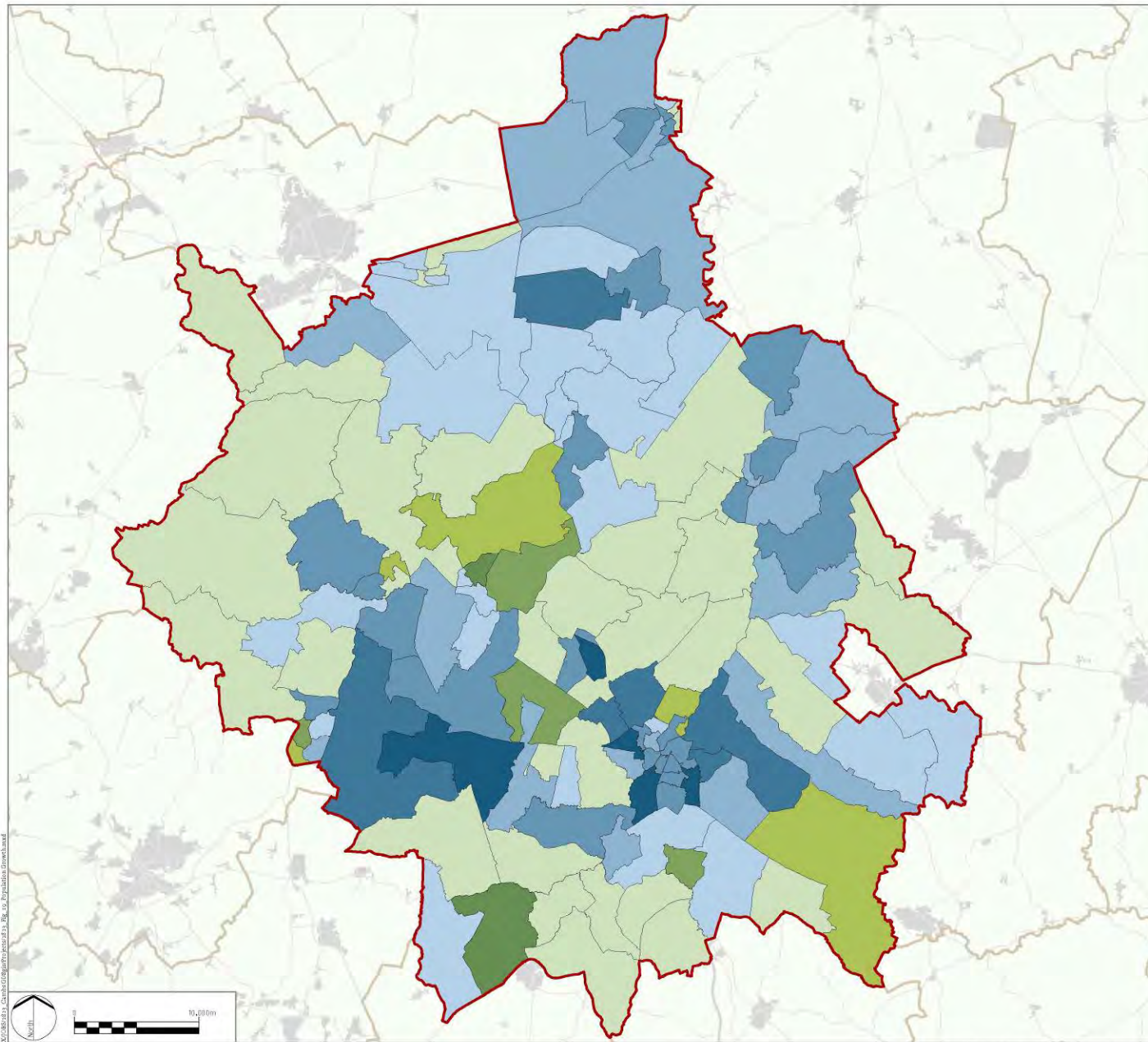


Some sites are over-used, with potentially negative effects on biodiversity, while others are underused. No single map currently summarises these opportunities, though the County Council has been working to expand its web mapping of countryside access opportunities.

Population Change

Areas of population growth, either through housing development or natural increase, indicate where more people may want to access the countryside or gain access to Green Infrastructure sites. People new to an area will not generally know where existing access is available. If these areas coincide with poor Rights of Way and site provision then additional provision is necessary to provide recreational opportunities and health benefits, and promotion is necessary.

Figure 11.3 Population Change 2001-2011 (Next page)



For ward details refer to Figure 4.

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Population Change 2001-2021

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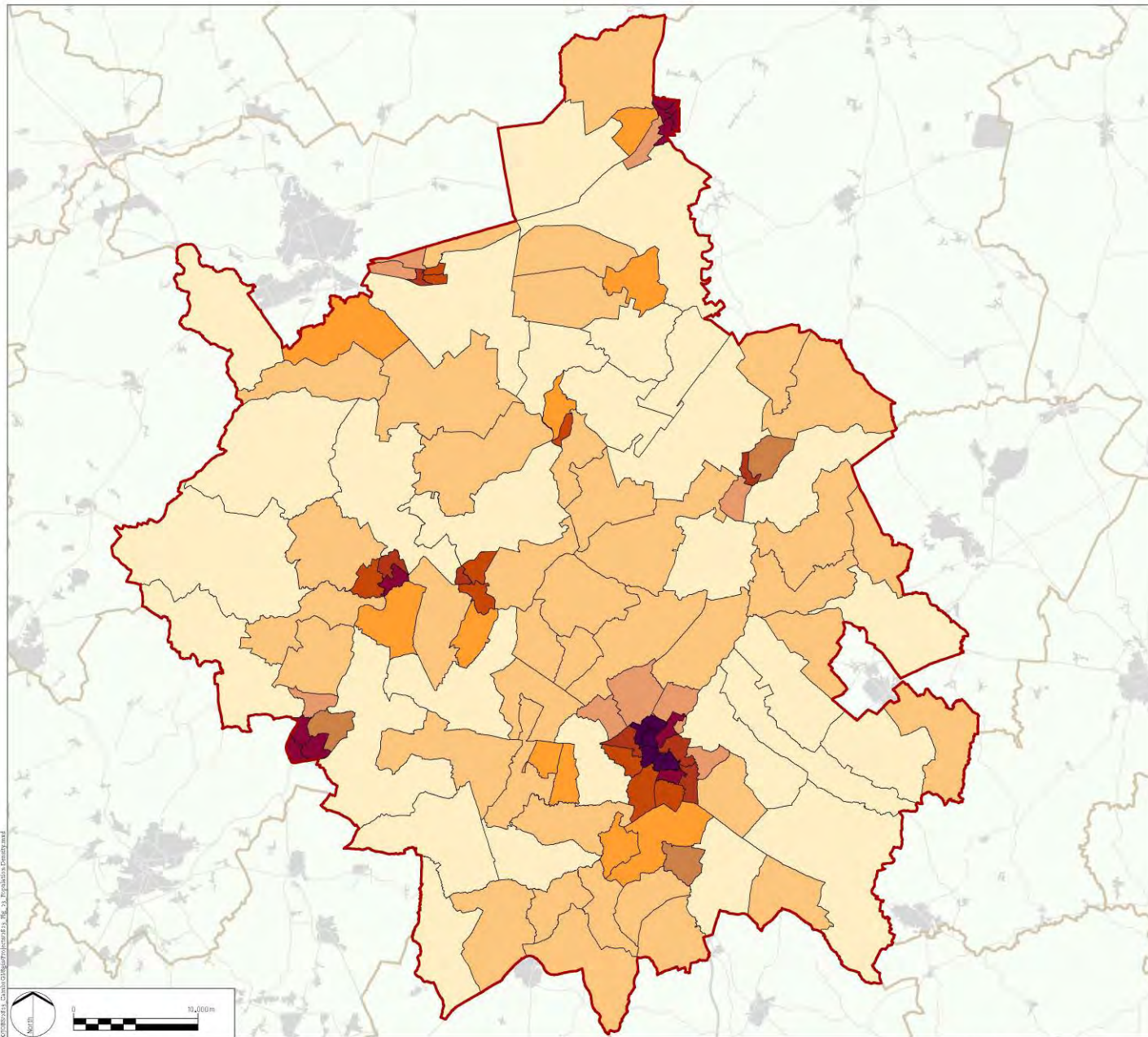
Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data Office of National Statistics & Cambridgeshire County Council.

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Population Density

Existing population density is unevenly distributed across the county and is concentrated in Cambridge, the market towns and particular rural wards in Cambridgeshire. Whilst linear access provision is important for all residents of Cambridgeshire, by concentrating limited resources on those areas of the county with more residents than very sparsely populated areas the greatest benefit for the majority of residents will be provided.

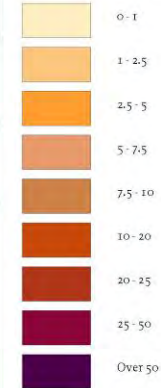
Figure 11.4 Population density (Next page)



LEGEND

 Study Area Boundary

Population Density (Population per Ha)



For ward details refer to Figure 4.

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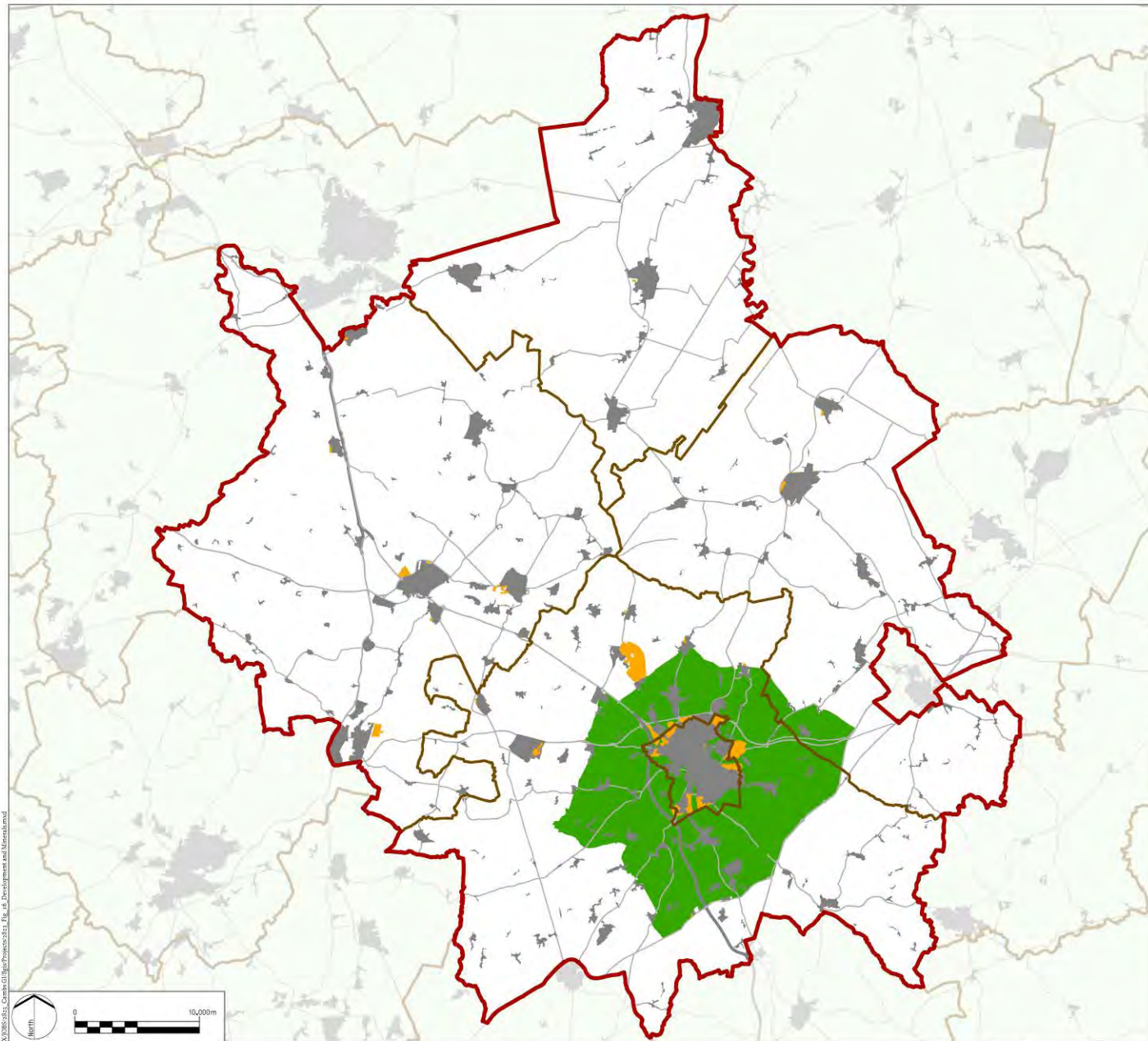
Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data Office of National Statistics & Cambridgeshire County Council.

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Major Development

Major new housing growth as part of development across Cambridgeshire will create new populations that may want to access the countryside or gain access to Green Infrastructure sites. If these areas coincide with poor Rights of Way and site provision then the recreational and health opportunities for these new communities will be limited and access by car to sites further away will increase.

Figure 11.5 Housing and growth (Next page)



LEGEND

- Study Area Boundary
- Green Belt
- Major Development Sites*

* Major Development Sites are correct as of September 2010 and comprises locations/sites:

- Allocated in Local Plan or LDF
- With Outline Planning Permission
- With Unimplemented Full Planning Permission
- Under Construction
- Completed between 01 July and 30 September 2010
- Where residential development sites are 100 dwellings or more

NB: Please refer to Cambridge Insert Plan for further detail of settlement boundaries and major developments in and around Cambridge.

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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Cambridgeshire County Council, East Cambridgeshire District Council, Fenland District Council, Huntingdonshire District Council, South Cambridgeshire District Council & Cambridge City Council.

Index of Multiple Deprivation

The Index of Multiple Deprivation⁹ (IMD) is a detailed measure of deprivation and contains seven domains (individual indices) which relate to income deprivation, employment deprivation, health deprivation and disability, education skills and training deprivation, barriers to housing and services, living environment deprivation and crime. IMD data can therefore be used to identify areas where investment in Green Infrastructure can help mitigate against appropriate issues

Figure 11.6 Wards and Index of Multiple Deprivation and index of child well-being 2009 data (Next page)

⁹ <http://www.imd.communities.gov.uk/>

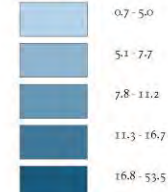


| OSWD | WSD | DISTRICT | OSWD | WSD | DISTRICT |
|------|----------------------------------|---------------------|------|-------------------------------|----------------------|
| 1 | Abney | Cambridge | 61 | Alconbury and The Scales | Huntingdonshire |
| 2 | Ashby | Cambridge | 62 | Beaumont | Huntingdonshire |
| 3 | Castle | Cambridge | 63 | Beaumont | Huntingdonshire |
| 4 | Cherry Hinton | Cambridge | 64 | Earith | Huntingdonshire |
| 5 | Coleridge | Cambridge | 65 | Ellington | Huntingdonshire |
| 6 | East Chesterton | Cambridge | 66 | Elm and Folksworth | Huntingdonshire |
| 7 | King's Healds | Cambridge | 67 | Fenstanton | Huntingdonshire |
| 8 | Market | Cambridge | 68 | Goldschammer | Huntingdonshire |
| 9 | Newmarket | Cambridge | 69 | Graveland and The Offords | Huntingdonshire |
| 10 | Peasfield | Cambridge | 70 | Huntingdon East | Huntingdonshire |
| 11 | Queen Elizabeth's | Cambridge | 71 | Huntingdon North | Huntingdonshire |
| 12 | Rosary | Cambridge | 72 | Huntingdon West | Huntingdonshire |
| 13 | Trumpington | Cambridge | 73 | Kimbolton and Raughlton | Huntingdonshire |
| 14 | West Chesterton | Cambridge | 74 | Little Paxton | Huntingdonshire |
| 15 | Brettenham | East Cambridgeshire | 75 | Ramsay | Huntingdonshire |
| 16 | Burwell | East Cambridgeshire | 76 | St Ives East | Huntingdonshire |
| 17 | Cherwell | East Cambridgeshire | 77 | St Ives South | Huntingdonshire |
| 18 | Downham Villages | East Cambridgeshire | 78 | St Ives West | Huntingdonshire |
| 19 | Dullingham Villages | East Cambridgeshire | 79 | St Neots Eaton Ford | Huntingdonshire |
| 20 | By East | East Cambridgeshire | 80 | St Neots Eaton Socon | Huntingdonshire |
| 21 | By March | East Cambridgeshire | 81 | St Neots Fyfebray | Huntingdonshire |
| 22 | By South | East Cambridgeshire | 82 | St Neots Friary Park | Huntingdonshire |
| 23 | By West | East Cambridgeshire | 83 | Sewery | Huntingdonshire |
| 24 | Forham Villages | East Cambridgeshire | 84 | Somerham | Huntingdonshire |
| 25 | Haddenham | East Cambridgeshire | 85 | Silton | Huntingdonshire |
| 26 | Idlesham | East Cambridgeshire | 86 | The Hemmingfords | Huntingdonshire |
| 27 | Littleport East | East Cambridgeshire | 87 | Upwood and The Rowkeys | Huntingdonshire |
| 28 | Littleport West | East Cambridgeshire | 88 | Waulboys and Bury | Huntingdonshire |
| 29 | Stam North | East Cambridgeshire | 89 | Waxley and Farret | Huntingdonshire |
| 30 | Stam South | East Cambridgeshire | 90 | Waxley | South Cambridgeshire |
| 31 | Stretham | East Cambridgeshire | 91 | Waxleybourn | South Cambridgeshire |
| 32 | Sturton | East Cambridgeshire | 92 | Waxley | South Cambridgeshire |
| 33 | The Swintham | East Cambridgeshire | 93 | Waxley and Poston | South Cambridgeshire |
| 34 | Waresley | Fenland | 94 | Linton | South Cambridgeshire |
| 35 | Berwick, Coates and Kestres | Fenland | 95 | McBurn | South Cambridgeshire |
| 36 | Beck | Fenland | 96 | Melbourn | South Cambridgeshire |
| 37 | Chalton | Fenland | 97 | The Abington | South Cambridgeshire |
| 38 | Delph | Fenland | 98 | Wiltonford | South Cambridgeshire |
| 39 | Driffield | Fenland | 99 | Bea Hill | South Cambridgeshire |
| 40 | Sims and Christchurch | Fenland | 100 | Barton | South Cambridgeshire |
| 41 | Hill | Fenland | 101 | Borum | South Cambridgeshire |
| 42 | Kingsmeor | Fenland | 102 | Caldecote | South Cambridgeshire |
| 43 | Kilgates | Fenland | 103 | Comberton | South Cambridgeshire |
| 44 | Lattersey | Fenland | 104 | Cottonham | South Cambridgeshire |
| 45 | Mains | Fenland | 105 | Fulbourn | South Cambridgeshire |
| 46 | Manthorpe | Fenland | 106 | Godingay | South Cambridgeshire |
| 47 | March North | Fenland | 107 | Grison | South Cambridgeshire |
| 48 | March West | Fenland | 108 | Hatchick | South Cambridgeshire |
| 49 | Medwells | Fenland | 109 | Hartono and Heaton | South Cambridgeshire |
| 50 | Parson Drove and Wisbech St Mary | Fenland | 110 | Huntingfield and The Brendens | South Cambridgeshire |
| 51 | Peckover | Fenland | 111 | Hulme and Impington | South Cambridgeshire |
| 52 | Roman Bank | Fenland | 112 | Longstanton | South Cambridgeshire |
| 53 | St Andrew's | Fenland | 113 | Milton | South Cambridgeshire |
| 54 | St Mary's | Fenland | 114 | Creswell and Harrington | South Cambridgeshire |
| 55 | Stade Lodge | Fenland | 115 | Papworth and Elsworth | South Cambridgeshire |
| 56 | Sturte | Fenland | 116 | Sewston | South Cambridgeshire |
| 57 | The Mill | Fenland | 117 | Sewsey | South Cambridgeshire |
| 58 | Waterless | Fenland | 118 | Tewinham | South Cambridgeshire |
| 59 | Wenayre | Fenland | 119 | The Belbreds and Stapleford | South Cambridgeshire |
| 60 | Wimbington | Fenland | 120 | The Willingham | South Cambridgeshire |
| | | | 121 | Waterbeach | South Cambridgeshire |
| | | | 122 | Willingham and Over | South Cambridgeshire |
| | | | 123 | The Meadows | South Cambridgeshire |

LEGEND

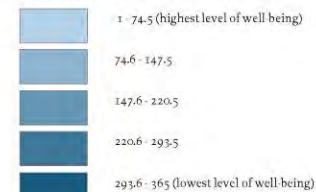
Study Area Boundary

Index of Multiple Deprivation Quantile Legend



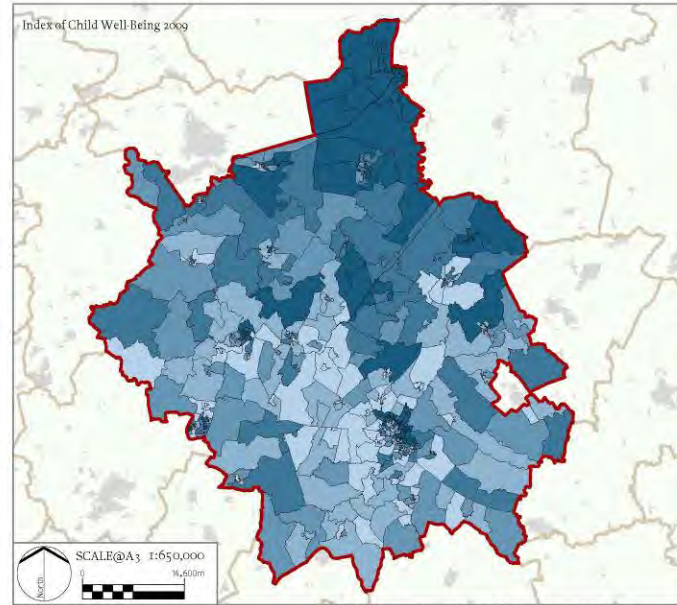
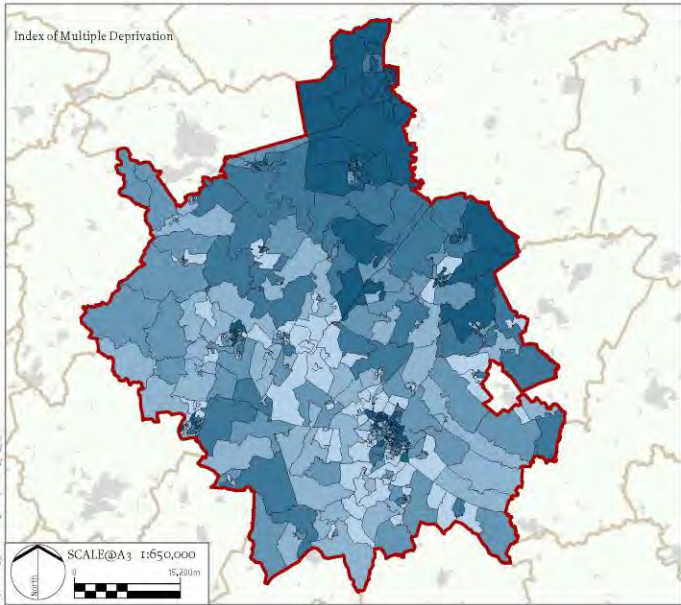
Note: The higher is the deprivation score, the more (relatively) deprived is the area;

Index of Child Well-Being 2009 Quantile Legend



Note: Data for Index of Multiple Deprivation and Index of Child Well-Being illustrated for Lower Super Output Areas (LSOAs) which are subdivisions of wards.

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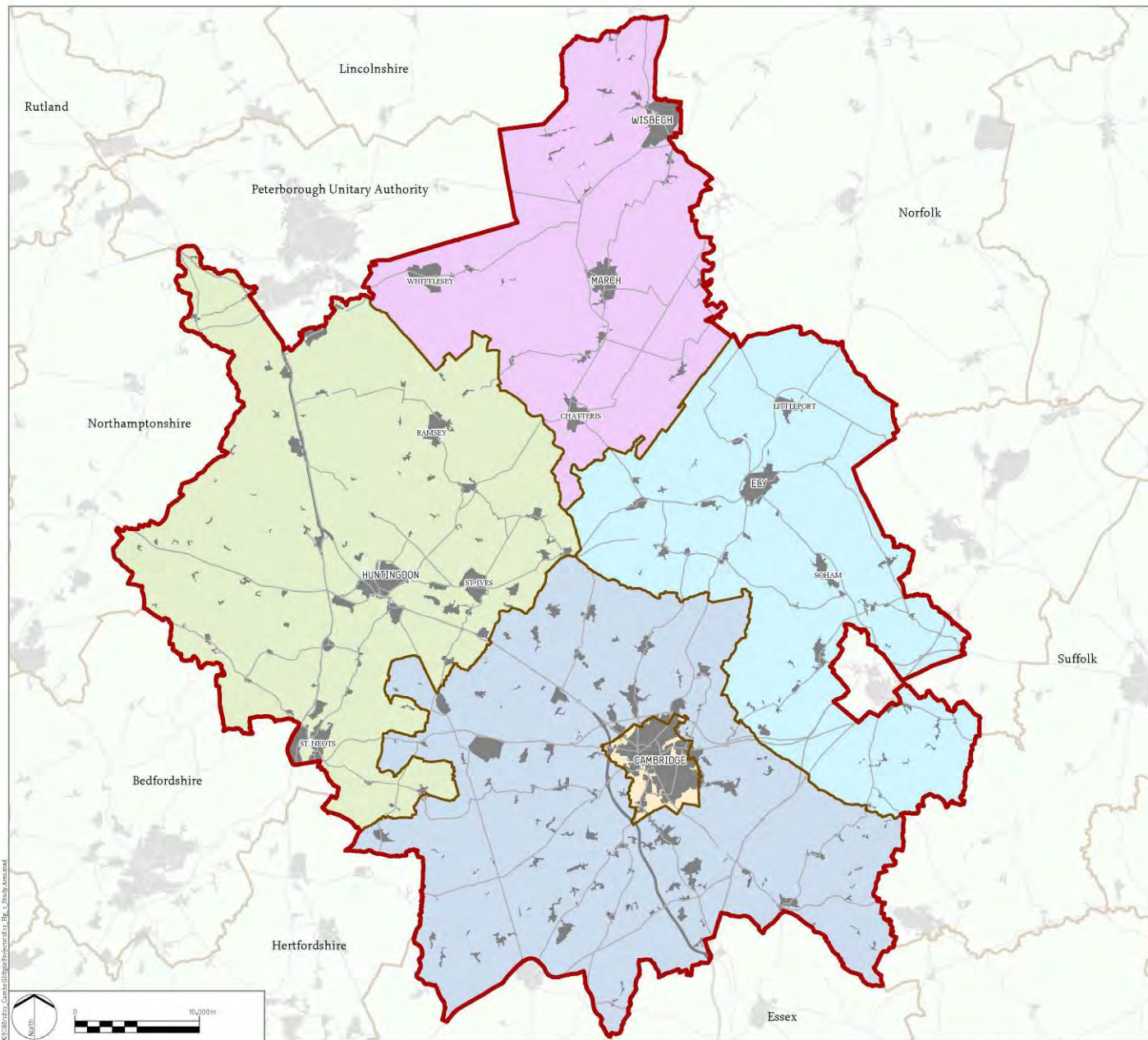
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Sources: Ordnance Survey, 2001 Census Area Data & Office of National Statistics.

Settlement Distribution

The below map shows the distribution of settlements across Cambridgeshire and is useful for seeing how settlements relate to the existing linear access network as shown in figure 11.1.

Figure 11.7 Study area (Next page)



LEGEND

- Study Area Boundary
- Fenland District Council
- East Cambridgeshire District Council
- Huntingdonshire District Council
- South Cambridgeshire District Council
- Cambridge City Council

Urban areas are derived from the Census 2001 dataset and includes all built up and developed areas.

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Cambridgeshire, showing Administrative Boundaries and Settlement Pattern

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The Rights of Way theme was developed by analysing the key baseline dataset of the Rights of Way network against the following datasets:

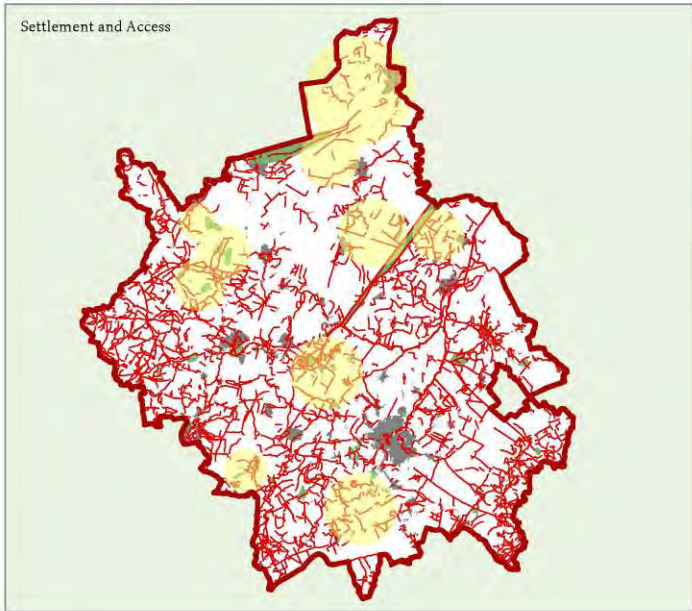
- Settlements
- Publicly accessible Green Infrastructure sites
- Index of Multiple Deprivation
- Population Growth including through major housing development
- Population Density

This analysis highlighted areas where improvements to the Rights of Way network could help address accessibility to the countryside/Green Infrastructure sites and also health and wellbeing issues.

The following were therefore identified through spatial analysis:

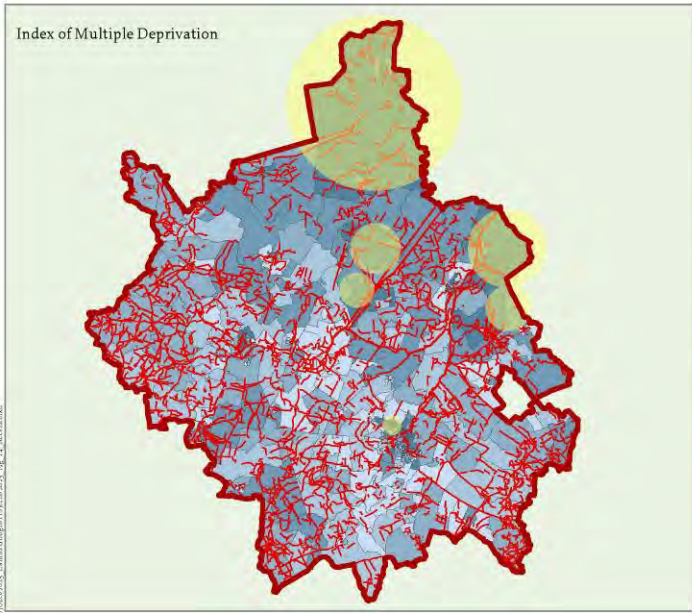
- Areas with poor Rights of Way access between settlements and publicly accessible Green Infrastructure sites
- Areas with few or no Rights of Way in areas of relatively high deprivation as measured by the Index of Multiple Deprivation
- Areas with few or no Rights of Way in areas of predicted population growth
- Areas where there are few or no Rights of Way in areas that are densely populated

Figure 11.8 Rights of Way opportunity analysis (Next page)



- LEGEND
- Study Area Boundary
 - Rights of Way
 - Settlement
 - Countryside Access Areas
 - Opportunity Areas

Access to Green Infrastructure
 This map identifies areas where access between settlements and accessible countryside along rights of way is poor.



- LEGEND
- Study Area Boundary
 - Rights of Way
- Index of Multiple Deprivation Quantile Legend
- 0.7 - 5.0
 - 5.1 - 7.7
 - 7.8 - 11.2
 - 11.3 - 16.7
 - 16.8 - 53.5
- Opportunity Areas

Note: The higher is the deprivation score, the more (relatively) deprived is the area;

Index of Multiple Deprivation
 This map identifies areas where there are few or no rights of way in areas of relatively high deprivation.



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Rights of Way Opportunity Analysis (1)

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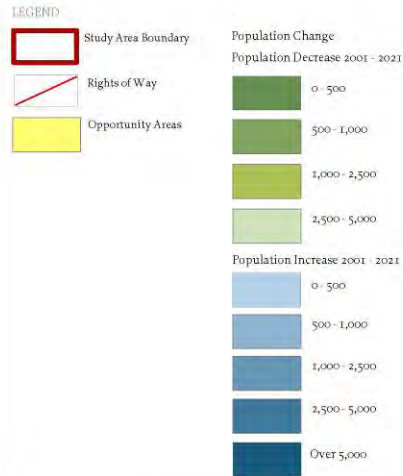
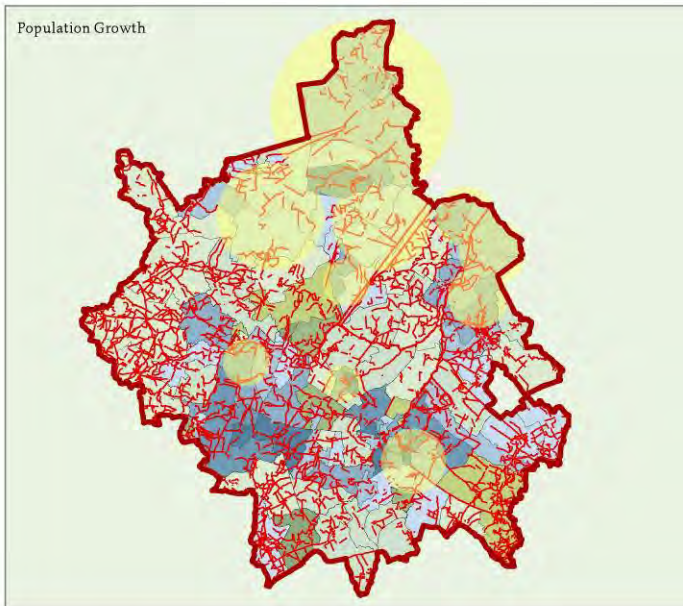
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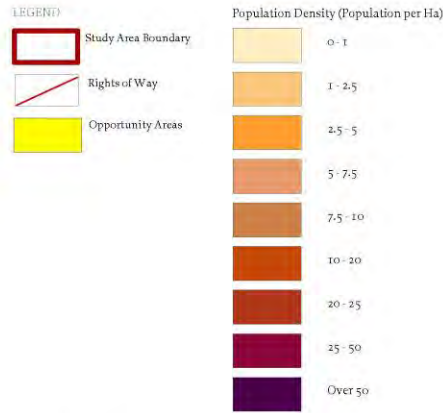
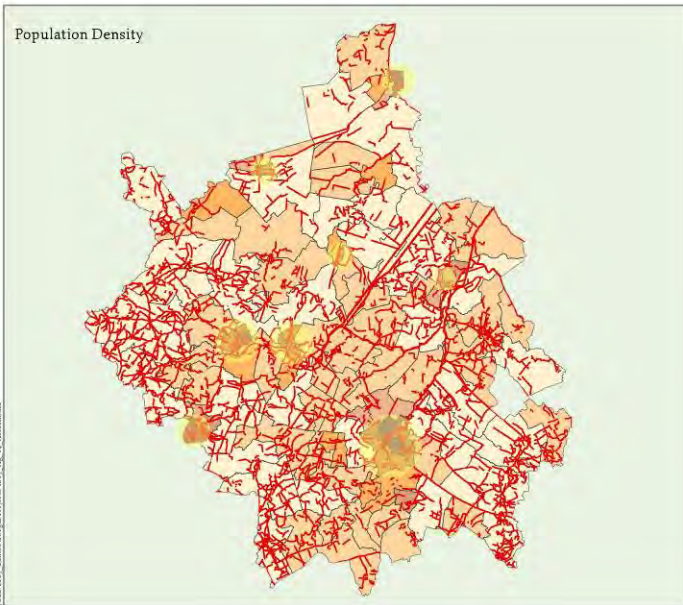
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Figure 11.8 shows areas with poor Rights of Way access between settlements and publicly accessible Green Infrastructure sites (top) and areas with few or no Rights of Way in areas of relatively high deprivation as measured by the Index of Multiple Deprivation (bottom).

Figure 11.9 Rights of Way opportunity analysis (Next page)



Population Change
This map identifies areas where there are few or no rights of way in areas of predicted population growth



Population Density
This map identifies areas where there are few or no rights of way in areas that are densely populated.



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Rights of Way Opportunity Analysis (2)

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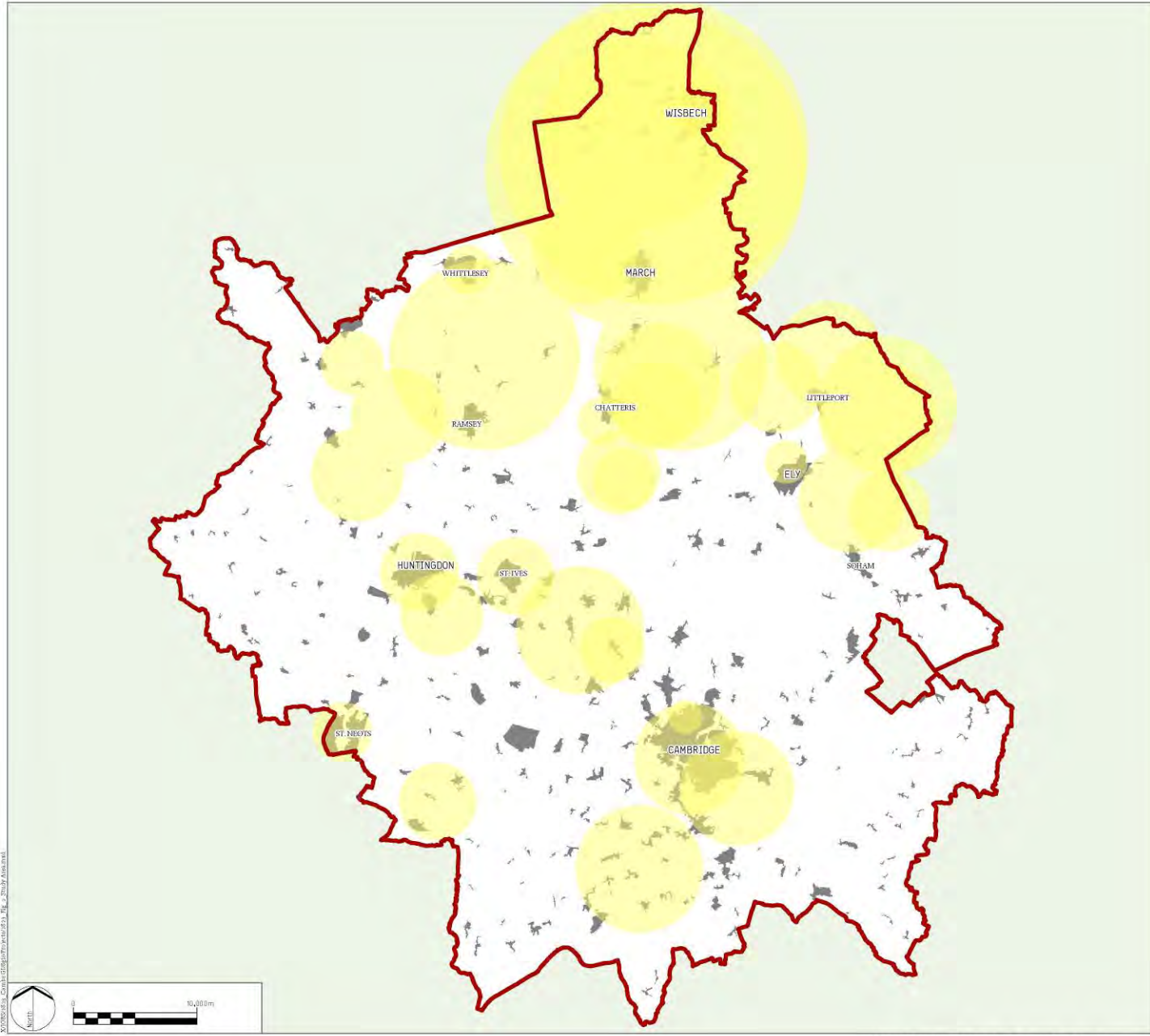
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Figure 11.9 shows areas with few or no Rights of Way in areas of predicted population growth (top) and areas where there are few or no Rights of Way in areas that are densely populated (bottom).

Figure 11.10 Rights of Way opportunities (Next page)



LEGEND

- Study Area Boundary
- Settlement
- Opportunity Areas

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DRAWING TITLE
Rights of Way Opportunities

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In bringing these together on a single map areas of concentration can be identified - the darker the highlighted area the more issues that investment in the Rights of Way network could be addressed.

The Rights of Way mapping analysis has examined Rights of Way provision with respect to settlement, deprivation and population. This strategic analysis does not consider status (footpath vs bridleway), connectivity (e.g. availability of circular routes) or public transport (e.g. for returning to the start of linear 'one-way' routes). A more detailed comparison of existing networks, user requirements and delivery opportunities will be required during the course of delivering projects.

More detailed analysis is currently being undertaken by the Highway Authority to better understand access provision on a parish-by-parish basis.

5 Issues and opportunities

Issues

Having identified where network improvement is needed, the question arises as to how this can be delivered.

Permissive access schemes can be easier to deliver in the short term, but can be ephemeral, as the demise of the Natural England Stewardship permissive access schemes illustrates. As well as the demise of the Natural England Stewardship permissive access schemes, reductions in local authority funding will inevitably have a significant effect on countryside access provision. This will make the availability of external funding to deliver network improvements still more important. It will not be possible to deliver many duties by the Highway Authority if funding is reduced in line with current predictions and new ways to deliver will have to be found. The Parish Paths Partnership (P3) scheme has for many years provided an example of what can be achieved through partnership delivery in the manner of 'Big Society'. This scheme also helps to identify those tasks which are appropriate to deliver at local level and those which are less so.

Formally designated Public Rights of Way offer longer term security. The County Council as Highway Authority has the necessary legal powers and extensive experience (e.g. GAF, HGF, GFW) of working in partnership with landowners to dedicate new routes, and linking their promotion into wider access networks, although this can be a lengthy process.

Though compulsory powers are, in principle, available to the Highway Authority, it needs to be recognised that political considerations makes these difficult to use. In practice, it is usually more appropriate to work with landowners on an opportunistic basis, within a wider framework of target areas and available funding - it is often hard to deliver costed programmes within set timescales than it is for e.g. building works.

Traditional approaches to people accessing green infrastructure (given limited rural public transport) have emphasised use of the motor car (e.g. site with car park remote from settlement). A more sustainable approach is now required to encourage more people to access the countryside without having to drive. Enabling effective provision of linear access for walking, riding, cycling and boating from where people live to the countryside and key destinations is, therefore, a key issue for green infrastructure.

The number of people using sites with car parks can be automatically counted - it is much harder to establish how many people use wider countryside access networks, when and how. However, the consultation work undertaken for the Rights of Way Improvement Plan provided insights, and limited people-counter data was produced by the Northstowe Growth Area Funding (GAF) project.

Many people understandably tend to use paths more in warmer, lighter conditions, but there is a hard core who exercise dogs and themselves on a more regular basis. People may already have attractive paths linking main attraction sites to where they live and may walk there but many will currently drive to these. While Cambridgeshire will never be able to offer an upland experience, suitable local routes may offer substantial carbon savings and opportunities for exercise and benefit health and well being.

Though there are some opportunities to travel out by train and walk back, few people use point-to-point routes in the manner of road networks - a better model is perhaps that of interconnected networks, with a smaller number of long distance routes along desire lines such as rivers.

Opportunities

The Green Infrastructure Strategy should build on the ROWIP actions to identify gaps in existing rights of way provision and help deliver an enhanced network, providing routes to and between key destinations, together with circular routes close to settlements. Examples include:

- Cambridge orbital recreational route or 'green wheel'.
- Circular routes in East Cambridgeshire, linking settlements and new green infrastructure, including crossings where routes are severed by transport corridors and watercourses.
- Fen Edge Cycle route to link to Peterborough Green Wheel and Cambridge.

In particular, analysis of countryside access in the north of the county has revealed a lack of accessible open space and countryside access in and around principal settlements in Fenland and East Cambridgeshire. The opportunity exists to create new and enhanced Green Infrastructure close to centres of population. Given that available sites are often found along or near to river corridors, the opportunity exists to ensure rights of way are improved and well maintained along river corridors and that connections are made to surrounding destinations and areas of accessible countryside. The rivers themselves also provide opportunities for water-based recreation.

People using long distance paths and visiting attractive areas such as Wicken Fen can make a substantial contribution to the local economy, helping to justify the public management costs.

It is widely acknowledged that walking, cycling or running can be shown to be very cost effective means of improving health, fitness and general well-being when compared to other publicly supported activities such as swimming. User groups and clubs including walkers, runners, riders and cyclists organise programmes of outings using the public rights of way network which contribute to healthy exercise at many

levels. Individual outings multiply the benefit beyond the number of hours of exercise taken in more costly organised facilities to provide a significant public health

Planning benefit, whether through s106 or CIL is an important delivery mechanism which will provide future opportunities - Cambourne provides a local example.

Promotion

The County Council as Highway Authority managing Public Rights of Way promotes specific routes, agreed with the Ordnance Survey. Other routes are promoted by other organisations, such as Sustrans, Natural England, the British Horse Society and The Ramblers.

In Cambridgeshire, public authorities including the various levels of local government - parish, district and County Council - carry out more local route promotion, often through joint projects. Other groups promoting local routes include cycling groups and bridleway associations.

Traditional leaflets and guidebooks can help to engage and encourage people to use access networks for a range of purposes including walking, cycling, visiting places or addressing health issues.

Guided walks and events are organised at sites such as RSPB Fen Drayton Lakes. Lack of resources means that the County Council does not currently organise events on the rights of way network, but individual walking, running, cycling and riding clubs do on a regular basis. These often introduce people to countryside access who then have the confidence required to undertake their own outings in future.

While guidebooks can be self-funding, the cost of leaflet production is increasingly becoming an issue. Website delivery of access information is increasing, both by the managing organisations (County Council, RSPB, Wildlife Trust etc) and by third parties.

As well as promoted sites and routes, web-based point activities such as Geocaching¹⁰ are increasingly attracting people into the countryside where they might not otherwise have ventured.

¹⁰ Geocaching is an outdoor sporting activity where the participants use a Global Positioning System (GPS) receiver/mobile device and other navigational techniques to hide and then seek containers, called 'geocaches'.

Cambridgeshire Green infrastructure Strategy Appendix 12

Economic Development

Contents

- 1 Introduction
- 2 Baseline information and analysis
- 3 What this information tells us
- 4 Opportunities

1 Introduction

Promoting sustainable growth and economic development is one of the four objectives for the Cambridgeshire Green Infrastructure Strategy. To ensure that the Strategy identifies realistic opportunities whereby Green Infrastructure can contribute towards economic development, this appendix sets out relevant policies, strategies, guidance, and baseline datasets relating to economic development. The information presented here was used together with data for the seven themes and the other factors which influence Green Infrastructure to inform and develop the Strategic Network of Green Infrastructure.

2 Baseline information and analysis

Key documents

Several key documents were reviewed and analysed to determine the relationship between Green Infrastructure for economic development. These include:

Benefits of Green Infrastructure - Forest Research

This Forest Research report¹ comments that evidence suggests that Green Infrastructure provides social and environmental benefits, and these in turn can be 'valued' to give a monetary value of benefits provided; for example the value of increased physical activity. In addition to social and environmental benefits Green Infrastructure can have an impact on the local economy.

The value of good quality accessible Green Infrastructure to the local economy can be quantified through:

- Inward investment and job creation - in the UK there are many instances of economic growth and investment as a result of the provision of well-maintained and managed green space. The Forest Research report gives seven examples of this, including that public sector funding of £425,000 in Portland Basin Green Business Park secured over £1.8 million of private investment due to landscaping improvements.
- Land and property values - developing and improving green space in key locations within urban and semi-urban areas may have significant benefits by increasing nearby property and land values. Investment in green spaces can lead to higher returns for the property sector. Greener areas have a better image and attract more visitors, bringing them retail and leisure spending and providing job and rental opportunities. The Forest Research report provides five examples of this, including that people are willing to pay more per annum per household for a woodland view from houses on the urban fringe.
- Local economic regeneration - economic regeneration means increasing employment, encouraging business growth and investment and tackling economic disadvantages. Investment in green infrastructure involves the creation, improvement and development of green space and landscaping. This investment may encourage and attract high value industry, entrepreneurs and skilled workers to an area through the maintenance and creation of a high quality, landscape sensitive, environmentally friendly living and working environment adding 'Gross Value Added' (GVA) to local economies. Local economic regeneration is strongly related to benefits of green spaces such as economic growth

¹ Forest Research (2010) 'Benefits of green infrastructure' Report by Forest Research. Forest Research, Farnham. Defra Research Contract no. WC0807.

and investment, quality of place (including visual amenity), recreation and leisure and tourism. The Forest Research report gives two examples of this.

Using information such as that presented in the Forest Research report, it can be seen that investments in green space can improve a region's image; helping to attract and retain high value industries, new business start-ups, entrepreneurs and workers. This in turn will increase the scope for levering in private sector investment, reducing unemployment and increasing GVA.

The Forest Research report goes on to state that as the UK leaves the deepest recession since 1930s, economic growth as a result of investment in Green Infrastructure will help UK companies succeed in international markets and assists overseas companies to bring high quality investment to the UK. In addition, investment in Green Infrastructure helps to meet the requirements of the UK Sustainable Development Strategy 'Securing the future - the UK Government's sustainable development strategy', published by Defra in 2005.

Natural England - Green Infrastructure by design: adding value to development

The guide looks at the impact that Green Infrastructure can have on the economy. The main benefits are:

- Attractive places to live, work and visit are economically more successful places with the potential to increase property values.
- Attractive open spaces incorporating a range of ecological habitat areas provide a strong sense of place, making new developments commercially more attractive.
- Attractive and convenient pedestrian and cycling routes between existing and proposed settlements can support the local economy.
- The creation of opportunities for the local green economy and potentially with local landowners through long term supply agreements.
- The contribution of food production to the green economy whilst also making attractive and sustainable place to live.
- Reduced economic and insurance costs associated with improved water resource management.
- The creation of industries providing solar energy and green roof technologies requiring high value, high skilled local employment.

Cambridgeshire Local Economic Assessment 2010

The Cambridgeshire Local Economic Assessment highlights the most important economic issues facing the county and districts. The economic assessment offers a comprehensive view of the economy and is organised into four main chapters:

- Business (including levels of productivity and sectoral strengths);

- People (including skills levels and patterns of deprivation) and;
- Place (including employment land provision and the impact of climate change).
- Worklessness (nature and scale of unemployment and economic inactivity).

The economic assessment shows Cambridgeshire to have a diverse, relatively resilient economy with nationally significant strengths in research and development, higher education, software consultancy, high value engineering and manufacturing, creative industries, pharmaceuticals, agriculture, processing and tourism. Many of these sectors are recognised to have significant growth potential which bodes well for the future health of the economy.

The economic assessment shows that the economies of East Cambridgeshire and Fenland lack diversity and are very dependent on lower value manufacturing and processing industries.

Green Infrastructure, sports facilities and arts and culture provision all impact on quality of life. A good quality of life is important in attracting and retaining the best talent and businesses for the benefit of the local economy.

There are significant differences in the incomes, employment levels, skills, qualifications and productivity of different parts of the county which follow a broad 'north-south' divide. For example, levels of prosperity in South Cambridgeshire are considerably higher than Fenland which is the weakest district economically.

Rural Cambridgeshire: Ensuring a Vibrant Future. A Rural Strategy for Cambridgeshire 2010-2015

The Rural Strategy for Cambridgeshire highlights the importance of economic wellbeing for rural communities in Cambridgeshire. Of particular relevance to Green Infrastructure is the importance of maintaining and enhancing market towns as essential service hubs. Cambridgeshire's ambitions to achieve this include supporting tourism opportunities within and around market towns. The Green Infrastructure Strategic Network will present Green Infrastructure opportunities that could help to meet this ambition, where a Target Area covers a market town.

Economic Valuation of the River Great Ouse, Halcrow/Environment Agency 2010

This evaluation provided a quantitative and qualitative assessment of factors including water-based recreation, business activity, property premiums and other benefits associated with the River Great Ouse. Overall, the 139 miles of navigation generate an economic value of £39million per annum, or £0.25million per mile per annum. Informal uses such as walking, cycling, bird

watching and relaxing attract 750,000 visitors per annum, resulting in a further value of £4.1million per annum. The Great Ouse provides a base for nearly 250 businesses and 1200 jobs, primarily within Huntingdonshire. The study estimated that the natural flood defence provided by the wetlands associated with the Great Ouse can be valued at £45,500 per annum, but points out that it's difficult to put a price tag on this and other ecosystem services provided by the river system.

Fens Waterways Link Implementation Plan, Atkins/Environment Agency 2004

The Fens Waterways Link is a large-scale vision for waterways restoration and creation that will eventually link the cathedral cities of Ely, Peterborough and Lincoln with Cambridge, St. Ives, Huntingdon, and a host of other Cambridgeshire riverside communities. The Link is being delivered in 6 phases, the first of which was completed in March 2009 with the opening of Black Sluice Lock in Boston, Lincolnshire. This first phase reopened 35km of navigable waterway that had been closed for 50 years. The fifth and sixth phases of the Link will have particular relevance to Cambridgeshire, by respectively opening up a new canal connecting the River Welland near Crowland to the River Nene near Peterborough, and improving the connections from the River Nene to the River Great Ouse across the Middle Level Navigations.

The 2003 Implementation Plan included an analysis of economic benefits, predicting that the Link will attract:

200,000 additional day visitors each year, bringing £10 million per annum to the area

800,000 additional visitors participating in bird watching, jogging, photography, picnicking and general relaxation, bringing an additional £4 million per annum to the area

Income from boating holidays, new privately owned boats, trip boat and restaurant businesses totalling a further £4.65 million per year

Over 1700 full time jobs created to construct the Link, 80% taken from local communities

The navigable waterways in Cambridgeshire already generate significant economic benefit; the Link vision will significantly increase these benefits by:

- Creating enhanced opportunities for leisure, tourism and regeneration, attracting economic development and employment;
- Developing a unique image of the Fens waterways as a world-class tourist destination;
- Opening access to the rich heritage, culture and history of the Fens; and
- Benefiting the natural environment by linking major wetland sites, creating new habitats and supporting the future of fenland wildlife.

The Economic Value of Green Infrastructure'²

This report makes the case for Green Infrastructure as a "*critical component for economic growth and social goals, not just as a way as supporting wildlife and the environment*".

Bringing together research from ECOTEC Research and Consulting³ and AMION consulting⁴, the study highlights the role Green Infrastructure has in supporting the Northwest of England's Economic Strategy. The main economic benefits are summarised below:

- Economic Growth - Green Infrastructure can improve the region's image, attracting high quality industry and workers;
- Land and Property Values - Research shows that property values increase near green spaces. Higher property values themselves are also believed to improve an areas image;
- Labour Productivity - Greener, more attractive environments increase productivity and reduce sickness. A pleasant working environment can also encourage staff retention;
- Tourism - Green Infrastructure plays a major role in tourism, creating visitor attractions, preserving attractive landscapes and generating economic activity in the service sector;
- Products of the Land - Despite extensive urban areas, the Northwest of England is still predominantly rural. This offers economic opportunities in locally produced food and drink and energy crops;
- Health and wellbeing - Green Infrastructure can encourage exercise activities which improves health and wellbeing, reducing demand for public health spending and burden of sick pay for employers;
- Recreation and Leisure - Green Infrastructure offers recreation and leisure activities, therefore benefiting employment and visitor spending, while also contributing to a healthier lifestyle;
- Quality of Place - An improved sense of quality of place can attract new visitors and residents;
- Land and Biodiversity - Investment in Green Infrastructure can create and maintain employment in rural industries and land management. This links with the growing natural tourism industry;

² The Economic Value of Green Infrastructure 2009, Natural Economy Northwest

³ ECOTEC (2008). The economic benefits of Green Infrastructure: Developing key tests for evaluating the benefits of Green Infrastructure.

⁴ AMION (2008). The Economic Benefits of Green Infrastructure – an Assessment Framework for the NWDA.

- Flood Alleviation and Water Management - Green Infrastructure can help prevent or alleviate flooding, potentially cutting the costs of engineered flood defences; and
- Climate Change Mitigation and Adaptation - Studies suggest Green Infrastructure offers sustainable, low cost ways to adapt to some of the challenges of climate change, regulating temperatures and extreme weather events.

The study also develops a series of tests to measure the value of investment in Green Infrastructure, making it possible to evaluate and support proposals with clear evidence. These include:

- Contribution to GVA - through profits and incomes for companies trading in areas where there is Green Infrastructure investment;
- Ecosystem Services - DEFRA is constructing a framework to assess the value of clean air and water, sustenance and pollination of crops and alleviation of environmental impacts;
- Public Sector Tests - delivery against pre-determined indicators, such as the Regional Economic Strategy indicators and Public Service Agreement targets;
- Private Sector Tests - return of capital investment and costs saved, such as reduced absenteeism and lower expenditure on flood damage repairs;
- CITYGreen - US development system to value ecosystem services and assign values to the components of Green Infrastructure;
- Downstream Economic Effects - creating a more attractive region and thereby drawing in businesses and business users; and
- Risk Reduction - measuring the reduction of impacts of flooding and poor health and calculating the reduced costs.

Natural England, No Charge? Valuing the Natural Environment 2009⁵

This studies the relationship between a healthy environment and economic growth and demonstrates that natural services provide:

“...a highly cost effective solution to growing problems like flood and coastal defence, carbon emissions and the preservation of soil, water and air quality”.

The report looks at a range of natural ‘eco-system services’ that underpin sustainable growth and economic development. It is estimated that ‘eco-system services’ ‘generate billions of pounds of hidden value to the UK economy each year, far outweighing the costs to sustain them in a healthy functioning state’. Examples of investment include:

⁵ No charge? Valuing the Natural Environment, Natural England, 2009

- Peatland Management - research shows we are losing between 2.8 and 5.8 million tonnes of CO₂ per year from cultivation and drainage of lowland peat soils. This value of this loss is estimated to be between £74 million and £150 million, comparable to the annual carbon cost of all the UK's domestic aviation.
- Environmental Stewardship - research by DEFRA estimates that changes to farming practices can deliver savings of 3.46 million tonnes of CO₂ per year, potentially reducing England's total greenhouse gas emissions by 0.7 per cent annually. The value of these savings is estimated to be around £1.25 billion.
- Green Spaces - vegetation can beneficially modify the climate, especially in cities where heat absorbed by buildings, concrete and tarmac raises temperatures. People living near accessible green space are also more likely to meet recommended levels of physical activity. Increasing exercise levels by 1 percent could reduce morbidity and mortality rates, delivering £1.5 billion in health care savings.

CABE Space 'Making the Invisible Visible 2009'⁶

This research considers the value of urban green space in more detail. The study examined the way parks are valued for local authority accounts. Research discovered that most councils classify their parks as 'community assets', with little or no market value. This does not recognise their true worth and fails to justify future investment.

The report suggests 'asset planning management', valuing the individual assets contained within the park in order to determine its true value and assist in long-term management and maintenance. However, the asset value of a park does not necessarily reflect the wider values that the park has for local people. It is therefore also necessary to consider economic, social and environmental value.

In relation to socio-economic functions, a range of measurable values were identified. These included:

- Value to businesses
 - Increased property prices
 - Staff retention and productivity
 - Tourism and expenditure in local economy
- Value to local authority
 - Level of satisfaction in local area
 - Attraction of private investment

⁶ Making the Invisible Visible, CABE Space, 2009

- Ability to lever in funding
- Value to individuals/society
 - Improved physical and mental health
 - Contribution to visual amenity and local character
 - Free or low-cost community and education resource

In summary the recently conducted research, reviewed here, demonstrates a strong economic case for the delivery of Green Infrastructure. Economic benefits range from improvements to local business productivity to global reductions in CO₂ emissions. The research also provides mechanisms that policy makers can use to evaluate and justify the provision of Green Infrastructure.

Planning Policy Statement (PPS) 4: Planning for Sustainable Economic Growth

This applies to both urban and rural economic development. The government aims to reduce the gap in economic growth rates between regions, promote regeneration and tackle deprivation. For rural areas the government wants to 'raise the quality of life and the environment in rural areas by promoting thriving, inclusive and locally distinctive rural communities whilst continuing to protect the open countryside for the benefit of all'. It emphasises the importance of supporting rural tourism and acknowledges that tourism has the potential to 'benefit rural businesses, communities and visitors, [utilising] and [enriching] rather than [harming] the countryside, its towns, villages, buildings and other features'.

Socio-Economic factors

Statistical information and the Index of Multiple Deprivation (IMD)⁷ for Cambridgeshire highlight the disparities between the north and south of the county.

Index of Multiple Deprivation

The Index of Multiple Deprivation (IMD) is a detailed measure of deprivation and contains seven domains (individual indices) which relate to income deprivation, employment deprivation, health deprivation and disability, education skills and training deprivation; barriers to housing and services; living environment deprivation and crime.

The highest levels of deprivation are in the most rural areas of the county where there is less access to employment opportunities and social infrastructure. The opportunity exists to use Green Infrastructure as a catalyst for regeneration in areas of Huntingdonshire, East Cambridgeshire and Fenland. This could include place making, creating a setting for new high-tech

⁷ <http://www.imd.communities.gov.uk/>

industries; and tourism, perhaps through exploiting the extensive Fenland waterways for recreational and leisure activities.

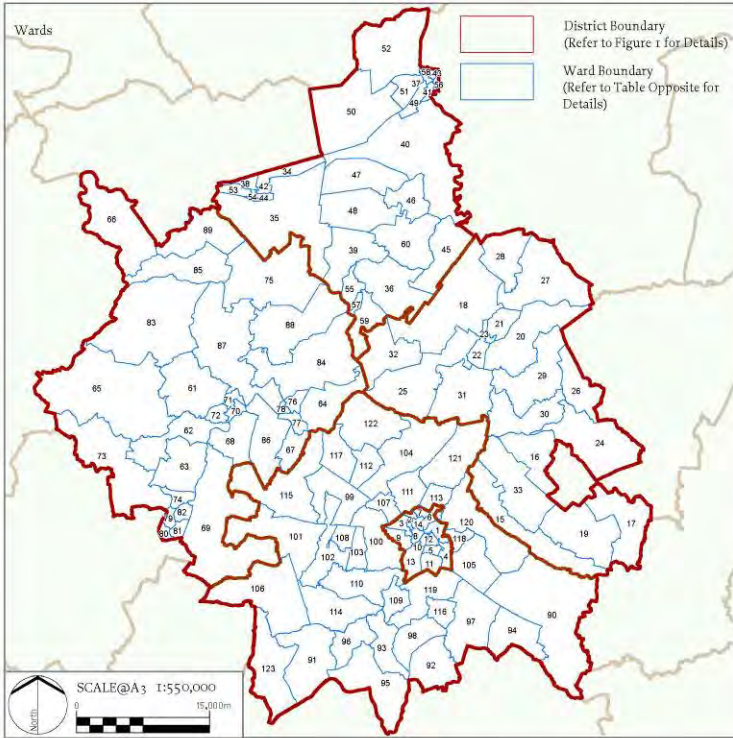
There is the need to respond to relatively high levels of health deprivation in the north of the county. One way in which this could be achieved is by the creation of accessible Green Infrastructure in and around settlements, which would seek to promote recreational activities and address deficiencies in open space. This aspect was identified as part of the development of the Green Infrastructure Strategy during 2009/2010.

There is also the need to respond to areas of relatively high levels of education deprivation. One way this could be achieved is by creating semi-natural green space or sites for food production, which offer opportunities for learning and development of skills.

In contrast, there are relatively few areas in the south of the county scoring below the national average for IMD. This is attributed to the strong economy and good connections to London and the South East. Accordingly, there are high levels of growth and the opportunity exists to use Green Infrastructure to help bring forward sites for housing development. As part of the development of the Green Infrastructure Strategy Review first draft (March 2010), LDA Design worked with the Project Group to identify that Green Infrastructure has already successfully been delivered in advance of new developments. In the city of Cambridge, where high levels of growth are planned, the Green Infrastructure Strategy considers improvement and diversification of existing Green Infrastructure provision.

IMD data, presented in Figure 12.1, can be used to identify areas where investment in Green Infrastructure can help mitigate against some of these issues.

Figure 12.1 Wards and Index of Multiple Deprivation and Index of Child Well-being 2009 data (Next page)



| WARD | DISTRICT | WARD | DISTRICT |
|-------------------------------------|---------------------|-----------------------------------|----------------------|
| 1 Abbey | Cambridge | 61 Akonbury and The Stakeys | Huntingdonshire |
| 2 Abury | Cambridge | 62 Banbury | Huntingdonshire |
| 3 Acland | Cambridge | 63 Buxton | Huntingdonshire |
| 4 Cherry Hill | Cambridge | 64 Eulish | Huntingdonshire |
| 5 Colledge | Cambridge | 65 Ellington | Huntingdonshire |
| 6 East Chesterton | Cambridge | 66 Elm and Fildesworth | Huntingdonshire |
| 7 King's Hedges | Cambridge | 67 Fenstanton | Huntingdonshire |
| 8 Market | Cambridge | 68 Goshamshester | Huntingdonshire |
| 9 Newnham | Cambridge | 69 Gosden and The Offords | Huntingdonshire |
| 10 Pavefield | Cambridge | 70 Huntingdon East | Huntingdonshire |
| 11 Queen Edith's | Cambridge | 71 Huntingdon North | Huntingdonshire |
| 12 Royston | Cambridge | 72 Huntingdon West | Huntingdonshire |
| 13 Tromington | Cambridge | 73 Kimbolton and Sloughton | Huntingdonshire |
| 14 West Chesterton | Cambridge | 74 Little Fenton | Huntingdonshire |
| 15 Bottisham | East Cambridgeshire | 75 Ramsey | Huntingdonshire |
| 16 Burwell | East Cambridgeshire | 76 St Ives East | Huntingdonshire |
| 17 Cliveley | East Cambridgeshire | 77 St Ives South | Huntingdonshire |
| 18 Downham Villages | East Cambridgeshire | 78 St Ives West | Huntingdonshire |
| 19 Dullingham Villages | East Cambridgeshire | 79 St Neots Eaton Ford | Huntingdonshire |
| 20 Ely East | East Cambridgeshire | 80 St Neots Eaton Socon | Huntingdonshire |
| 21 Ely North | East Cambridgeshire | 81 St Neots Eyresbury | Huntingdonshire |
| 22 Ely South | East Cambridgeshire | 82 St Neots Priory Park | Huntingdonshire |
| 23 Ely West | East Cambridgeshire | 83 Sweeney | Huntingdonshire |
| 24 Fordham Villages | East Cambridgeshire | 84 Soesemham | Huntingdonshire |
| 25 Hildenhams | East Cambridgeshire | 85 Stilton | Huntingdonshire |
| 26 Isham | East Cambridgeshire | 86 The Herdingfords | Huntingdonshire |
| 27 Littleport East | East Cambridgeshire | 87 Upwood and The Raveleys | Huntingdonshire |
| 28 Littleport West | East Cambridgeshire | 88 Walsley and Bury | Huntingdonshire |
| 29 Soham North | East Cambridgeshire | 89 Yaxley and Facet | Huntingdonshire |
| 30 Soham South | East Cambridgeshire | 90 Balham | South Cambridgeshire |
| 31 Stretton | East Cambridgeshire | 91 Buntingford | South Cambridgeshire |
| 32 Sutton | East Cambridgeshire | 92 Duxford | South Cambridgeshire |
| 33 The Swaffhams | East Cambridgeshire | 93 Fowlmead and Fenton | South Cambridgeshire |
| 34 Broomfield | Fenland | 94 Linton | South Cambridgeshire |
| 35 Berwick, Coates and Eastrea | Fenland | 95 Melbourn | South Cambridgeshire |
| 36 Birch | Fenland | 96 Mether | South Cambridgeshire |
| 37 Charkton | Fenland | 97 The Abington | South Cambridgeshire |
| 38 Dingle | Fenland | 98 Wainfleet | South Cambridgeshire |
| 39 Doddington | Fenland | 99 Bar Hill | South Cambridgeshire |
| 40 Elm and Chatterburh | Fenland | 100 Barton | South Cambridgeshire |
| 41 Hill | Fenland | 101 Bourn | South Cambridgeshire |
| 42 Kingsmoor | Fenland | 102 Caldecote | South Cambridgeshire |
| 43 Kirkgate | Fenland | 103 Combetton | South Cambridgeshire |
| 44 Lattsey | Fenland | 104 Contonham | South Cambridgeshire |
| 45 Mann | Fenland | 105 Fulbourn | South Cambridgeshire |
| 46 March East | Fenland | 106 Gemlingey | South Cambridgeshire |
| 47 March North | Fenland | 107 Gilton | South Cambridgeshire |
| 48 March West | Fenland | 108 Haverhill | South Cambridgeshire |
| 49 Meworth | Fenland | 109 Hasston and Hasston | South Cambridgeshire |
| 50 Parson Drove and Wisbech St Mary | Fenland | 110 Haslingfield and The Overdens | South Cambridgeshire |
| 51 Peckover | Fenland | 111 Hinton and Impington | South Cambridgeshire |
| 52 Roman Bank | Fenland | 112 Longstanton | South Cambridgeshire |
| 53 St Andrew's | Fenland | 113 Milton | South Cambridgeshire |
| 54 St Mary's | Fenland | 114 Orwell and Barrington | South Cambridgeshire |
| 55 Stuke Lodge | Fenland | 115 Papworth and Elsworth | South Cambridgeshire |
| 56 Stiths | Fenland | 116 Sawston | South Cambridgeshire |
| 57 The Mills | Fenland | 117 Sweeney | South Cambridgeshire |
| 58 Waterfen | Fenland | 118 Teversham | South Cambridgeshire |
| 59 Waresley | Fenland | 119 The Stowards and Stapleford | South Cambridgeshire |
| 60 Winkington | Fenland | 120 The Willbrahms | South Cambridgeshire |
| | | 121 Waterbeach | South Cambridgeshire |
| | | 122 Willingham and Oves | South Cambridgeshire |
| | | 123 The Woodnes | South Cambridgeshire |

LEGEND

Study Area Boundary

Index of Multiple Deprivation Quantile Legend

- 0.7 - 5.0
- 5.1 - 7.7
- 7.8 - 11.2
- 11.3 - 16.7
- 16.8 - 53.5

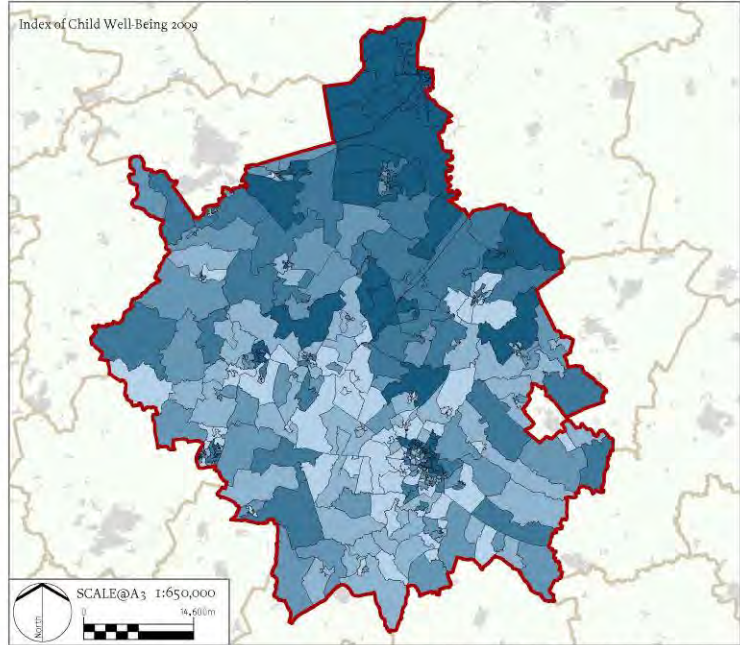
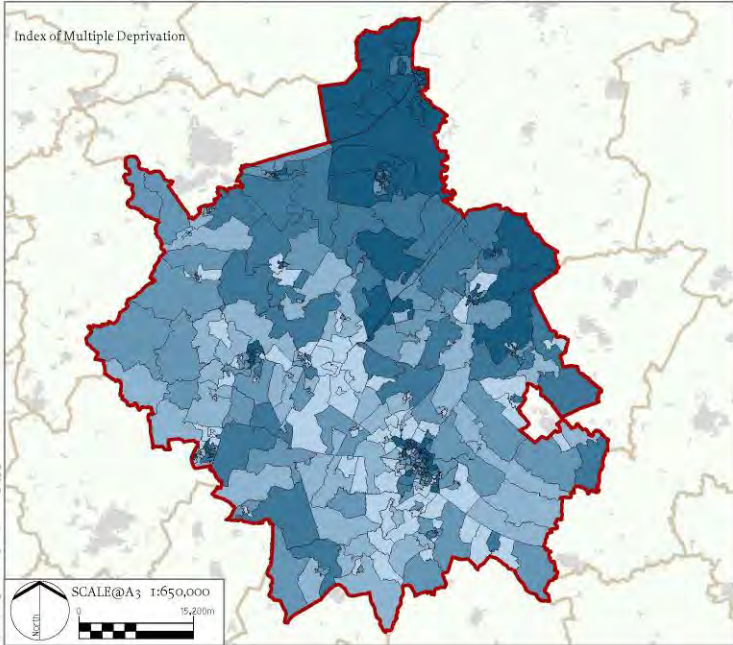
Note: The higher is the deprivation score, the more (relatively) deprived is the area;

Index of Child Wellbeing 2009 Quantile Legend

- 1 - 74.5 (highest level of well-being)
- 74.6 - 147.5
- 147.6 - 220.5
- 220.6 - 293.5
- 293.6 - 365 (lowest level of well-being)

Note: Data for Index of Multiple Deprivation and Index of Child Well-Being illustrated for Lower Super Output Areas (LSOAs) which are subdivisions of wards.

REV. DESCRIPTION APP. DATE



LDĀ DESIGN

PROJECT TITLE

Cambridgeshire Green Infrastructure Review and Second Edition

DRAWING TITLE

Wards and Index of Multiple Deprivation and Index of Child Well-Being 2009 data

ISSUED BY **Oxford** T 01865 887050

DWG.NO 2823_T04

DATE 17/05/2011 DRAWN DL

SCALE@A3 Various CHECKED PL

STATUS FINAL APPROVED IH

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Sources: Ordnance Survey, 2001 Census Area Data & Office of National Statistics.

3 What this information tells us

Green Infrastructure provides benefits to the quality of life in a place and attracts inward investment, business development and attracting well qualified and skilled staff to an area.

In Cambridgeshire, there is an expectation from mobile businesses that because the quality of the built environment is reasonably high, the natural/green environment should be similar. Poor Green Infrastructure can therefore be a factor which would count against Cambridgeshire as a potential relocation destination even if other factors made it attractive in cost terms.

Green Infrastructure, sports facilities and arts and culture provision, are all recognised as important in maintaining and enhancing the quality of life of an area and can influence development and business decisions. A good quality of life is important for attracting and retaining the best talent and businesses for the benefit of the local economy.

4 Opportunities

Tourism

Improved and new Green Infrastructure will make Cambridgeshire an even more attractive place for visitors. Tourism brings with it a high economic benefit to the region. If those visiting Cambridgeshire enjoy their time here, there is the potential for great reputational benefit which in turn will result in Cambridgeshire being an even more popular place to visit, work and live.

Green Infrastructure is important for tourism with the growth in green tourism and cycle, walking and adventure holidays. Creating attractive places can also encourage short breaks by the more active older/retired population.

Promotion of green spaces by tourist companies within and just outside of Cambridgeshire is key to capitalising on the opportunities created by tourism.

Farm diversification

Within the rural landscape generally, farm diversification can contribute to leisure and tourism opportunities. In the north of the county, where current provision is especially poor, farm diversification could be used to increase the number of visitor destinations and provide local employment opportunities.

New developments

The Green Infrastructure Strategy provides required evidence to reasonably request that developers include green space into new development proposals. This strategy shows that green spaces can realise many benefits, including an economic benefit.

Green Infrastructure management

It is important that Green Infrastructure is well maintained and managed to allow its potential for supporting economic development to be realised.

Funding Opportunities

Cambridgeshire ACRE co-manages the Fens Adventurers Rural Development Programme (FARDP) with the County Council. FARDP is a £4 million grass roots grants programme which aims to support the start-up or the enhancement of rural local enterprises which trade within specific rural parishes within the Cambridgeshire and West Norfolk Fens.

Cambridgeshire Green Infrastructure Strategy Appendix 13 Health and Well-being

Contents

- 1 Baseline information and datasets, including relevant policies
- 2 What this information tells us
- 3 Spatial analysis
- 4 Issues and Opportunities

Good health and well-being are benefits that can be realised when delivering Green Infrastructure in Cambridgeshire. This Appendix sets out relevant policies, strategies, guidance, baseline datasets and maps relating to Green Infrastructure and health and well-being. This information was used together with the seven Theme maps and the other factors which influence Green Infrastructure, e.g. planning and growth and economic development, to inform and develop the Strategic Network of Green Infrastructure.

1 Baseline information and datasets, including relevant policies

The importance of green infrastructure to the health and well being of the populace is well documented. The following key documents, campaigns and datasets have informed the development of this Green Infrastructure Strategy.

Future Health: sustainable places for health and well-being, Commission for Architecture and the Built Environment (CABE) 2009

This report examines how good design makes healthy places. It focuses on sustainable health promoting environments and health and well-being. It uses real examples and research to highlight the benefits and explains why and how planners can have a long term positive effects on health through supporting green infrastructure and sustainable transport networks.

Joint Strategic Needs Assessment (JSNA)

A JSNA is the means by which Primary Care Trusts (PCTs) and local authorities describe the future health, care and well-being needs of the local populations and to identify the strategic direction of service delivery to meet those needs. The reason for conducting a JSNA is to develop the whole health and social care response so that it more closely meets the wants and needs of local people.

The aims of a JSNA are to:

- Provide analyses of data to show the health and well-being status of local communities.
- Define where inequalities exist.
- Provide information on local community views and evidence of effectiveness of existing interventions which will help to shape future plans for services.
- Make specific recommendations based on the information and evidence collected.

In Cambridgeshire, separate JSNAs are carried out for different population groups and full reports are available on the web (www.cambridgeshire.nhs.uk). Key findings and recommendations of each of the separate JSNAs are then brought together into a summary document. The JSNA for Cambridgeshire: Phase 4 Summary¹ developed in 2010 includes a chapter on New Communities. This includes a section on “out and about: transport, green spaces and the built environment”. Key findings include:

¹ Joint Strategic Needs Assessment for Cambridgeshire: Phase 4 Summary 2010 NHS Cambridgeshire and Cambridgeshire County Council. <http://www.cambridgeshirejsna.org.uk/cambridgeshire-joint-strategic-needs-assessment-jsna/jsna-phase-4-summary>

- Living close to green space reduces mortality. Planning for green space could therefore help to reduce the inequalities of life expectancy experienced between socio-economic groups.
- Transport planning can enhance health by promoting active transport (such as cycling and walking), facilitating social interaction, and improving access to green spaces, fresh food and other amenities and services that promote health.
- People are more likely to walk, cycle and play in natural, attractive spaces. The overall “quality” of the green space - function, safety, accessibility, emotional and physical attractiveness with diverse and interesting natural sights is an important theme in the frequency and consistency of its use.
- Exposure to green spaces is good for health can improve mental wellbeing and may stimulate more social contact.
- Community gardening can serve as a mechanism for combating social isolation and promoting social cohesion by contributing to the development of social networks. Positive health benefits include improved access to food and increased physical activity. Factors which promote the use of community gardens include safety, proximity to users’ homes providing natural surveillance and secured tenure.

Numerous references to green spaces are made in the New Communities part of the full report. Relevant text from section 7 ‘Out and about: transport, green spaces and the built environment’ is extracted below and also included in the section on issues and opportunities:

A green space is usually used in the context of an area or plot in the built environment which is “open, undeveloped land with natural vegetation.”² These include parks, forests, playing fields, river corridors, play areas and cemeteries. Urban green spaces can range from linear parks, squares, and crescents to more intimate communal spaces such as allotment gardens or other communal spaces looked after by adjoining properties or community trusts.

There is increasing attention paid to the relationship between the amount and quality of green space in the living environment and peoples’ health and well-being. A number of national and international studies suggest that exposure to green spaces, which may be experienced via various means including viewing natural settings, participating in recreational activities and undertaking nature-based therapy programmes, can be both

² Centres for Disease Control and Prevention. Healthy places terminology. <http://www.cdc.gov/healthyplaces/terminology.htm> (accessed 17 September 2009).

psychologically and physically restorative leading to improved mental and physical health and well-being.

Green spaces improve physical health

The first large-scale study that assessed the relationship between green spaces and physical health was done in Tokyo, Japan³. A prospective cohort study analysed the five year survival rates of a large cohort of senior citizens aged 75+ and measured the association from a baseline assessment performed five years earlier in the form of a questionnaire in which nine items affecting the residential environment were asked. These included space near the residence for taking a stroll, a park, and tree lined streets near the residence, and existence of a garden near the residence. Even after controlling for the effects of the residents' age, sex, marital status, and socio-economic status, the factor of walkable green streets and spaces near the residence showed significant predictive value for the survival of the urban senior citizens over the five year period. The authors concluded that "walkable green spaces near the residence significantly and positively influenced five year survival".

These findings have been corroborated by other cohort studies. A large Dutch study looked at the health of over 10,000 people in the Netherlands and compared it both with the degree of urbanity and the amount of green space in the living environment.⁴ The global health indicators used in the study were the number of symptoms experienced in the last 14 days and perceived general health measured on a five point scale running from "very good" to "very bad". The analysis performed suggested that the amount of green space in the living environment has a strong relationship with self-reported health. Separate analyses were conducted for socioeconomic status and it was found that the lower socioeconomic status groups appeared to be more sensitive to the amount of green in the living environment. The study also found that for housewives and the elderly, the relationship between the amount of green space and the number of symptoms is stronger than for the population in general. Extrapolation from this analysis assuming a causal relationship between green space and health, suggest that 10% more green space in the living environment leads to a decrease in the number of symptoms that is comparable with a decrease in age by five years.

An Australian review examined the empirical, theoretical and anecdotal evidence exploring the link between health and nature and concluded that

3 Takano T et al. Urban residential environments and senior citizens' longevity in megacity areas: the importance of walkable green spaces. *J Epidemiol Community Health*. 2002;56:913-918.

4 De Vries et al. Natural environments – healthy environments? An exploratory analysis of the relationship between greenspace and health. *Environment and Planning*. 2003;35:1717-1731.

“contact with nature positively impacts blood pressure, cholesterol, outlook on life and stress reduction”.⁵

Green spaces and mental health

The evidence to suggest a direct beneficial effect on mental health by exposure to the natural environment is compelling. This effect is thought to arise from what is known as the attention-restoration theory.⁶ This argues that natural environments lead to an individual’s attention and fascination (effortless attention) being drawn to more natural environments which in turn have a restorative effect from stress. In a study which compared stress recovery against different kinds of environmental exposure, natural settings were perceived by the participants as having the highest overall restorative effectiveness.

Studies on hospital inpatients which compared those with a window view of a brick wall against those with a view overlooking a park and trees reported that patients with a view of a green space reported shorter post-operative hospital stays, received fewer negative evaluative comments in nursing notes and received fewer analgesics.⁷ Similar studies carried out in a prison environment in the mid-western USA demonstrated the association between viewing nature and positive well-being outcomes. These inmates had a lower frequency of stress-related symptoms including illness of the digestive tracts and headaches.⁸

A survey of garden users in a children’s hospital founded that users felt more relaxed and less stressed after visiting the garden, refreshed and rejuvenated and more able to cope and more positive.⁹ Nearly half of the visitors observed spent fewer than five minutes in the garden which suggests that even short visits were beneficial.

Does the presence of green space increase physical activity?

It has long been known that being physically active has positive health effects. People are inclined to undertake physical activity in aesthetically appealing environments. Natural environments are perceived to be more aesthetically appealing than built-up environments. Therefore, it has been suggested that natural environments may stimulate people to undertake healthy physical activities such as walking or cycling, and to spend more time on them.

5 Maller C et al. Healthy nature healthy people: ‘contact with nature’ as an upstream health promotion interventions for populations. *Health Promotion International*. 2006; 21(1):45-54.

6 Herzog et al. Reflection and attentional recovery as distinctive benefits of restorative environments. *Journal of Environmental Psychology*. 1997; 17(2):165-170.

7 Ulrich R. View through a window may influence recovery from surgery. *Science*. 1984; 224:420-421.

8 Moore E. A prison environment’s effect on health care service demands. *Journal of Environmental systems*. 1981; 11:17-34.

9 Sustainable Development Commission. Health, place and nature. How outdoor environments influence health and wellbeing: a knowledge base. 2008. Whitehall place, London

There is however no clear relationship between the amount and availability of green spaces and physical activity. Studies conducted in the Netherlands and more recently in East Anglia, did not find a relationship between the amount of green space in the living environment and whether or not people were physically active.^{10,11}

Positive associations have however been shown to be influenced by the specific type of green space and physically active behaviour. Some of these factors include distance to footpath networks, network distance to newsagents and other local amenities, and perceptions of footpath condition, which were all significantly associated with the likelihood of participation in recreational walking.¹² Attractiveness of the streetscape was one of the most important features related to increased levels of walking and cycling.¹³ An attractive streetscape included trees, wide grassy verges, parks, private gardens, diverse and interesting natural sights. This would correlate with NICE guidance which suggests that people are more likely to walk or cycle if there is an attractive streetscape with well-maintained and unobstructed pavements.¹⁴

Is there a synergistic effect of green exercise?

Both physical activity and exposure to nature are known separately to have positive effects on physical and mental health. Research has gone on to examine whether there is a synergistic benefit in adopting physical activities while being exposed to nature.

The national association for mental health, Mind, commissioned a study that compared groups taking part in two walks in contrasting environments - one in a county park which had a varied landscape of woodlands, grasslands and lakes, and the other took place in a large indoor shopping centre.¹⁵ Participants were asked to complete identical questionnaires immediately before and after each walk. Those on the natural walk reported significant improvement in self-esteem, depression, anger, tension, confusion, fatigue, and vigour compared to the participants in the shopping centre walk. Overall the green walk improved mood by an average of 13% whereas measures for the indoor walk showed that on average mood was unaffected.

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- 10 Hillsdon et al. The relationship between access and quality of urban green space with population physical activity. *Public Health*. 2006; 120:1127-1132.
 - 11 Mass J et al. Physical activity as a possible mechanism behind the relationship between green space and health: A multilevel analysis. *BMC Public Health*. 2008; 8:206.
 - 12 Giles-Corti B et al. Increasing walking: how important is distance to, attractiveness and size of public open space. *American Journal of Preventative Medicine*. 2005; 28:169-176.
 - 13 Pikora T et al. Developing a framework for assessment of the environmental determinants of walking and cycling. *Social Science and Medicine*. 2003; 56:1693-1703.
 - 14 National Institute for Health and Clinical Excellence. *Physical Activity and the Environment*. PH-8. January 2008.
 - 15 Mind. *Ecotherapy – the green agenda for mental health*. 2007.

Other studies report that participants who run through urban parks report more psychological benefit than street joggers.¹⁶ Participants who were exposed to different images whilst on a treadmill report that natural scenes significantly increased self-esteem in addition to that gained simply by taking the exercise and had the greatest effect on lowering blood pressure. These, and similar findings have led Mind to conclude that green exercise was more enjoyable, more therapeutic, and had a positive effect on mental health and well-being.

Green spaces and neighbourhood social ties

The history of public spaces as areas for relaxation, providing places to rest and meet people have been well-documented.¹⁷ The evidence available indicates that natural features within urban environments can encourage greater use, facilitate higher levels of social contact and social integration.

Studies in inner-city USA investigating the accessibility and use of public spaces report that the presence of trees and grass is related to the use of the space, the amount of social activity that takes place within them and the proportion of social to non-social activities they support.¹⁸ Results consistently indicate that natural landscaping encourages greater use of outdoor areas by residents. Spaces with trees attracted larger groups of people, as well as more mixed groups of youths and adults, than did spaces devoid of nature.

Community gardening

Community gardens are increasingly part of the urban fabric. A community garden is a single piece of land gardened collectively by a group of people. Anecdotal evidence from community members and local organisations suggest that these have a number of positive health benefits including improved access to food, increased physical activity, improved sense of security in local communities and increased social capital.¹⁹

One study collected data on the perceived health impacts of community gardening in Toronto, Canada through participant observation, focus groups and interviews. The community gardens studied varied greatly in size from a large field to a narrow space between a building and the road, and in organisation from allotment gardens to community worked gardens. Community gardens that were situated near the homes of the gardeners involved were used regularly and consistently, whereas gardens in areas not immediately adjacent to the housing of participants were not

16 Pretty et al. A countryside for Health and Wellbeing: the physical and mental health benefits of green exercise. 2005.

17 Sullivan WC et al. The fruit of urban nature: vital neighbourhood space. *Environment and Behaviour*. 2004; 36(5):678-700.

18 Coley R et al. Where does community grow? The social context created by nature in urban public housing. *Environment and Behaviour*. 1997; 29(4):468-494

19 Wakefield S et al. Growing urban health: community gardening in south-east Toronto. *Health Promotion International*. 2007; 22(2):92-101.

frequented as regularly. The gardens were most active in the evenings. Important themes that arose from the interviews include better access to fresh food, greater physical activity, and improved mental health. The participants also expressed their belief that community gardens benefit the community as a whole, by improving relationships among people, increasing community pride, and serving as an impetus for broader community improvement and mobilisation. Some concerns identified include insecure tenure and concerns about personal safety.

Lessons from Cambourne

Cambourne is a relatively new settlement 10 miles west of Cambridge comprising three villages (Lower, Great and Upper Cambourne) that is divided by two shallow green valleys radiating out from the settlement centre. Its projected size is 4,250 households with a density of 32 dwellings per hectare. The Master Plan and Design Guide envisions a sustainable, self-sufficient settlement in the country with urban amenities with a specific aim which takes into account the natural environment and the creation of attractive public spaces.²⁰ An evaluation of the implementation of this master plan was undertaken by reviewing existing reports and surveys and conducting a new survey of 55 stakeholders including local residents and developers.²¹

The evaluation suggests that while not all the objectives of the master plan have been met, Cambourne is considered by residents and developers alike to have delivered on its goal of creating attractive, user-friendly and well-integrated green spaces throughout the settlement. It is now home to more wildlife than the farmland it was built upon. There is an 80 acre country park with lakes and a 20 acre eco park. The woodland is natural and greenways between the houses create a sense of space. There are two allotments with an active society attracting families interested in growing their own food. The landscape designers used the original woodlands to create pleasant walks which act as short cuts from housing to the centre of the village. The green space is managed by the Wildlife Trust. This is considered to be one of the main factors for its success. Residents report frequent use and appreciation of the green spaces both in terms of the physical attractiveness and character it provides to the community and its function as areas for rest and relaxation and physical activity.

One major issue identified in the report has been the lack of connectivity to surrounding villages and countryside. There are three footpath links to the south; however one is blocked two metres from the Cambourne boundary. It is also more difficult to reach footpaths to villages in the

²⁰ Randall Thorp Chartered Landscape Architects. Cambourne New Settlement. <http://www.randallthorp.co.uk/Cambourne-New-Settlement-Landscape-Arch.html> (accessed 17 September 2009).

²¹ Platt S. Lessons from Cambourne. Cambridge Architecture Research. 2007. <http://www.carl.co.uk/downloads/Cambourne.pdf>

north since walking around the traffic interchange into Cambourne is inhospitable and uninviting. Residents also report problems regarding pedestrian connections within Cambourne due to the availability of detailed maps (as the layout is constantly changing) and the lack of street plans showing road names and footpaths on local display boards.

The report is generally favourable to the developers' actions with regards to the incorporation of green spaces in the new settlement although it recommends that any new settlement should have good pedestrian and cycle links to all local footpaths and bridleways and these rights of ways needs to be established well in advance of construction.

What is this telling us?

Transport planning can enhance health by promoting active transport, facilitating social interaction, and improving access to green spaces, fresh food and other amenities and services that promote health. Good transport planning can also reduce the risk of injury to road users and pedestrians and minimise air pollution.

Aspects of the built environment such as energy efficiency, ventilation and safety features of houses have a direct impact on health. High quality building can be health promoting.

People are more likely to walk and cycle in natural, attractive spaces. The overall "quality" of the green space - function, safety, accessibility, and physical attractiveness - is an important theme in the frequency and consistency of its use. Exposure to green spaces is good for health in and of itself, can improve mental wellbeing and in some cases may stimulate more social contact.

Access and size of green space alone is not enough to influence physical activity. Specific factors which contribute to increasing physical activity include an attractive streetscape which includes trees, parks, gardens and diverse and interesting natural sights.

Community gardening can serve as a mechanism for combating social isolation and promoting social cohesion by contributing to the development of social networks. It also brings about positive health benefits which include improved access to food and increased physical activity. Factors which promote the use of community gardens include safety, proximity to users' homes and secured tenure.

Green spaces have a valuable role to play in improving social interaction and reducing isolation.

Healthy Lives, Healthy People: Our strategy for public health in England (White Paper) November 2010

Healthy Lives, Healthy People: Transparency in Outcomes: Proposals for a Public Health Outcomes Framework (Department of Health Consultation Document) December 2010

In November 2010, the Government published the White Paper 'Healthy Lives, Healthy People' setting out its long-term vision for the future of public health in England. The aim is to create a 'wellness' service (Public Health England) and to strengthen both national and local leadership.

The paper outlines the factors that influence public health over the course of a lifetime, including access to and use of green spaces, in an effort to ensure that they are better understood and acted upon in an integrated, joint manner. It argues that integrating public health into local government will allow that to happen as services will be planned and delivered in the context of the broader social determinants of health, such as poverty, crime and pollution. The NHS, social care, the voluntary sector and communities will be expected to work together to achieve better public health.

On the issue of Green Infrastructure, the White Paper stresses the importance of protecting green spaces, promoting community ownership of green spaces and improving access to land so that people can grow their own food (e.g. community gardens and orchards).

The related DoH consultation document proposes a new Outcomes Framework for public health at national and local levels. The framework will be evidence-driven, taking into account the different needs of different communities. It will set out how the DoH will measure success in public health both nationally and locally.

The Outcomes Framework is organised in five domains: health protection and resilience, tackling the wider determinants of ill health, promoting healthy choices and healthy lifestyles, preventing ill health, and focusing on premature mortality and the health of the most vulnerable.

In Domain 2 'Tackling the wider determinants of ill health: tackling factors which affect health and wellbeing' it sets out a series of indicators that affect health outcomes and that will require the combined efforts of all public services to address and improve. 'Access and utilisation of green space' is one of these proposed indicators.

Fair Society, Healthy Lives: A Strategic Review of Health Inequalities in England Post-2010

'Fair Society, Healthy Lives' was published by The Marmot Review Team, chaired by Professor Sir Michael Marmot at the request of the Secretary of State for Health. It was the culmination of a year-long independent review into health inequalities in England and included a specific section on air quality and green spaces:

Air quality, green spaces and health inequalities

There is clear evidence of the adverse effects of outdoor air pollution, especially for cardio-respiratory mortality and morbidity. It is estimated that each year in the UK, short-term air pollution is associated with 12,000 to 24,000 premature deaths. Poorer communities tend to experience higher concentrations of pollution and have a higher prevalence of cardio-respiratory and other diseases. Sixty-six per cent of carcinogenic chemicals emitted into the air are released in the 10 per cent most deprived wards.

Creating a physical environment in which people can live healthier lives with a greater sense of well-being is a hugely significant factor in reducing health inequalities. Living close to areas of green space - parks, woodland and other open spaces can improve health, regardless of social class. Numerous studies point to the direct benefits of green space to both physical and mental health and well-being.

Green spaces have been associated with a decrease in health complaints blood pressure and cholesterol, improved mental health and reduced stress levels, perceived better general health, and the ability to face problems. The presence of green space also has indirect benefits: it encourages social contact and integration, provides space for physical activity and play, improves air quality and reduces urban heat island effects.

Strategy to tackle health inequalities in Cambridgeshire 2009-11

The Cambridgeshire Health and Wellbeing Officer Group (HWBG), who developed this Strategy, sit within Cambridgeshire Together structures as a supporting group for the Community Wellbeing Thematic Partnership. The HWBG links closely with district level Health Partnerships, which report into the relevant Local Strategic Partnerships.

The Cambridgeshire Health Inequality Strategy provides direction for addressing health inequalities across the county stating that:

In Cambridgeshire overall health and life expectancy are well above the national average but within this picture there are marked geographical and socio-environmental health inequalities in the county. These are closely linked with wider Index of Multiple Deprivation scores. Geographically the inequalities are present in both urban and rural areas,

and are more concentrated in Fenland, the north and east of Cambridge city, North Huntingdon and the north of East Cambridgeshire, where lower levels of skills, income and greater health inequalities than the rest of the rural or urban economy are experienced. (Cambridgeshire's Vision 2007-2021). However specific vulnerable population groups such as Travellers, older people, people with disabilities, people who are on low incomes or unemployed and homeless people are found across the county.

Of the 4 strategic aims, the most relevant to the Green Infrastructure strategy are:

- Decreasing the inequalities of access that impact on health and wellbeing
- Preventing the creation of new health inequalities associated with new growth

Natural England's Health Campaign

Health is one of the four main themes on which Natural England is currently campaigning and the work of WfH (Walking for Health²²) is an integral part of this campaign. Growing medical evidence shows that access to the natural environment improves health and wellbeing, prevents disease and helps people recover from illness. It also can help tackle childhood obesity, coronary heart disease, stress and mental illness.

Index of Multiple Deprivation 2007

The Index of Multiple Deprivation²³ (IMD) is a detailed measure of deprivation in England that provides a relative ranking of areas across England according to their level of deprivation. It contains seven domains (indicators) which relate to income deprivation, employment deprivation, health deprivation and disability, education skills and training deprivation; barriers to housing and services; living environment; deprivation and crime. These are weighted and combined to create the overall IMD 2007.

The Index of Multiple Deprivation 2007 is based on the small area geography known as Lower Super Output Areas (LSOAs). LSOAs have between 1000 and 3000 people living in them with an average population of 1500 people. In most cases, these are smaller than wards, thus allowing the identification of small pockets of deprivation and allowing direct comparison between geographical areas. There are 32,482 LSOAs in England. The LSOA ranked 1 by the IMD 2007 is the most deprived and that ranked 32,482 is the least deprived. As such, there is a strong correlation between high IMD scores and poor health and health inequalities.

There are 365 LSOAs in Cambridgeshire. Three LSOAs in Cambridgeshire are within the most deprived quintile (20%) of the 32,482 LSOAs in England. All three are located in Wisbech, north Fenland. A further ten are within the most

²² <http://www.wfh.naturalengland.org.uk/>

²³ <http://www.imd.communities.gov.uk/>

deprived quartile (25%); six in Fenland, three in the city of Cambridge and one in Huntingdonshire. At the other end of the scale, 156 of Cambridgeshire's 365 LSOAs (43%) lie within England's least deprived quintile. Only one of these LSOAs is in Fenland.

Overall South Cambridgeshire is the least deprived district in Cambridgeshire; all but one LSOA lie within the least deprived 50% of LSOAs nationally. However, the city of Cambridge is the second most deprived district notably as a result of concentrations of deprivation in the north and east of the city.

All the domains of the deprivation index are relevant to health as they are factors that have an impact on health care or are 'determinants of health'. The Health Deprivation and Disability Domain identifies areas with relatively high rates of people who die prematurely or whose quality of life is impaired by poor health and/or disability across the whole population.

Health deprivation is mostly concentrated in Fenland, where almost 20% of the population is above 65 years of age. Three wards within Wisbech are in the most deprived national quintile. There are also concentrations of health deprivation in the city of Cambridge located to the north and east of the city, and in market towns such as Ely, Huntingdon and St Neots. By comparison, 184 of Cambridgeshire's 365 LSOAs (i.e. 50%) are in the least deprived national quintile and these are generally in the south and west of the county.

Further information can found in documents produced by the Cambridgeshire County Council Research Group:

- Deprivation in Cambridgeshire - Index of Multiple Deprivation 2007
- Deprivation in Cambridgeshire - Individual Indices of Deprivation 2007
- Child Well-Being Index 2009

2 What this information tells us?

Access to green spaces and opportunities for outdoor physical exercise are shown to improve health, and physical and mental well being. In addition to providing access to destinations and reducing reliance on car journeys, the rights of way network and other access land represents a central asset in encouraging both organised and informal public exercise programmes. The availability of circular routes is particularly important at an everyday level for promoting regular exercise and healthier lifestyles.

Yet, the health and wellbeing of Cambridgeshire's residents varies greatly, with clearly defined geographic concentrations of poor health and inequality. Whilst Cambridgeshire has a wealth of green spaces, many areas of the county have limited access to green infrastructure and poor 'green' connectivity to the countryside and between towns and villages.

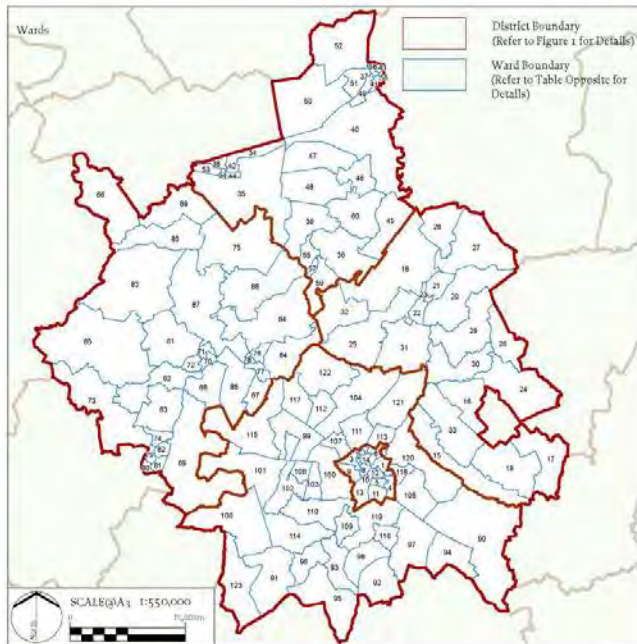
Improving and expanding the county's Green Infrastructure resources can help to address these health inequalities.

3 Spatial analysis

The key spatial dataset used was the Index of Multiple Deprivation 2007 (see above). The IMD contains health indicators that highlight geographic areas of health deprivation in Cambridgeshire. There is a strong correlation between high IMD scores and high levels of inequality and poor health. The following maps were all taken into consideration in the spatial analysis for health.

Figure 13.1 shows areas of relative deprivation in child health and wellbeing across Cambridgeshire.

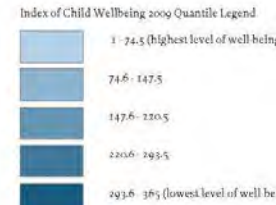
Figure 13.1 Wards and Index of Multiple Deprivation and index of child wellbeing 2009 (Next page)



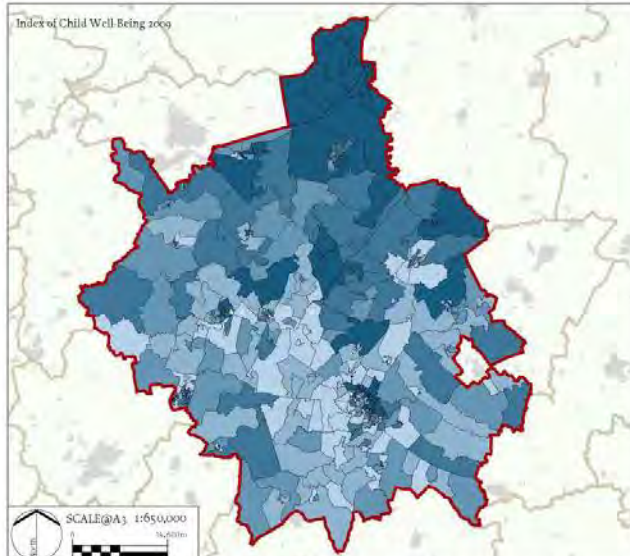
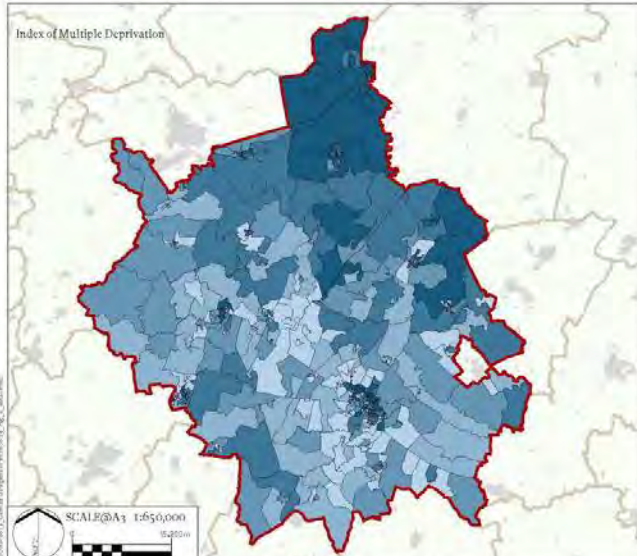
| Ward No. | Ward Name | Super Output Area | Ward No. | Ward Name | Super Output Area |
|----------|-----------------|-------------------|----------|---------------------|-------------------|
| 1 | Abbey | Cambridge | 41 | Abbey and The Backs | Cambridge |
| 2 | Adnams | Cambridge | 42 | Barnes | Cambridge |
| 3 | Cambridge | Cambridge | 43 | Barro | Cambridge |
| 4 | Cambridge North | Cambridge | 44 | Barro | Cambridge |
| 5 | Cambridge | Cambridge | 45 | Barro | Cambridge |
| 6 | Cambridge | Cambridge | 46 | Barro | Cambridge |
| 7 | Cambridge | Cambridge | 47 | Barro | Cambridge |
| 8 | Cambridge | Cambridge | 48 | Barro | Cambridge |
| 9 | Cambridge | Cambridge | 49 | Barro | Cambridge |
| 10 | Cambridge | Cambridge | 50 | Barro | Cambridge |
| 11 | Cambridge | Cambridge | 51 | Barro | Cambridge |
| 12 | Cambridge | Cambridge | 52 | Barro | Cambridge |
| 13 | Cambridge | Cambridge | 53 | Barro | Cambridge |
| 14 | Cambridge | Cambridge | 54 | Barro | Cambridge |
| 15 | Cambridge | Cambridge | 55 | Barro | Cambridge |
| 16 | Cambridge | Cambridge | 56 | Barro | Cambridge |
| 17 | Cambridge | Cambridge | 57 | Barro | Cambridge |
| 18 | Cambridge | Cambridge | 58 | Barro | Cambridge |
| 19 | Cambridge | Cambridge | 59 | Barro | Cambridge |
| 20 | Cambridge | Cambridge | 60 | Barro | Cambridge |
| 21 | Cambridge | Cambridge | 61 | Barro | Cambridge |
| 22 | Cambridge | Cambridge | 62 | Barro | Cambridge |
| 23 | Cambridge | Cambridge | 63 | Barro | Cambridge |
| 24 | Cambridge | Cambridge | 64 | Barro | Cambridge |
| 25 | Cambridge | Cambridge | 65 | Barro | Cambridge |
| 26 | Cambridge | Cambridge | 66 | Barro | Cambridge |
| 27 | Cambridge | Cambridge | 67 | Barro | Cambridge |
| 28 | Cambridge | Cambridge | 68 | Barro | Cambridge |
| 29 | Cambridge | Cambridge | 69 | Barro | Cambridge |
| 30 | Cambridge | Cambridge | 70 | Barro | Cambridge |
| 31 | Cambridge | Cambridge | 71 | Barro | Cambridge |
| 32 | Cambridge | Cambridge | 72 | Barro | Cambridge |
| 33 | Cambridge | Cambridge | 73 | Barro | Cambridge |
| 34 | Cambridge | Cambridge | 74 | Barro | Cambridge |
| 35 | Cambridge | Cambridge | 75 | Barro | Cambridge |
| 36 | Cambridge | Cambridge | 76 | Barro | Cambridge |
| 37 | Cambridge | Cambridge | 77 | Barro | Cambridge |
| 38 | Cambridge | Cambridge | 78 | Barro | Cambridge |
| 39 | Cambridge | Cambridge | 79 | Barro | Cambridge |
| 40 | Cambridge | Cambridge | 80 | Barro | Cambridge |
| 41 | Cambridge | Cambridge | 81 | Barro | Cambridge |
| 42 | Cambridge | Cambridge | 82 | Barro | Cambridge |
| 43 | Cambridge | Cambridge | 83 | Barro | Cambridge |
| 44 | Cambridge | Cambridge | 84 | Barro | Cambridge |
| 45 | Cambridge | Cambridge | 85 | Barro | Cambridge |
| 46 | Cambridge | Cambridge | 86 | Barro | Cambridge |
| 47 | Cambridge | Cambridge | 87 | Barro | Cambridge |
| 48 | Cambridge | Cambridge | 88 | Barro | Cambridge |
| 49 | Cambridge | Cambridge | 89 | Barro | Cambridge |
| 50 | Cambridge | Cambridge | 90 | Barro | Cambridge |
| 51 | Cambridge | Cambridge | 91 | Barro | Cambridge |
| 52 | Cambridge | Cambridge | 92 | Barro | Cambridge |
| 53 | Cambridge | Cambridge | 93 | Barro | Cambridge |
| 54 | Cambridge | Cambridge | 94 | Barro | Cambridge |
| 55 | Cambridge | Cambridge | 95 | Barro | Cambridge |
| 56 | Cambridge | Cambridge | 96 | Barro | Cambridge |
| 57 | Cambridge | Cambridge | 97 | Barro | Cambridge |
| 58 | Cambridge | Cambridge | 98 | Barro | Cambridge |
| 59 | Cambridge | Cambridge | 99 | Barro | Cambridge |
| 60 | Cambridge | Cambridge | 100 | Barro | Cambridge |



Note: The higher is the deprivation score, the more (relatively) deprived is the area;



Note: Data for Index of Multiple Deprivation and Index of Child Well-Being illustrated for Lower Super Output Areas (LSOAs) which are subdivisions of wards.



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Wards and Index of Multiple Deprivation and Index of Child Well-Being 2009 data

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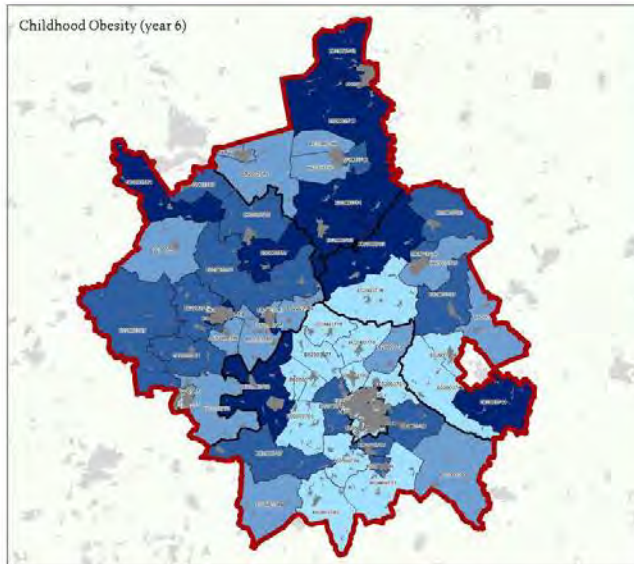
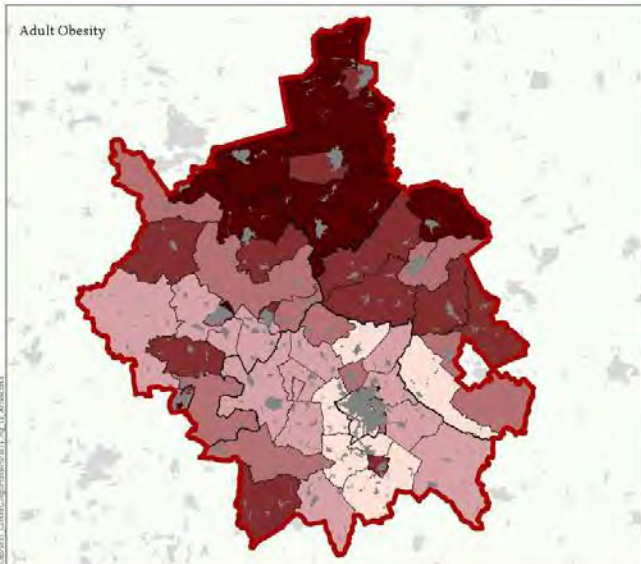
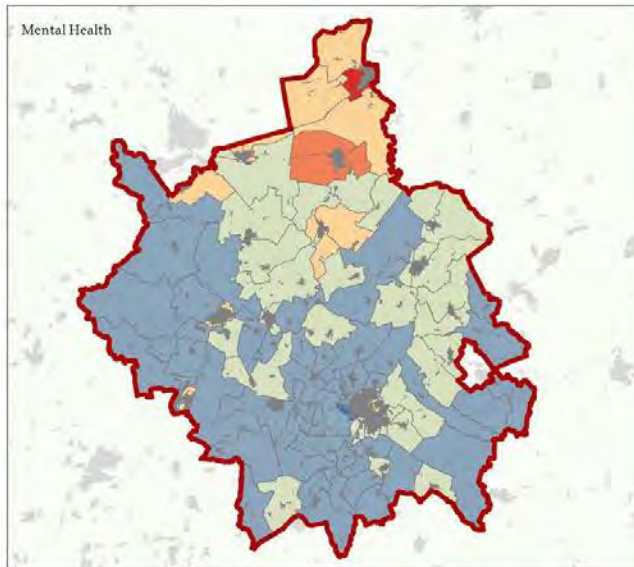
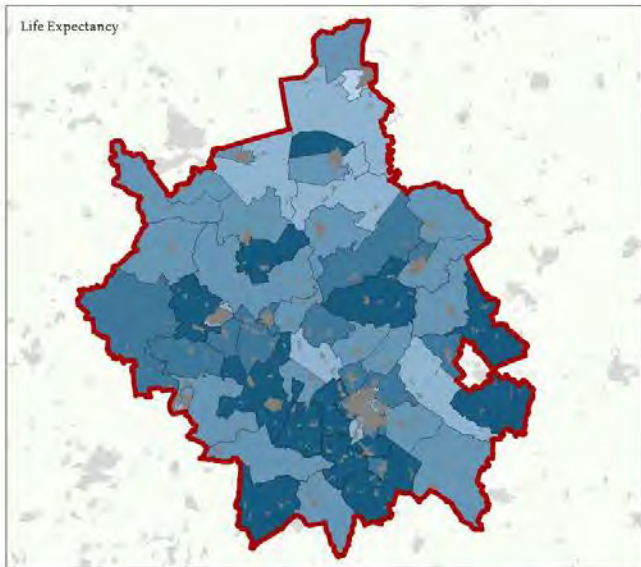
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Source: Ordnance Survey, 2001 Census Area Data & Office of National Statistics

Although there is a strong correlation between high IMD scores and health inequalities, baseline datasets of life expectancy, mental health, adult obesity and childhood (year 6) obesity were also mapped (shown in Figure 13.2). Areas with lower life expectancy, greater mental health issues and higher levels of adult and childhood obesity have a strong correlation with areas of high IMD scores. However, there are some areas of the county with higher levels of adult and childhood obesity that do not strongly relate to areas with high IMD scores. Although Green Infrastructure can have specific health benefits in areas with health inequalities, it can have benefits for health and wellbeing across all areas and populations in Cambridgeshire and highlights the importance of an infrastructure that provides access to all.

Figure 13.2 Health and Wellbeing in Cambridgeshire (life expectancy, mental health, adult obesity and childhood obesity) (Next page)



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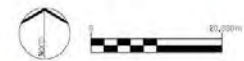
Study Area Boundary
 Study Area Boundary

Life expectancy
 76-78
 78-80
 80-82
 82-84
 Over 84

Mental Health MINI 2000 Scores
 0-0.25
 0.25-0.5
 0.5-0.75
 0.75-1.0
 1.0-1.25
 1.25-1.5

MSOA Obesity %
 0 to <12 (21)
 12 to <15 (18)
 15 to <19 (17)
 19 to <32 (19)

Synthetic estimate of adult obesity %
 27.6 to 32.6 (14)
 23.6 to 27.6 (16)
 21.5 to 23.6 (15)
 20.4 to 21.5 (15)
 11.5 to 20.4 (15)



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 Health and Wellbeing in Cambridgeshire (Life Expectancy, Mental Health, Adult Obesity and Childhood Obesity)

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Sources: Ordnance Survey & NHS Cambridgeshire

4 Issues and Opportunities

Green Infrastructure offers many opportunities to improve health and wellbeing in Cambridgeshire. The 'Joint Strategic Needs Assessment: New Communities 2010'²⁴ summarises the key opportunities.

- Exposure to green spaces is good for health, can improve mental wellbeing and it may stimulate more social contact.
- Living close to green space reduces mortality. Planning for green space could therefore help to reduce the inequalities of life expectancy experienced between socio-economic groups.
- Transport planning can enhance health by promoting active transport (such as cycling and walking), facilitating social interaction, improving access to green spaces, fresh food and other amenities as well as services that promote health.
- Good transport planning can reduce the risk of injury to road users and pedestrians and minimise air pollution.
- People are more likely to walk, cycle and play in natural, attractive spaces. The overall 'quality' of the green space - its function, safety, and accessibility, emotional and physical attractiveness with diverse and interesting natural sights is an important theme in the frequency and consistency of its use.
- Community gardening can serve as a mechanism for combating social isolation and promoting social cohesion by contributing to the development of social networks. Positive health benefits include improved access to food and increased physical activity. Factors which promote the use of community gardens include safety, proximity to users' homes providing natural surveillance and secured tenure.

The JSNA also makes specific recommendations for how to maximise green infrastructure opportunities when planning for new communities in Cambridgeshire.

- There should be a mixture of formal and informal green spaces, which should include considerations for community gardens and allotments that are close to residential areas, accessible, well-maintained and well connected to existing networks of strategic spaces and walking routes such as green chains.

²⁴ JSNA New Communities 2010 http://cambridge.newcastlejsna.org.uk/webfm_send/92

- There should be consultation with residents of new communities, at the earliest opportunity, about the provision of community resources including green space provision, a clear allocation of responsibilities in managing these resources and a mechanism to ensure that locally agreed monitoring is implemented and the results acted upon.

Health and access to green spaces are linked. As demonstrated by the IMD maps, there are significant inequalities in health outcomes experienced across populations in Cambridgeshire. It is important to take this into account when planning and prioritising initiatives related to green space and infrastructure.

Cambridgeshire Green Infrastructure Strategy Appendix 14

Water and Land Management

Contents

- 1 Introduction
 - Water Management
- 2 Baseline information
 - Policy
 - Strategies
 - Water Resources
 - Flooding
 - Water Quality
 - Climate Change
- 3 What this information tells us
- 4 Issues and Opportunities
 - Land Management
- 5 Baseline information
 - Land Use Data
 - Agriculture
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 - Case Study
 - Forestry and Woodland
 - Schemes
- 6 What this information tells us
- 7 Issues and Opportunities
 - Agriculture
 - Forestry and Woodlands

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 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.

Anglian River Basin Management Plan

This plan was produced by the Environment Agency for the Anglian river basin area. It aims to protect and improve that water environment and contain the main issues and the actions needed to deal with them. It is the mechanism by which the Water Framework Directive will be delivered. Green Infrastructure will have a very important role to play in 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 places responsibility with local authorities for managing local flood risk from surface water, ground water and from ordinary watercourses and retains the Environment Agency's strategic flood

and coastal risk overview role. It will reduce the risk of flooding associated with extreme weather events.

Great Ouse Catchment Flood Management Plan

This has been produced by the Environment Agency and gives an overview of flood risk for each catchment area and recommends 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 (PPS)

The most relevant PPSs for water resources and quality include:

- **PPS1 Delivering Sustainable Development** 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 for eco towns.
- **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.
- **PPS25 Development and Flood Risk** directs new development away from areas at highest risk of flooding.

Local Area Agreement 2008-2011

The Local Area Agreement (LAA) 2008-2011 is the three year delivery plan for the Cambridgeshire Vision as described above. The LAA established county-wide priority areas and targets, using indicators from the national indicator set. Those of relevance to water & land Management include:

- NI 188 - Adapting to climate change; and
- NI 189 - Flood and coastal erosion risk management

Strategies

Water Cycle Strategies

Water Cycle Studies are examinations of water supply capacity, wastewater infrastructure, surface water drainage and flood risk management. They are undertaken to ensure that new development can be supplied with water services infrastructure in a sustainable way.

Three Water Cycle Strategies are currently being developed in the county: 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, to the slower flowing fenland rivers to the north.

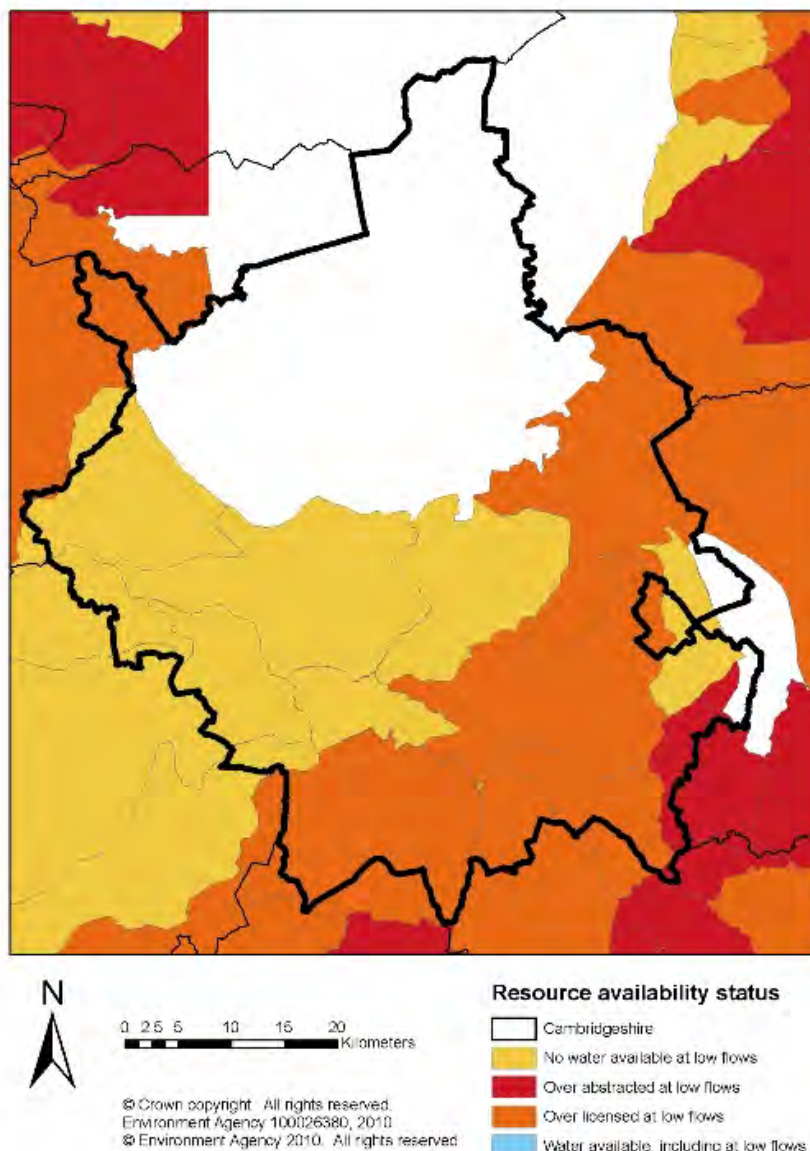


Figure 14.1 Water availability in Cambridgeshire

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.

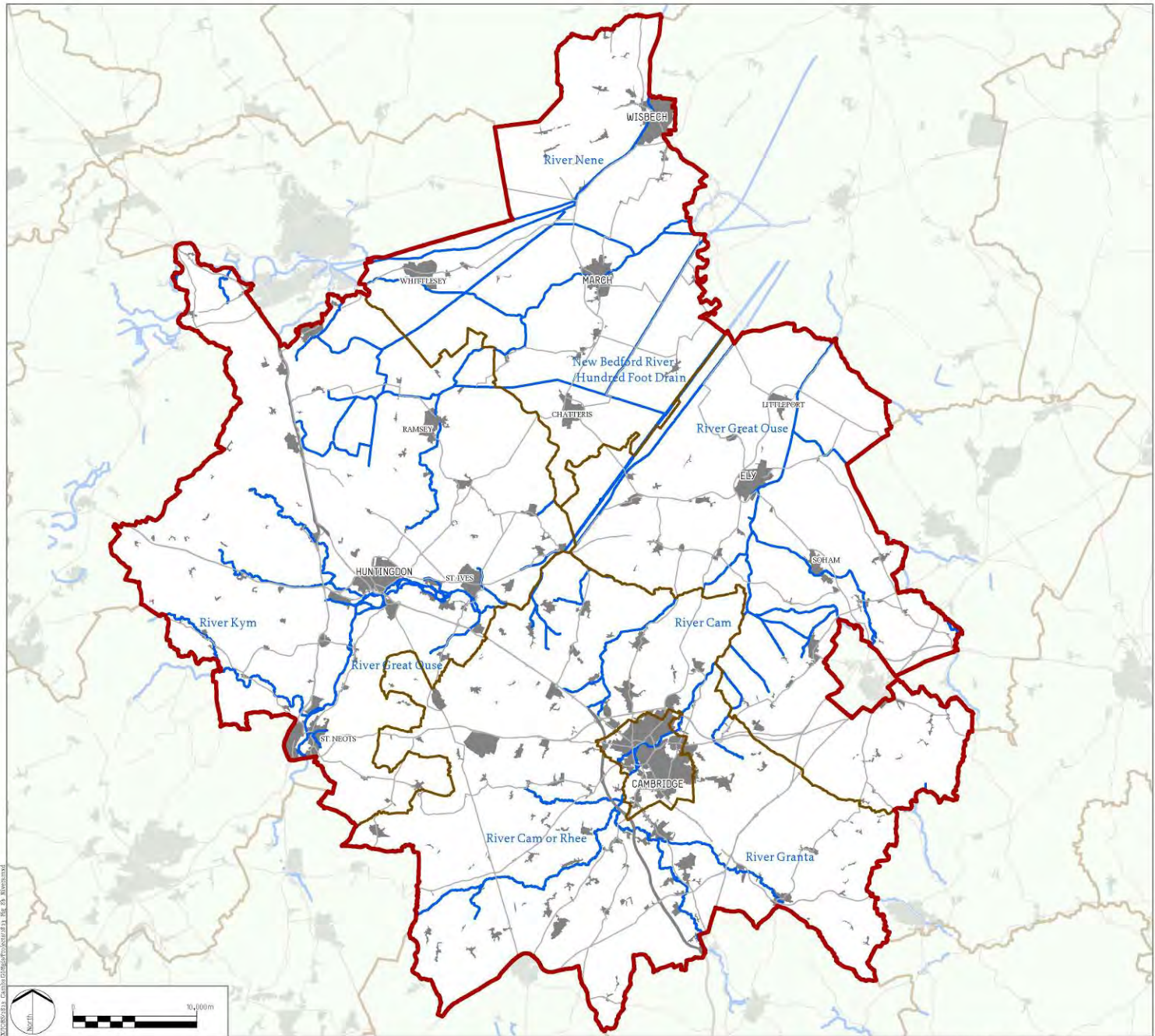
Abstraction for public water supply accounts for the single highest use of water in the county. At present the average water consumption for the county is 149.6 l/h/d and the national average is 150 l/h/d. The UK government would like to see this go down to 130l/h/d by 2030¹ to allow for the sustainable management of our water resources. It should be ensured that pressure from abstraction and pollution from development does not have an adverse affect on water-dependant habitats and species that rely on a clean and adequate water supply.

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.

Figure 14.2 Principal river channels in Cambridgeshire (Next page)

¹ Water Resource Strategy for England and Wales, March 2009



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 Study Area Boundary

 Principal River Channels

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 Principal River Channels in Cambridgeshire

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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data & Environment Agency.

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.

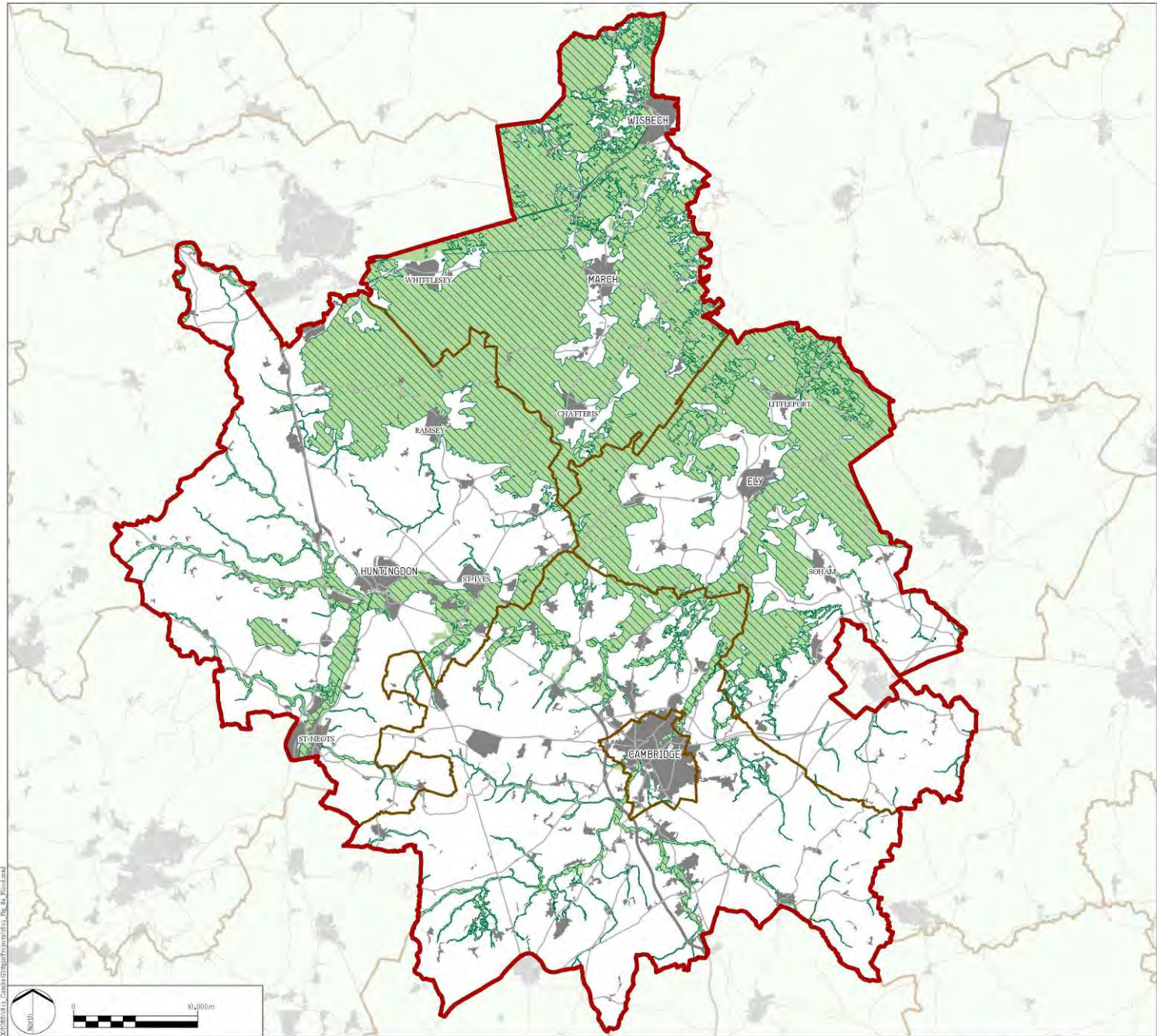
Significant areas along the county's principal rivers have been identified as flood zones by the Environment Agency. Large tracts of land in Fenland and East Cambridgeshire are identified as Flood Zone 3, with a high risk of flooding⁴.

Figure 14.3 Strategic Flooding risk in Cambridgeshire (Next page)

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



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LEGEND

- Study Area Boundary
- Flood Zone 3 (high risk with annual probability of flooding of 1% or greater)
- Flood Zone 2 (low to medium risk with annual probability of flooding of 0.1 - 1%)

The Environment Agency Flood Map is intended for guidance only and cannot provide details for residential properties

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Strategic Flooding Risk in Cambridgeshire

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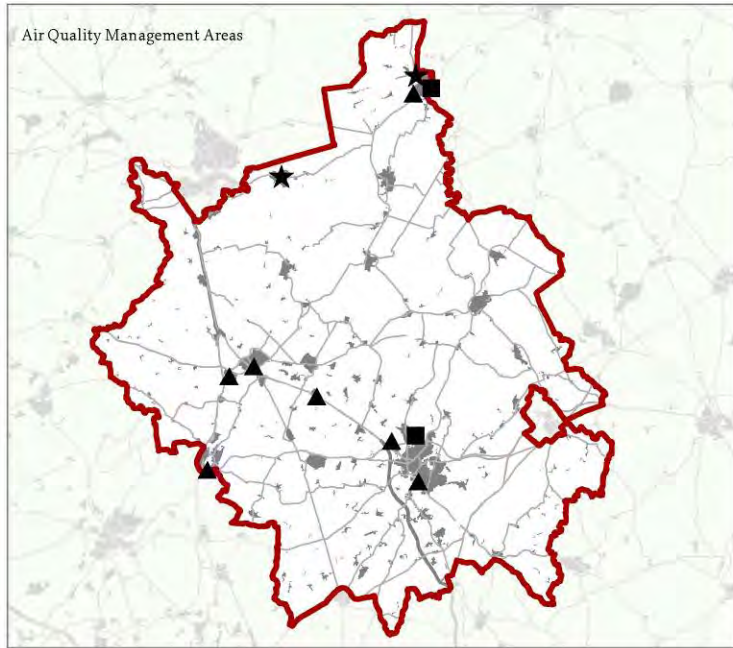
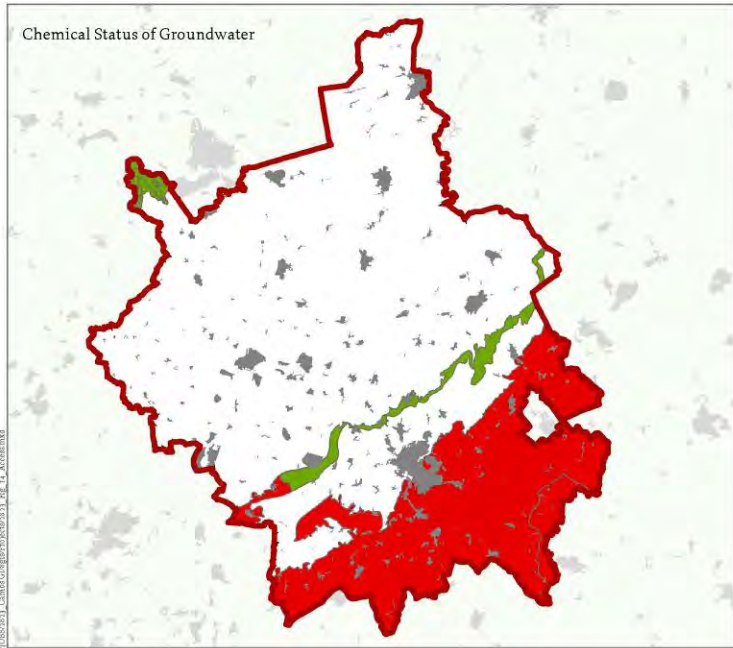
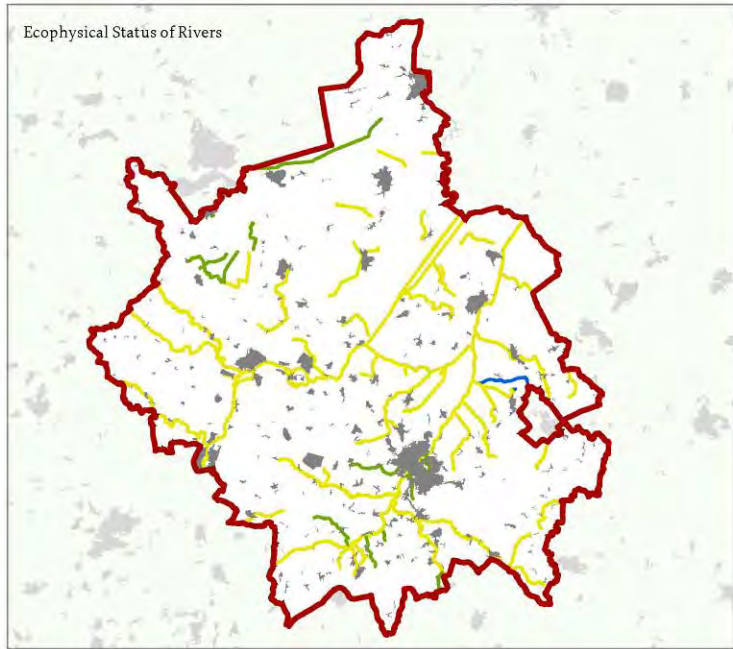
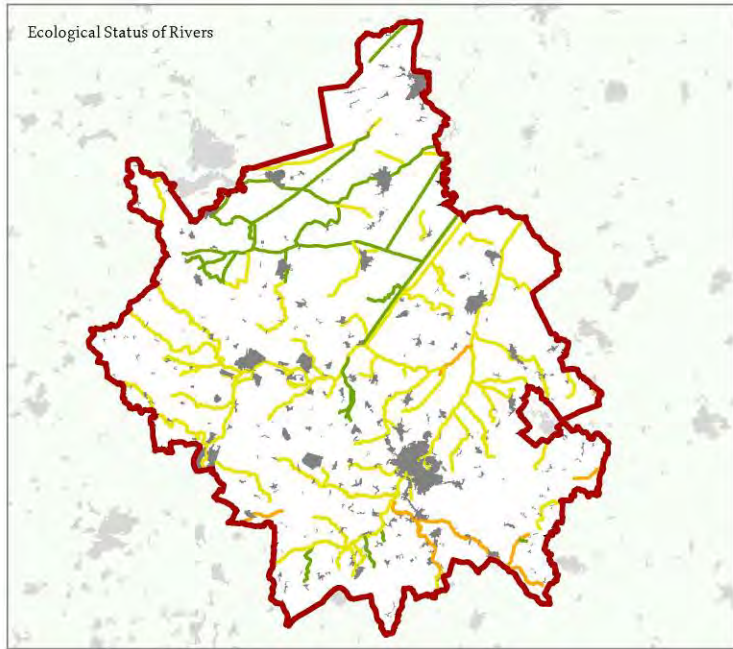
Figure 14.3 details Environment Agency Flood Zones 2 (low to medium risk with annual probability of flooding of 0.1 - 1%) and 3 (high risk with annual probability of flooding of 1% or greater) and shows how a significant part of the north of the County is at risk from flooding, as well as many of the 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 surface 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 Environmental Quality (Next page)



LEGEND

Study Area Boundary

Ecological Status of Rivers

- Good
- Moderate
- Poor

Ecophysical Status of Rivers

- High
- Good
- Moderate

Chemical Status of Groundwater

- Good
- Poor

Air Quality Management Areas

- NO2
- PM10
- SO2



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Sources: Ordnance Survey, Environment Agency & Cambridgeshire County Council.

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.

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.

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.

⁵ www.ukclimateprojections.defra.gov.uk

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.
- **Diffuse pollution (e.g. nitrates)** - Diffuse water pollution is a major pressure on the water environment and can come from both urban and rural areas. Diffuse pollution cannot be attributed to a precise point or incident; rather it is the cumulative effect of day to day activity over a large area. Various activities contribute to diffuse pollution, including agriculture, construction and urban life. Nitrates are nutrients found in fertilisers used in agriculture and in sewage effluent, and have been identified as a major risk to the quality of water bodies.
- **Organic pollution** - an excess of organic matter such as manure or discharges from sewage systems, which depletes the oxygen available for wildlife and impacts 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. Where appropriate and practical, 'buffer zones' along watercourses can help counteract diffuse pollution.

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 lakes/ponds 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 sustainable drainage systems (SuDS) as part of development proposals. This approach supports the Government's Flood Risk Regulations, which call 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 Flood and Water Management Act.

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

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

- managing surface water runoff at the source to reduce the risk of 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, SuDS reduce the risk of flooding by reducing surface run off. Examples of SuDS include green roofs, swales, retentions ponds and constructed wetlands.⁷ 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 by creating places 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.

High quality Green Infrastructure 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 enable the natural treatment of surface water run-off by a number of treatment stages, which will improve water quality before it is discharged into the river network.

⁷ Cambridge City Council has produced the Cambridge Sustainable Drainage Design and Adoption Guide (2009) to promote the use of sustainable drainage systems (SuDS) within Cambridge, the council has taken the decision to adopt SuDS that are located within public open space and produced the Cambridge Sustainable Drainage Design and Adoption Guide that sets out the council's requirements.

Land Management

5 Baseline information

Land Use Data

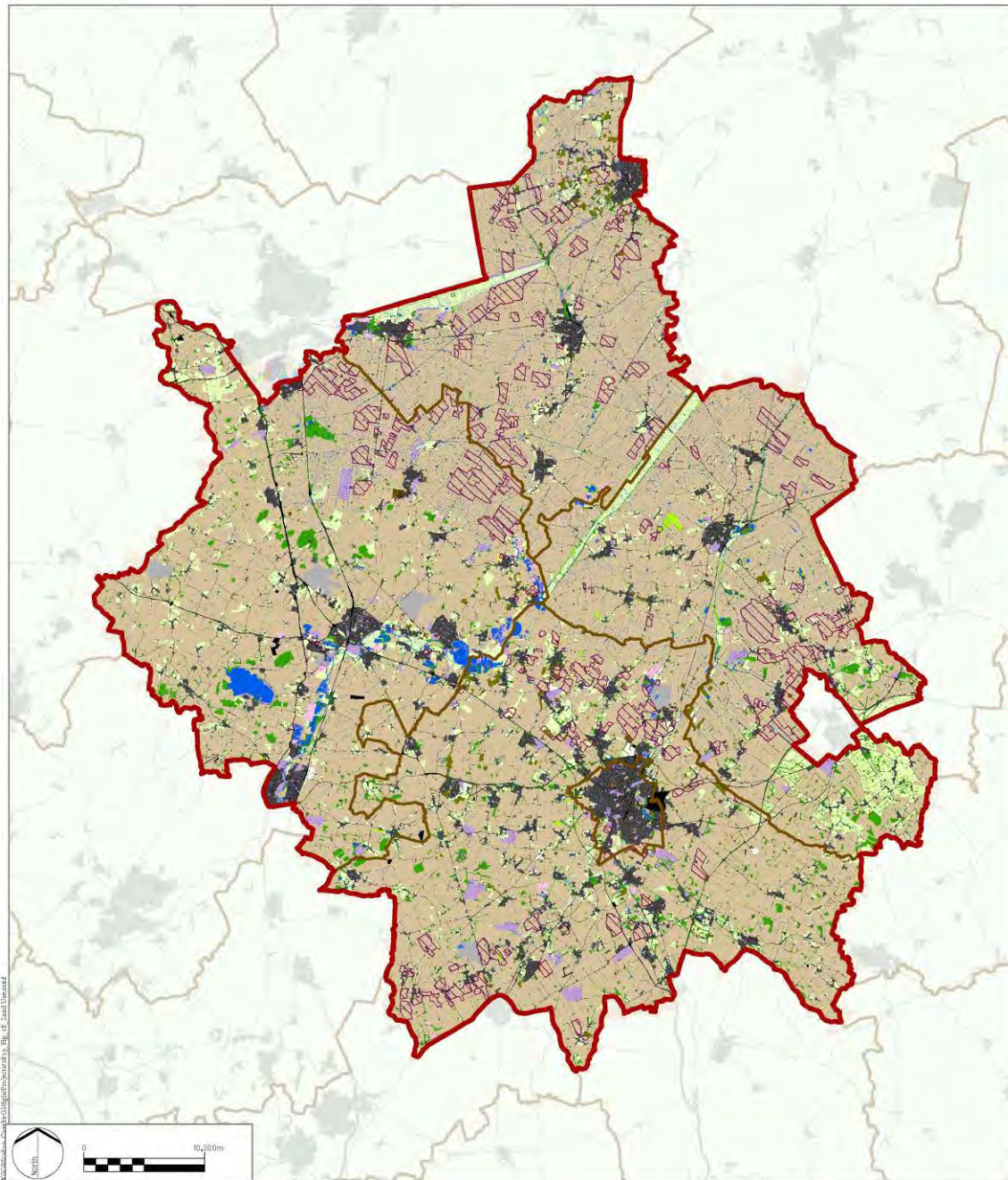
The Cambridgeshire Land Use Analysis ⁸(LUA) is a comprehensive overview of land use types in the county. This provides a guide to the spatial coverage and extent of these uses. For the purposes of this appendix two elements are covered in detail - Agriculture, and Forestry and Woodland. Table 14.1 give 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 |

Figure 14.5 Land uses within Cambridgeshire (Next page)

⁸ Data presented based on Draft LUA 2010. Data clipped to County Boundary and statistics are based on this clipped output.



- LEGEND**
- Study Area Boundary
 - County Farms
 - Cambridgeshire Land Use Data (2009 Draft)
 - Agricultural Land**
 - 1.1 Field Crops
 - 1.2 Ploughed Field
 - 1.3 Horticulture and Orchards
 - 1.4 Improved Pasture
 - 1.5 Field Margins
 - Woodland**
 - 2.1 Conifer Woodland
 - 2.2 Mixed Woodland
 - 2.3 Broadleaved Woodland
 - 2.4 Undifferentiated Young Woodland
 - 2.5 Scrub
 - 2.6 Felled Woodland
 - 2.7 Land Cultivated for Afforestation
 - Semi Natural Habitat**
 - 3.1 Unimproved Grassland
 - 3.2 Heathland
 - 4.2 Standing Water
 - 4.3 Running Water
 - 4.4 Fresh Water Marsh
 - 4.6 Bog

- Minerals / Landfill**
 - 6.1 Mineral Workings and Quarries
 - 6.2 Landfill Waste Disposal Sites
- Urban and Built Development**
 - 7.1 Indoor Recreation
 - 7.2 Outdoor Recreation
 - 7.3 Allotments
 - 8.1 Roads
 - 8.2 Car Parks
 - 8.3 Railways
 - 8.4 Airports
 - 8.5 Docks
 - 9.1 Residential
 - 9.2 Institutional and Communal Accommodation
 - 10.1 Institutional Buildings
 - 10.2 Educational Buildings
 - 10.3 Religious Buildings
 - 11.1 Industry
 - 11.2 Office
 - 11.3 Retailing
 - 11.4 Storage and Warehousing
 - 11.5 Utilities
 - 11.6 Agricultural Buildings
 - 12.2 Vacant Buildings
 - 12.1 Vacant Land Previously Developed
 - 12.3 Derelict Land
 - 13.0 Defence

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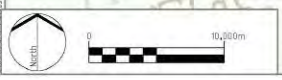
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Land Uses within Cambridgeshire

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Source: Openstreetmap, Cambridgeshire County Council, Office of National Statistics and Cities Revealed

Map data © OpenStreetMap contributors, CC-BY, Imagery © Mapbox, Imagery © Mapbox, Imagery © Mapbox



Cities Revealed aerial photography copyright The Geoinformation Group 2009,



Figure 14.5 illustrates the different land uses in Cambridgeshire as mapped by the Cambridgeshire LUA. 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. It is an important component of the rural economy and a significant contributor to the food consumed in Cambridgeshire and the UK.

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 efficiency⁹.

The Agricultural Land Classification System: purpose & uses

Land quality varies from place to place. The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland. The ALC system classifies land into five grades, with the best and most versatile land defined as Grades 1, 2 and 3a. This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food crops such as biomass. The presence of best and most versatile agricultural land has to be taken into account alongside other sustainability considerations when determining planning applications which involve the loss of twenty hectares or more of this land.

The extent of high grade agricultural land in Cambridgeshire is less than originally suggested in the Provisional ALC maps, published during the 1960s, due to peat wastage, intensive usage, soil structure changes and conversion to other land uses.

Policy

Rural Development Programme for England (RDPE)

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

⁹Natural England, State of the Natural Environment, 2008

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 Green Infrastructure.

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 interests¹⁰. 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 Plan¹¹, published by EEDA, supports social and economic development in rural areas between 2007 and 2013. This includes specific targets for new businesses and enterprises in the rural economy and opening up of new areas for public access and enjoyment.

¹⁰ http://www.naturalengland.org.uk/images/hlstargeting/Chilterns_&_East_Anglian_Chalk.pdf

¹¹ EEDA, RDPE: East of England Regional Implementation Plan 2007 – 2013 (Draft), 2008

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 2040¹². 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 Cambridgeshire¹³, mainly the Fenlands and Western Claylands National Character Areas.

Case Study: Management of Cambridgeshire County Council's County Farms Estate.

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 concentrations 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 Statement¹⁴ 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.

¹² Countryside Agency, The Future Character and Function of England's Landscapes, 2006

¹³ <http://www.defra.gov.uk/foodfarm/growing/crops/industrial/energy/opportunities/ee.htm>

¹⁴ <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.

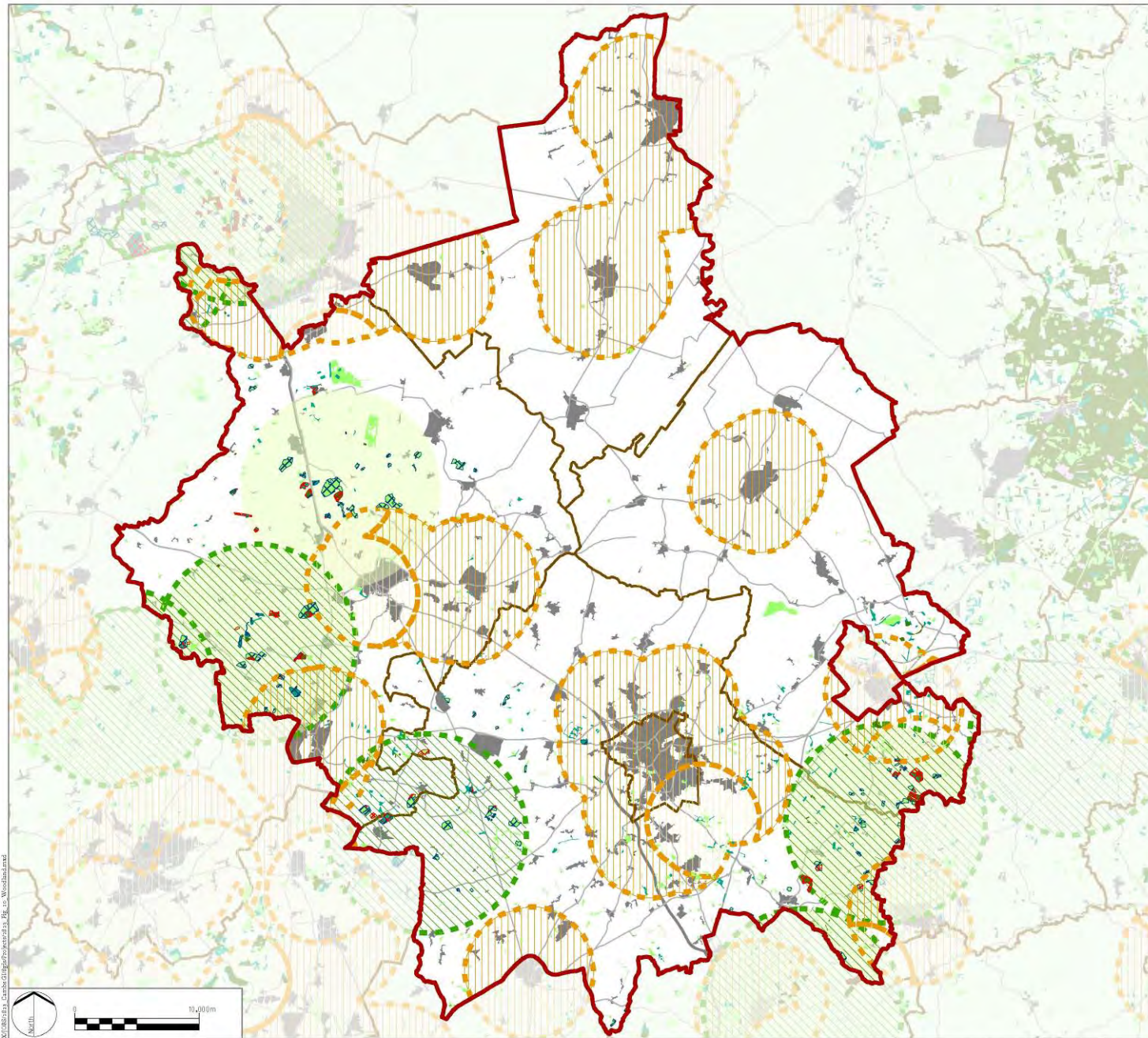
Woodland cover in the county, according to the Land Use Dataset extends to some 10,000 ha, representing 3% of land cover. This compares to 7% as a regional average¹⁵. Woodfuel East¹⁶ has also undertaken a review of woodland cover in the county, based on the National Inventory of Woodland and Trees. Their 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, which are known to have had a continuous cover of tree species for several hundred of years and to have been present by around 1600AD. They 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. Both are associated with distinctive ground flora.

Figure 14.6 Distribution of woodland types in Cambridgeshire (Next page)

¹⁵ 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

¹⁶ 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.



LEGEND

- Study Area Boundary
- Simplified National Inventory of Woodland Types (NIWT)**
- Broadleaved Woodland*
- Coniferous Woodland
- Mixed Woodland
- Felled Woodland and Ground Prepared for Planting

* Includes areas identified as Coppice, Copple with Standards, Shrub and Young Trees.

Ancient Woodland

- Ancient Semi-Natural Woodland
- Plantation on Ancient Woodland Site

| | |
|--------------------------------------|--|
| Ancient Woodland Target Areas | Quality of Place Priority Areas |
| Expand | High |
| Restore | Other |

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Sources: Ordnance Survey, Open Street Map, 2001 Census Area Data, Natural England & Forestry Commission.

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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 - derived from the English Woodland Grant Scheme (EWGS) and their Quality of Place priority areas are also shown.

Schemes

The **English Woodland Grant Scheme (EWGS)**¹⁷ 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.
- Native Woodland Expansion Areas: Based on the distribution of Ancient Semi Natural Woodlands (ASNW) and Plantations on Ancient Woodland Sites (PAWS).

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 GWh¹⁸ 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 species¹⁹.

¹⁷ www.forestry.gov.uk/ewgs

¹⁸ Gigawatt hours

¹⁹ 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.

6 What this information tells us

By far the most prominent agricultural land use according to the Land Use Data (LUD) is field cropping, which is the most prominent land use because of the amount of high grade agricultural land in the county. Agriculture will therefore continue to have a significant role to play in supporting the rural (as well as the regional and national) economy and influencing 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 efficiency²⁰ 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.

7 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 Green Infrastructure Strategy has limited opportunities to influence agriculture, opportunities exist for land owners to realise Green Infrastructure objectives whilst supporting agricultural businesses. Environmental Stewardship represents a mechanism through which to deliver the Green Infrastructure 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

²⁰Natural England, State of the Natural Environment, 2008

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 Estate²¹(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, with the Green Infrastructure Strategy presenting an opportunity to identify the most suitable locations for this activity. However, Green Infrastructure may also have a role in mitigating the effects of large scale monocultures and associated infrastructure on landscape and biodiversity character.

Forestry and Woodland

Woodland plays an important role in habitat enhancement and connectivity and provision of access to nature. It 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 is considered an important element in Green Infrastructure Strategies concerning the planning of new development and landscape restoration, and through 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.

²¹ 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

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 the 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 uses.²² The Green Infrastructure Strategy supports 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 and, as such the Green Infrastructure Strategy supports Woodfuel East's targets for wood fuel and energy generation.

In its 2002 publication, 'Review of Climate Change Implications for Trees and Woodland in the East of England'²³; Forest Research demonstrates the effects of climate change on woodland in the East of England. The publication supports the role of urban woodland in urban areas, highlighting woodland's role in mitigating and adapting to climate change, including its cooling effect, its contribution to the visual environment and its ability to reduce levels of some airborne pollutants. Green Infrastructure 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.

²² Mark Broadmeadow, A Review of Climate Change Implications for Trees and Woodland in the East of England, Forest Research, The Forestry Commission, 2002

²³ Ibid.

Cambridgeshire Green infrastructure Strategy Appendix 15

Strategic Network Projects

Contents

- 1 Introduction
- 2 Existing and future Green Infrastructure projects - Strategic Network Projects (Table 15.1)
- 3 Green Infrastructure projects - detail
 - Strategic Area 1: River Nene
 - Strategic Area 2: Huntingdonshire Fens and Woods
 - Strategic Area 3: Great Ouse
 - Strategic Area 4: Eastern Fens and Towns
 - Strategic Area 5: Chippenham Fen
 - Strategic Area 6: Cambridge and Surrounding Areas

1 Introduction

Within the Strategic Network there are a series of existing projects that deliver Green Infrastructure in Cambridgeshire. Projects can sit within target areas or in other parts of strategic areas. They relate to one or more of the Green Infrastructure themes and other important issues for the county and help deliver the objectives for the Strategy. This Appendix provides more details on the projects identified in Chapter 4.

3 Existing and future Green Infrastructure projects

Table 15.1 (Cambridgeshire Green Infrastructure Strategy Strategic Network Projects) shows how each of the Strategic Areas is broken down into a series of Target Areas. Each of these contains a number of projects that help to deliver Green Infrastructure for the target area, and therefore contributes to the delivery of the four objectives of the Strategy. The local authority area the target area projects sit within are also indicated, as are whether they are existing or future projects. The table also shows projects that are located across a strategic area, rather than just within a specific target area.

Key to Table 15.1:

CCITYC: Cambridge City Council
ECDC: East Cambridgeshire District Council
FDC: Fenland District Council
HDC: Huntingdonshire District Council
SCDC: South Cambridgeshire District Council

Bold: Existing project
Italic: Future project

1 Table 15.1 Cambridgeshire Green Infrastructure Strategy - Strategic Network Projects

| STRATEGIC AREA | STRATEGIC AREA PROJECTS | TARGET AREA | TARGET AREA PROJECTS | LOCAL AUTHORITY AREA |
|---|---|---|--|----------------------|
| Strategic Area 1 : River Nene | Fens Adventurers Partnership: Green Fen Way | Wisbech | Wisbech Country Park | FDC |
| | | Whittlesey | | FDC |
| | Fens Waterways Link | March | March Country Park | FDC |
| | | Nene Washes and River Nene (Old Course) | Links to Peterborough Green Wheel & Peterborough Waterspace Strategy | FDC |
| Strategic Area 2 : Huntingdonshire Fens and Woods | Fens Adventurers Partnership: Green Fen Way | Great Fen | Great Fen Masterplan Delivery | HDC |
| | | | Great Fen/South Peterborough Access Link | HDC / PCC |
| | Fens Waterways Link | Ramsey | Healthy Walks Programme | HDC |
| | | Huntingdonshire Ancient Woodlands | The Great Fen | HDC |
| Strategic Area 3 : Great Ouse | Fens Adventurers Partnership: Green Fen Way | Grafham Water | Woodland Linkage Project | HDC |
| | | | Grafham Water - Brampton Wood Link | HDC |
| | Fens Waterways Link | St Neots | St Neots A428 Pedestrian Underpass | HDC |
| | | | St Neots Green Corridor Project | HDC |
| | | Ouse Valley & Paxton Pits | Ouse Valley Wet Meadows & Wet Woodlands | HDC |
| | | | Ouse Valley Way | HDC |
| | | | Paxton Pits Nature Reserve | HDC |
| | | | Cow Lane Gravel Pits | HDC |
| | | Huntingdon | Huntingdon Green Spaces | HDC |
| | | | Huntingdon West / Northbridge | HDC |
| | | St Ives | Houghton Meadows Restoration Project | HDC |
| | | | St Ives Accessible Greenspace | HDC |
| | | Fen Drayton | Fen Drayton Lakes | SCDC |
| | | | RSPB habitat and visitor infrastructure management | SCDC |
| | | Needingworth | Hanson RSPB wetland project | |
| | | Earith | Rights of Way improvement projects | HDC |

| | | | | |
|--|---|---|---|---------------|
| | | Chatteris | Chatteris Country Park | FDC |
| | | | <i>Chatteris - Somersham Railway Corridor Enhancement</i> | FDC / HDC |
| | | Block Fen | <i>Block Fen Minerals After use Wetland & Restoration Project</i> | FDC |
| | | | <i>Creation of wet grassland following mineral extraction</i> | FDC |
| | | Ouse Washes | Environment Agency Ouse Washes Habitat Creation Project | FDC |
| | | | Ouse Washes - management of the Ouse Washes | FDC |
| Strategic Area 4 : Eastern Fens and Towns | Fens Adventurers Partnership: Green Fen Way | Littleport | Littleport Urban Greenway | ECDC |
| | | | New River Town Park | ECDC |
| | | | Cycleway Improvements | ECDC |
| | | | Woodland Creation | ECDC |
| | Fens Waterways Link | Ely | Ely Country Park | ECDC |
| | | | <i>Woodland Creation</i> | ECDC |
| | | | <i>North Ely Development</i> | ECDC |
| | | | <i>Ouse SuDS</i> | ECDC |
| | Soham | Sustainable Access across A10 | ECDC | |
| | | Soham Commons Restoration | ECDC | |
| | Ely Ouse | Improved public open space and town parks | ECDC | |
| | | Environmental Stewardship Schemes - Commons | ECDC | |
| | | | Eastern Gateway Green Infrastructure Expansion | ECDC |
| | | | | |
| Strategic Area 5 : Chippenham Fen | | Chippenham Fen | Continued Reserve management | ECDC |
| | | | Water management investigation | ECDC |
| Strategic Area 6 : Cambridge & Surrounding Areas | Chalk Rivers Project | Northstowe | Enhance Rights of Way Links | SCDC |
| | | Wicken Fen and Anglesey Abbey | Wicken Fen Vision | ECDC / SCDC |
| | | | <i>Wicken Fen Heritage Trails</i> | ECDC / SCDC |
| | | Cambridge | Cambridge Nature Conservation Strategy* *(and future) | CCITYC |
| | | | Cambridge Fringe Sites* *(and future) | CCITYC / SCDC |
| | Fowlmere Nature Reserve Extension and Development | | | |

| | | | | |
|--|--------------------------|-------------------------------|--|---------------|
| | of Facilities | | Cambridge 'Necklace' Projects* <i>*(and future)</i> | CCITYC / SCDC |
| | | | Cambridge City Centre | CCITYC |
| | | Cambourne | Large scale public open space | CCITYC |
| | Linear Monuments | Wimpole | Wimpole Cycling Link | SCDC |
| | Woodland Linkage Project | West Cambridgeshire Woodlands | West Cambridgeshire Hundreds Habitat Enhancement Project | SCDC / HDC |
| | Fens Waterways Link | | <i>Bourn Brook Enhancement</i> | SCDC |
| | | | | |

3 Green Infrastructure projects - detail

The below section provides more detail (where available) on the projects contained within the Strategy. This information is correct as of April 2011.

STRATEGIC AREA 1: RIVER NENE

Strategic Area Projects:

| Name of Project | Fens Adventurers Partnership: Green Fen Way |
|--|---|
| Summary of Project and Core Objectives | The Green Fen Way project aims to make significant improvements to countryside access networks (both Public Rights of Way (PRoW) and permissive paths) in the Fens Adventurers area with the aim of benefiting rural tourism and businesses. The project will provide an important legacy for future projects to build on and will help to redress the balance of funding towards the Fens. |
| Outputs (quantified where possible e.g. ha species rich grassland) | 300 improved way-marks/signs 30 projects improving access to the countryside Increased revenue for local businesses along route improvements. Increase tourism and overnight stays. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | 4: By providing improved access to the countryside for local residents and visitors. 3: Supporting local rural tourism businesses. 2: Encouraging use of sustainable transport links when accessing the countryside. 1: Improving the condition of paths and Right of Way. |

| Name of Project | Fens Waterways Link |
|--|--|
| Summary of Project and Core Objectives | The Fens Waterways Link (FWL) will enhance river navigation to connect the Cathedral Cities of Lincoln, Peterborough and Ely as well as King's Lynn, Denver, March, Ramsey, Huntingdon and Cambridge. |
| Outputs (quantified where possible e.g. ha species rich grassland) | Opening up 240km of contiguous waterway (80km of new waterway and increased access to 160km of existing navigations) the project will: <ul style="list-style-type: none"> • Improve access to the rich heritage and landscape of the Fens; • Benefit the natural environment by linking major wetland sites and creating new habitats; • Improve and increase GI assets, and give local people a sense of ownership of their waterways as |

| | |
|--|--|
| | <p>a place of belonging with rich opportunities for recreation, enjoyment and healthy activities;</p> <ul style="list-style-type: none"> • Promote waterways as a venue for 'real world' learning, training and skills development; and • Enable visitors, businesses and others to become champions for the waterways at the heart of local communities. |
| Lead Delivery Agent and Partners | <p>Environment Agency</p> <p>Initial consultation by the Environment Agency led to the formation of a strategic group of more than 40 stakeholders contributing to the FWL vision.</p> |
| Funding (Partners and Mechanisms) | <p>In November 2009 Environment Agency appointed a new Project Manager, whose role is to provide strategic leadership for the project and drive forward partnership development and fundraising efforts.</p> |
| Ball Park Costs (capital and operational expenditure where known) | <p>Cambridgeshire-based phases of the project:</p> <p>Total cost £63.6m Total navigation 105km</p> |
| Delivery Timetable | <p>Overall the project can be seen as a long-term vision, with completion expected in fifteen to twenty years. The precise delivery timetable will be largely dependent on the availability of funding.</p> |
| Outputs (quantified where possible e.g. ha species rich grassland) | <ul style="list-style-type: none"> • Wildlife habitat enhancements • Links to large-scale habitat restoration projects • Capital improvements to the waterway and associated amenities • Promoting sustainable transport via waterway, cycleway, bridleway, footpaths etc • Creating major countryside tourism asset that connects existing and new attractions • Providing focus for economic regeneration centred around new development adjacent to the waterway • Protecting and enhancing cultural heritage and landscape character of the Fens • Providing increased access to outdoor destinations, sporting, recreation and leisure opportunities • Giving local people a sense of ownership of their local waterways as a place of belonging • Promoting waterways as a venue for learning and skills development |
| GI Outcomes (which GI objectives is it) | <p>Objective 3: Promote Sustainable Growth and Economic Development</p> <p>Objective 4: Support Healthy Living and Wellbeing</p> |

| | |
|-----------------------------------|---|
| hitting - in order of importance) | Objective 2: Mitigate and Adapt to Climate Change |
|-----------------------------------|---|

Target Area 1.1 Wisbech:

| | |
|--|--|
| Name of Project | Wisbech Country Park |
| Summary of Project and Core Objectives | <p>The objective is to overcome lack of accessible open space in Wisbech.</p> <p>The proposed location is around land owned by the National Trust and other parties in the west part of Wisbech and / or around the Sea Bank Scheduled Ancient Monument to the north west.</p> <p>However, at this stage the Local Development Plan is still being prepared and due to the uncertainty of large scale housing development occurring on the west side of Wisbech, a final site has yet to be identified. An Area of Search close to or within the existing settlement boundary of Wisbech should identify the preferred location for the country park in the near future.</p> |
| Lead Delivery Agent and Partners | Developers; Fenland District Council; and Wisbech Town Council. |
| Funding (Partners and Mechanisms) | Developer contributions; and Growth Funds. |
| Ball Park Costs (capital and operational expenditure where known) | Unknown at this stage |
| Delivery Timetable | Delivery by 2031 |
| Outputs (quantified where possible e.g. ha species rich grassland) | Unknown at this stage |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 4: Support Healthy Living and Wellbeing. Objective 3: Promote Sustainable Growth and Economic Development. Objective 2: Mitigate and Adapt to Climate Change. Objective 1: Reverse the Decline in Biodiversity. |
| Links to GI | A new Country Park in Wisbech will support the Economic |

| | |
|---------------------|---|
| Themes and Benefits | <p>Investment Programme by enhancing the amount and quality of green space assets in the town. Further benefit may arise in meeting the objectives of the Welcome to the Cambridgeshire Fens initiative.</p> <p>As details become available concerning location and design, it may be possible for the Country Park to deliver aspects of other Themes and Benefits such as creating new semi-natural habitats as part of the Biodiversity Enhancement Programme.</p> |
|---------------------|---|

Target Area 1.2 Whittlesey:

Projects are yet to be identified by partners.

Target Area 1.3 March:

| | |
|--|---|
| Name of Project | March Country Park |
| Summary of Project and Core Objectives | <p>The objective is to overcome lack of accessible open space in March.</p> <p>An opportunity to provide an extension to West End Park as part of the College of West Anglia (COWA) proposals has previously been identified. However, at this stage, the Local Development Plan is still being prepared and a final site has yet to be identified. An Area of Search close to or within the existing settlement boundary should identify the preferred location for the country park in the near future.</p> |
| Lead Delivery Agent and Partners | Fenland District Council; March Town Council; Developers |
| Funding (Partners and Mechanisms) | Developers; Growth Funds; |
| Ball Park Costs (capital and operational expenditure where known) | Unknown at this stage |
| Delivery Timetable | Delivery by 2031 |
| Outputs (quantified where possible e.g. ha species rich grassland) | Details are not known at this stage. |
| GI Outcomes (which GI | Objective 4: Support Healthy Living and Wellbeing. Objective 3: Promote Sustainable Growth and Economic |

| | |
|--|--|
| objectives is it hitting - in order of importance) | Development. Objective 2: Mitigate and Adapt to Climate Change. Objective 1: Reverse the Decline in Biodiversity. |
| Links to GI Themes and Benefits | A new Country Park in March will support the Economic Investment Programme by enhancing the amount and quality of green space assets in the town. Further benefit may arise in meeting the objectives of the Welcome to the Cambridgeshire Fens initiative. As details become available concerning location and design, it may be possible for the Country Park to deliver aspects of other Themes and Benefits such as creating new semi-natural habitats as part of the Biodiversity Enhancement Programme. |

Target Area 1.4 Nene Washes and River Nene (Old Course):

- Management of Nene Washes

STRATEGIC AREA 2: HUNTINGDONSHIRE FENS AND WOODS

Strategic Area Projects:

| Name of Project | Fens Adventurers Partnership: Green Fen Way |
|--|---|
| Summary of Project and Core Objectives | The Green Fen Way project aims to make significant improvements to countryside access networks (both Public Rights of Way (PRoW) and permissive paths) in the Fens Adventurers area with the aim of benefiting rural tourism and businesses. The project will provide an important legacy for future projects to build on and will help to redress the balance of funding towards the Fens. |
| Outputs (quantified where possible e.g. ha species rich grassland) | 300 improved way-marks/signs 30 projects improving access to the countryside Increased revenue for local businesses along route improvements. Increase tourism and overnight stays. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | 4: By providing improved access to the countryside for local residents and visitors. 3: Supporting local rural tourism businesses. 2: Encouraging use of sustainable transport links when accessing the countryside. 1: Improving the condition of paths and Right of Way. |

| Name of Project | Fens Waterways Link |
|--|--|
| Summary of Project and Core Objectives | The Fens Waterways Link (FWL) will enhance river navigation to connect the Cathedral Cities of Lincoln, Peterborough and Ely as well as King's Lynn, Denver, March, Ramsey, Huntingdon and Cambridge. |
| Outputs (quantified where possible e.g. ha species rich grassland) | Opening up 240km of contiguous waterway (80km of new waterway and increased access to 160km of existing navigations) the project will: <ul style="list-style-type: none"> • Improve access to the rich heritage and landscape of the Fens; • Benefit the natural environment by linking major wetland sites and creating new habitats; • Improve and increase GI assets, and give local people a sense of ownership of their waterways as a place of belonging with rich opportunities for recreation, enjoyment and healthy activities; • Promote waterways as a venue for 'real world' learning, training and skills development; and • Enable visitors, businesses and others to become champions for the waterways at the heart of local communities. |

| | |
|--|--|
| Lead Delivery Agent and Partners | Environment Agency Initial consultation by the Environment Agency led to the formation of a strategic group of more than 40 stakeholders contributing to the FWL vision. |
| Funding (Partners and Mechanisms) | In November 2009 Environment Agency appointed a new Project Manager, whose role is to provide strategic leadership for the project and drive forward partnership development and fundraising efforts. |
| Ball Park Costs (capital and operational expenditure where known) | Cambridgeshire-based phases of the project: Total cost £63.6m Total navigation 105km |
| Delivery Timetable | Overall the project can be seen as a long-term vision, with completion expected in fifteen to twenty years. The precise delivery timetable will be largely dependent on the availability of funding. |
| Outputs (quantified where possible e.g. ha species rich grassland) | <ul style="list-style-type: none"> • Wildlife habitat enhancements • Links to large-scale habitat restoration projects • Capital improvements to the waterway and associated amenities • Promoting sustainable transport via waterway, cycleway, bridleway, footpaths etc • Creating major countryside tourism asset that connects existing and new attractions • Providing focus for economic regeneration centred around new development adjacent to the waterway • Protecting and enhancing cultural heritage and landscape character of the Fens • Providing increased access to outdoor destinations, sporting, recreation and leisure opportunities • Giving local people a sense of ownership of their local waterways as a place of belonging • Promoting waterways as a venue for learning and skills development |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 3: Promote Sustainable Growth and Economic Development Objective 4: Support Healthy Living and Wellbeing Objective 2: Mitigate and Adapt to Climate Change |

Target Area 2.1 Great Fen

| | |
|-----------------------------|---|
| Name of Project | Great Fen Masterplan Delivery |
| Summary of Project and Core | The Great Fen is a partnership project established to join together two National Nature Reserves, Holme Fen and |

| | |
|---|--|
| Objectives | <p>Woodwalton Fen, and in doing so better safeguard the relict habitats the reserves protect. Once complete it will cover an area of fen and fen-edge of 3,700 hectares and will deliver wider socio-economic benefits including flood protection, enhanced local access, tourism and climate change mitigation and adaptation.</p> <p>This will be achieved by obtaining land adjacent to two existing National Nature Reserves, Holme Fen and Woodwalton Fen. Connecting these two vitally important nature reserves will provide a haven for wildlife and create a massive green space for people, opening new opportunities for recreation, education and business.</p> <p>By rewetting peat soils and the establishment of wetlands and other natural habitats the project has significant carbon storage benefits and prevents the further release of carbon through soil erosion.</p> |
| Outputs (quantified where possible e.g. ha species rich grassland) | <p>Creation of a 3,700ha wetland - composed of fen, reed bed, wet grassland, dry grassland and open water. Restoration of 3,000 ha to fenland habitats. Estimated storage/capture of 325,000 tonnes carbon dioxide equivalent per annum. Potential creation of c. 27 km public footpaths, 21 km bridleway and 34km cycle routes. support rural economic activity through land management enterprises, visitor attractions and heritage interpretation and access links</p> |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | <p>Objective 1: Reverse the Decline in Biodiversity Objective 2: Mitigate and Adapt to Climate Change Objective 3: Promote Sustainable Growth and Economic Development Objective 4: Support Healthy Living and Wellbeing</p> |

- Great Fen/South Peterborough Access Link

Target Area 2.2 Ramsey

- Ramsey Health Walks Programme
- The Great Fen

Target Area 2.3 Huntingdonshire Ancient Woodlands

- Woodland Linkage project

STRATEGIC AREA 3: GREAT OUSE

Strategic Area Projects:

| Name of Project | Fens Adventurers Partnership: Green Fen Way |
|--|---|
| Summary of Project and Core Objectives | The Green Fen Way project aims to make significant improvements to countryside access networks (both Public Rights of Way (PRoW) and permissive paths) in the Fens Adventurers area with the aim of benefiting rural tourism and businesses. The project will provide an important legacy for future projects to build on and will help to redress the balance of funding towards the Fens. |
| Outputs (quantified where possible e.g. ha species rich grassland) | 300 improved way-marks/signs 30 projects improving access to the countryside Increased revenue for local businesses along route improvements. Increase tourism and overnight stays. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | 4: By providing improved access to the countryside for local residents and visitors. 3: Supporting local rural tourism businesses. 2: Encouraging use of sustainable transport links when accessing the countryside. 1: Improving the condition of paths and Right of Way. |

| Name of Project | Fens Waterways Link |
|--|--|
| Summary of Project and Core Objectives | The Fens Waterways Link (FWL) will enhance river navigation to connect the Cathedral Cities of Lincoln, Peterborough and Ely as well as King's Lynn, Denver, March, Ramsey, Huntingdon and Cambridge. |
| Outputs (quantified where possible e.g. ha species rich grassland) | Opening up 240km of contiguous waterway (80km of new waterway and increased access to 160km of existing navigations) the project will: <ul style="list-style-type: none"> • Improve access to the rich heritage and landscape of the Fens; • Benefit the natural environment by linking major wetland sites and creating new habitats; • Improve and increase GI assets, and give local people a sense of ownership of their waterways as a place of belonging with rich opportunities for recreation, enjoyment and healthy activities; • Promote waterways as a venue for 'real world' learning, training and skills development; and • Enable visitors, businesses and others to become champions for the waterways at the heart of local communities. |

| | |
|--|--|
| Lead Delivery Agent and Partners | Environment Agency Initial consultation by the Environment Agency led to the formation of a strategic group of more than 40 stakeholders contributing to the FWL vision. |
| Funding (Partners and Mechanisms) | In November 2009 Environment Agency appointed a new Project Manager, whose role is to provide strategic leadership for the project and drive forward partnership development and fundraising efforts. |
| Ball Park Costs (capital and operational expenditure where known) | Cambridgeshire-based phases of the project: Total cost £63.6m Total navigation 105km |
| Delivery Timetable | Overall the project can be seen as a long-term vision, with completion expected in fifteen to twenty years. The precise delivery timetable will be largely dependent on the availability of funding. |
| Outputs (quantified where possible e.g. ha species rich grassland) | <ul style="list-style-type: none"> • Wildlife habitat enhancements • Links to large-scale habitat restoration projects • Capital improvements to the waterway and associated amenities • Promoting sustainable transport via waterway, cycleway, bridleway, footpaths etc • Creating major countryside tourism asset that connects existing and new attractions • Providing focus for economic regeneration centred around new development adjacent to the waterway • Protecting and enhancing cultural heritage and landscape character of the Fens • Providing increased access to outdoor destinations, sporting, recreation and leisure opportunities • Giving local people a sense of ownership of their local waterways as a place of belonging • Promoting waterways as a venue for learning and skills development |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 3: Promote Sustainable Growth and Economic Development Objective 4: Support Healthy Living and Wellbeing Objective 2: Mitigate and Adapt to Climate Change |

Target Are 3.1 Grafham Water:

- Woodland Linkage Project
- Grafham Water - Brampton Wood link

Target Area 3.2 St Neots:

| Name of Project | St Neots A428 Pedestrian Underpass |
|-----------------------------------|--|
| Project Summary | Design and construction of a walkway structure to allow pedestrian access through an existing culvert under the A428 St Neots bypass. Core Objective is to: Allow access to the wider countryside currently inhibited by the lack of safe crossings over the A428, which therefore acts as a barrier to increased sustainable movement and countryside recreation. |
| Lead Delivery Agents and Partners | Cambridgeshire County Council Highways Agency Environment Agency Huntingdonshire District Council |
| Funding | Housing Growth Funding Rights of Way revenue funding (County) Rights of Way capital funding (LTP - County) S106 developer contributions / roof tax Indicative Costs: Construction - £20,000. Associated Public Rights of Way improvements - £5,000 |
| Delivery Timetable | Securing design approval from stakeholders - 6 months. Off-site fabrication - 1 month On-site preparation, assembly and installation - 1 week. |
| GI Outputs | New culvert walkway structure to allow access from the proposed development area east of St Neots development area without having to cross the A428. Associated Public Rights of Way improvements (surface and access improvements, diversions (if necessary) and signage. |
| GI Outcomes | Objective 4: Support Healthy Living and Wellbeing. Objective 2: Mitigate and Adapt to Climate Change. Objective 3: Promote Sustainable Growth and Economic Development. |

| Name of Project | St Neots Green Corridor Project |
|--|---|
| Summary of Project and Core Objectives | The St Neots area has substantial open space on either side of the river. The main purpose of the Green Corridor Project is to link and enhance the access routes between the |

| | |
|--|---|
| | green areas and to increase their biodiversity value. |
| Lead Delivery Agent and Partners | Huntingdonshire District Council Cambridgeshire County Council St Neots Town Council St Neots Town Centre Initiative. |
| Funding (Partners and Mechanisms) | Section 106, Grants, etc. |
| Ball Park Costs (capital and operational expenditure where known) | Capital £5,000,000 Revenue £1,500,000 |
| Delivery Timetable | On-going |
| Outputs (quantified where possible e.g. ha species rich grassland) | 12km enhanced access routes. 40ha Wet grassland creation 1 Visitor Centre |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 4: Support Healthy Living and Wellbeing Objective 1: Reverse the Decline in Biodiversity. Objective 2: Mitigate and Adapt to Climate Change. Objective 3: Promote Sustainable Growth and Economic Development. |

Target Area 3.3 Ouse Valley/Paxton Pits:

| | |
|--|--|
| Name of Project | Ouse Valley Wet Meadows and Wet Woodlands |
| Summary of Project and Core Objectives | The purpose of this project is to increase the area of wet grassland and wet woodland in the Ouse Valley to enhance its biodiversity value and to mitigate against climate change. |
| Lead Delivery Agent and Partners | Huntingdonshire District Council The Farming and Wildlife Advisory Group Environment Agency NE, Wildlife Trust and FA |
| Funding (Partners and Mechanisms) | Grants and Defra funding |
| Ball Park Costs (capital and | Revenue £50,000 |

| | |
|--|---|
| operational expenditure where known) | Capital covered by Agri-Environment Scheme |
| Delivery Timetable | On-going |
| Outputs (quantified where possible e.g. ha species rich grassland) | 400ha of well managed wet grassland 40ha of well managed wet woodland |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the Decline in Biodiversity. Objective 2: Mitigate and Adapt to Climate Change. Objective 3: Promote Sustainable Growth and Economic Development. Objective 4: Support Healthy Living and Wellbeing |

| | |
|--|---|
| Name of Project | Ouse Valley Way |
| Summary of Project and Core Objectives | The Ouse Valley Way is a 42km footpath that links all the major sites in the Ouse Valley |
| Lead Delivery Agent and Partners | Huntingdonshire District Council Cambridgeshire County Council |
| Funding (Partners and Mechanisms) | Huntingdonshire District Council and Grants |
| Ball Park Costs (capital and operational expenditure where known) | Capital £200,000 Revenue £20,000 per annum |
| Delivery Timetable | On-going |
| Outputs (quantified where possible e.g. ha species rich grassland) | 42km of accessible, well managed Rights of Way |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 4: Support Healthy Living and Wellbeing Objective 3: Promote Sustainable Growth and Economic Development. Objective 1: Reverse the Decline in Biodiversity. Objective 2: Mitigate and Adapt to Climate Change. |

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| Name of Project | Paxton Pits Nature Reserve |
| Summary of Project and Core | The Nature Reserve will increase in size to 283ha in the near future. The Reserve will |

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| Objectives | be an integral part of a 1012ha leisure/wildlife area which is between Little Paxton and Buckden and the A1 and the East Coast Mainline. |
| Lead Delivery Agent and Partners | Huntingdonshire District Council Friends of Paxton Pits Aggregate Companies Land owners. |
| Funding (Partners and Mechanisms) | Section 106, Private Sector, Grants, etc. |
| Ball Park Costs (capital and operational expenditure where known) | £3,000,000 for new visitor facilities £1,000,000 revenue costs. |
| Delivery Timetable | Dependent on gravel extraction. |
| Outputs (quantified where possible e.g. ha species rich grassland) | 30km additional footpath/cycleway network 1012ha of publicly accessible open space 1012ha of land managed for wildlife |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 3: Promote Sustainable Growth and Economic Development. Objective 1: Reverse the Decline in Biodiversity. Objective 4: Support Healthy Living and Wellbeing Objective 2: Mitigate and Adapt to Climate Change. |

- Cow Lane Gravel Pits

Target Area 3.4 Huntingdon:

| Name of Project | Huntingdon Green Spaces |
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| Summary of Project and Core Objectives | Huntingdon has a number of very popular green spaces including Hinchingsbrooke Country Park and Huntingdon Riverside Park. The purpose of this project is to enhance the visitor facilities at the sites and improve linkages between them, thereby increasing their carrying capacity for users. |
| Lead Delivery Agent and Partners | Huntingdonshire District Council |
| Funding (Partners and Mechanisms) | Section 106, Grants, etc. Defra |

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| Ball Park Costs (capital and operational expenditure where known) | £1,500,000 capital cost to enhance visitor facilities £1,000,000 revenue costs |
| Delivery Timetable | On-going |
| Outputs (quantified where possible e.g. ha species rich grassland) | 40ha extension to Hinchingsbrooke 12km Rights of Way extension |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 4: Support Healthy Living and Wellbeing Objective 3: Promote Sustainable Growth and Economic Development. Objective 1: Reverse the Decline in Biodiversity. Objective 2: Mitigate and Adapt to Climate Change. |

- Huntingdon West / Northbridge

Target Area 3.5 St Ives:

- Houghton Meadows Restoration project

| Name of Project | St. Ives Accessible Greenspace |
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| Summary of Project and Core Objectives | The St. Ives Country Park will link a number of the small sites on the west of St. Ives |
| Lead Delivery Agent and Partners | Huntingdonshire District Council Developers |
| Funding (Partners and Mechanisms) | Section 106 and Grants etc. |
| Ball Park Costs (capital and operational expenditure where known) | Capital £2,000,000 Revenue £1,500,000 |
| Delivery Timetable | Dependent on house building |
| Outputs (quantified where possible e.g. ha species rich grassland) | Additional 20ha of accessible green space |
| GI Outcomes (which GI objectives is it hitting - in | Objective 4: Support Healthy Living and Wellbeing Objective 3: Promote Sustainable Growth and |

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| order of importance) | Economic Development. Objective 1: Reverse the Decline in Biodiversity. Objective 2: Mitigate and Adapt to Climate Change. |
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Target Area 3.6 Fen Drayton:

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| Name of Project | Fen Drayton Lakes |
| Summary of Project and Core Objectives | The 391ha of Fen Drayton Lakes is continuing to be developed as a high quality Green Infrastructure resource for the residents of the surrounding area, Cambridgeshire and for the future residents of the new settlement of Northstowe. The site will be a constituent part of and gateway to the Great Ouse Wetland. Core objectives: Habitat restoration and improvement Public access Visitor Facilities Community engagement and education |
| Lead Delivery Agents and Partners | RSPB South Cambridgeshire District Council, Environment Agency, Cambridgeshire County Council |
| Outputs (quantified where possible e.g. ha species rich grassland) | Grazing meadows c.100ha Reedbed c.6ha Lakes, margins grassland/woodland c.200ha Extensive public access, footpaths/bridleways, visitor centre and car parks |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the Decline in Biodiversity. Objective 4: Support Healthy Living and Wellbeing. Objective 3: Promote Sustainable Growth and Economic Development. Objective 2: Mitigate and Adapt to Climate Change. |

- RSPB habitat and visitor infrastructure management

Target Area 3.7 Needingworth:

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| Name of Project | Hanson RSPB Wetland Project (Needingworth) |
| Summary of Project and Core Objectives | Hanson and the RSPB are working together to produce a wetland nature reserve following the extraction of 28 million tonnes of sand |

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| | and gravel. Site will be created stage-by-stage over a 30 year period, and will form a part of the Great Ouse Wetland. |
| Lead Delivery Agents and Partners | Hanson, RSPB, Cambridgeshire County Council Environment Agency |
| Outputs (quantified where possible e.g. ha species rich grassland) | A 700ha wetland including 460ha of reedbed in 20-40ha blocks. Access will be provided by the creation of 32km of new public rights of way. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the Decline in Biodiversity. Objective 4: Support Healthy Living and Wellbeing Objective 2: Mitigate and Adapt to Climate Change. Objective 3: Promote Sustainable Growth and Economic Development. |

Target Area 3.8 Earith:

| <u>Name of Project</u> | <u>Rights of Way Improvement Projects</u> |
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| Summary of Project and Core Objectives | Opportunities can be taken to improve the network of rights of way in the Earith area. In particular circular routes can be explored linking to adjacent Green Infrastructure sites and villages. Where practical, upgrading of routes to include a wider range of users should be explored. |

Target Area 3.9 Chatteris:

| <u>Name of Project</u> | <u>Chatteris Country Park</u> |
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| Summary of Project and Core Objectives | The overall objective is to overcome the lack of accessible open space in Chatteris. Historically a country park has been proposed to the south west of the town between the disused railway line to Somersham and the B1050. More recently the proposed development to the south east of the town and stretching towards Mepal Outdoor Centre has been identified as being a possible location. However, at this stage the Local Development Plan is still |

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| | being prepared and a final site has yet to be identified. An Area of Search close to or within the existing settlement boundary we will be used to identify the preferred location. |
| Lead Delivery Agent and Partners | Developers; Fenland District Council; and Chatteris Town Council. |
| Funding (Partners and Mechanisms) | Developers; and Growth funds |
| Ball Park Costs (capital and operational expenditure where known) | Unknown at this stage |
| Delivery Timetable | Delivery by 2031 |
| Outputs (quantified where possible e.g. ha species rich grassland) | Unknown at this stage. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 4: Support Healthy Living and Wellbeing. Objective 3: Promote Sustainable Growth and Economic Development. Objective 2: Mitigate and Adapt to Climate Change. Objective 1: Reverse the Decline in Biodiversity. |
| Links to GI Themes and Benefits | A new Country Park in Chatteris will support the Economic Investment Programme by enhancing the amount and quality of green space assets in the town. Further benefit may arise in meeting the objectives of the Welcome to the Cambridgeshire Fens initiative. As details become available concerning location and design, it may be possible for the Country Park to deliver aspects of other Themes and Benefits such as creating new semi-natural habitats as part of the Biodiversity Enhancement Programme. |

- Chatteris - Somersham Railway Corridor Enhancement

Target Area 3.10 Block Fen:

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| Name of Project | Block Fen minerals after use wetland restoration project |
| | Creation of wetland habitat following |

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| Summary of Project and Core Objectives | mineral extraction at Block Fen. The project will deliver a significant new Green Infrastructure site providing access to high quality wetland habitats including 500ha of wet grassland and open water areas where public access for quiet countryside enjoyment sits alongside the creation of high quality wetland, designed to be important in its own right whilst also adding value to the adjacent Ouse Washes. Part of the Great Ouse wetland. |
| Lead Delivery Agents and Partners | Cambridge County Council Aggregate Industries, Lafarge, Hanson, RSPB Environment Agency, Mick George Ltd |
| Outputs (quantified where possible e.g. ha species rich grassland) | 500ha wet grassland and several areas of open water |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the decline in Biodiversity Objective 3: Promote Sustainable Growth and Economic Development. Objective 2: Mitigate and adapt to climate change. Objective 4: Support healthy living and wellbeing. |

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| Name of Project | Trial Area - Wet Grassland Creation, Block Fen / Langwood Fen , near Mepal |
| Summary of Project and Core Objectives | To trial the methodology for the creation of wet grassland which is proposed in the Block Fen / Langwood Fen Master Plan. This methodology is to be used for the creation of around 480 hectares of wet grassland following the extraction of sand and gravel at Block Fen / Langwood Fen, Near Mepal. |
| Lead Delivery Agent and Partners | Cambridgeshire County Council, Aggregates Industries, RSPB, Mick George Ltd. |
| Delivery timescale | Created in 2009, the progress of the wet |

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| | grassland and the visiting bird species, are currently being monitored. |
| Outputs | 12 hectares of wet grassland, and a robust methodology for the creation of additional wet grassland at Block Fen / Langwood Fen, Mepal. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the decline in Biodiversity Objective 2: Mitigate and adapt to climate change. |

Target Area 3.11 Ouse Washes:

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| Name of Project | Ouse Washes Habitat Creation Project |
| Summary of Project and Core Objectives | The project has been created to deliver replacement habitat to address the deterioration of the Ouse Washes. The Environment Agency is delivering this project on behalf of Government (Defra) to address the deterioration of the Ouse Washes SPA and Ramsar site up to 2002. The objective is to create 500ha by 2020 of new wet grassland habitat close to the Ouse Washes of suitable quality to be used by breeding birds specifically, snipe, black-tailed godwit and ruff together with wintering wigeon. The project is focussed on two areas adjacent to the southern end of the Washes. |
| Lead Delivery Agents and Partners | Environment Agency RSPB, Natural England, Cambridgeshire Wildlife Trust |
| Outputs (quantified where possible e.g. ha species rich grassland) | 500ha of replacement wet grassland to provide alternative habitat for wintering wigeon and breeding waders including black-tailed godwit affected by increasing incidence of summer flooding on Ouse Washes |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the decline in biodiversity Objective 2 Mitigate and adapt to climate change Objective 4: Support healthy living and wellbeing |

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| Name of Project | Ouse Washes - Management of the Ouse Washes |
| Summary of Project and Core Objectives | The project will maintain wet grassland washes for the benefit of internationally important wintering wildfowl and breeding waders at the heart of the Great Ouse Wetland Project Area. Habitats (extending to some 2,400ha, part of which is in Norfolk) include wet grassland washlands and associated ditches, banks and withy beds. |
| Lead Delivery Agents and Partners | RSPB, Cambridge Wildlife Trust, Wildfowl and Wetlands Trust, Environment Agency, Natural England |
| Outputs (quantified where possible e.g. ha species rich grassland) | 2,400ha (part in Norfolk) of wet grassland washlands with associated ditches, banks and withy beds. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the decline in biodiversity. Objective 2: Mitigate and adapt to climate change. Objective 4: Support healthy living and wellbeing. |

STRATEGIC AREA 4: EASTERN FENS AND TOWNS

Strategic Area Projects:

| Name of Project | Fens Adventurers Partnership: Green Fen Way |
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| Summary of Project and Core Objectives | The Green Fen Way project aims to make significant improvements to countryside access networks (both Public Rights of Way (PRoW) and permissive paths) in the Fens Adventurers area with the aim of benefiting rural tourism and businesses. The project will provide an important legacy for future projects to build on and will help to redress the balance of funding towards the Fens. |
| Outputs (quantified where possible e.g. ha species rich grassland) | 300 improved way-marks/signs 30 projects improving access to the countryside Increased revenue for local businesses along route improvements. Increase tourism and overnight stays. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | 4: By providing improved access to the countryside for local residents and visitors. 3: Supporting local rural tourism businesses. 2: Encouraging use of sustainable transport links when accessing the countryside. 1: Improving the condition of paths and Right of Way. |

| Name of Project | Fens Waterways Link |
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| Summary of Project and Core Objectives | The Fens Waterways Link (FWL) will enhance river navigation to connect the Cathedral Cities of Lincoln, Peterborough and Ely as well as King's Lynn, Denver, March, Ramsey, Huntingdon and Cambridge. |
| Outputs (quantified where possible e.g. ha species rich grassland) | Opening up 240km of contiguous waterway (80km of new waterway and increased access to 160km of existing navigations) the project will: <ul style="list-style-type: none"> • Improve access to the rich heritage and landscape of the Fens; • Benefit the natural environment by linking major wetland sites and creating new habitats; • Improve and increase GI assets, and give local people a sense of ownership of their waterways as a place of belonging with rich opportunities for recreation, enjoyment and healthy activities; • Promote waterways as a venue for 'real world' learning, training and skills development; and • Enable visitors, businesses and others to become champions for the waterways at the heart of local communities. |

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| Lead Delivery Agent and Partners | Environment Agency Initial consultation by the Environment Agency led to the formation of a strategic group of more than 40 stakeholders contributing to the FWL vision. |
| Funding (Partners and Mechanisms) | In November 2009 Environment Agency appointed a new Project Manager, whose role is to provide strategic leadership for the project and drive forward partnership development and fundraising efforts. |
| Ball Park Costs (capital and operational expenditure where known) | Cambridgeshire-based phases of the project: Total cost £63.6m Total navigation 105km |
| Delivery Timetable | Overall the project can be seen as a long-term vision, with completion expected in fifteen to twenty years. The precise delivery timetable will be largely dependent on the availability of funding. |
| Outputs (quantified where possible e.g. ha species rich grassland) | <ul style="list-style-type: none"> • Wildlife habitat enhancements • Links to large-scale habitat restoration projects • Capital improvements to the waterway and associated amenities • Promoting sustainable transport via waterway, cycleway, bridleway, footpaths etc • Creating major countryside tourism asset that connects existing and new attractions • Providing focus for economic regeneration centred around new development adjacent to the waterway • Protecting and enhancing cultural heritage and landscape character of the Fens • Providing increased access to outdoor destinations, sporting, recreation and leisure opportunities • Giving local people a sense of ownership of their local waterways as a place of belonging • Promoting waterways as a venue for learning and skills development |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 3: Promote Sustainable Growth and Economic Development Objective 4: Support Healthy Living and Wellbeing Objective 2: Mitigate and Adapt to Climate Change |

Target Area 4.1 Littleport:

- Littleport Urban Greenway
- New River Town Park
- Cycleway Improvements

- Littleport Woodland Creation

Target Area 4.2 Ely:

| Name of Project | Ely Country Park |
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| Summary of Project and Core Objectives | <p>Ely Country Park is being developed to create new GI resource in the City of Ely to address shortfalls in the provision of open amenity spaces in the market town and sub-region. Its strategic location at the confluence of the urban city and the fenland landscape will establish the site as a key gateway to the countryside in and around Ely.</p> <p>Three core objectives were identified as being met by the development of Ely Country Park: circulation conservation, and the development of appropriate facilities.</p> |
| Outputs (quantified where possible e.g. ha species rich grassland) | The outputs of the Ely Country Park development will promote ecological and social benefits both on site and for the wider community. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | <p>Objective 3: Promote Sustainable Growth and Economic Development.</p> <p>Objective 4: Support Healthy Living and Wellbeing.</p> <p>Objective 1: Reverse the Decline in Biodiversity.</p> <p>Objective 2: Mitigate and Adapt to Climate Change.</p> |

- Ely Woodland Creation
- North Ely Development
- Ouse SuDS
- Sustainable Access across A10

Target Area 4.3 Soham:

- Soham Commons Restoration
- Improved public open space and town parks

Target Area 4.4 Ely Ouse:

- Environmental Stewardship Schemes - Commons
- Eastern Gateway Green Infrastructure Expansion

STRATEGIC AREA 5: CHIPPENHAM FEN

- Continued Reserve management
- Water management investigation

STRATEGIC AREA 6: CAMBRIDGE AND SURROUNDING AREAS

Strategic Area Projects:

| Name of Project | Cambridgeshire Chalk Rivers Project |
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| Summary of Project and Core Objectives | <p>Chalk rivers are a habitat of national importance. They often contain good water quality with a reliable flow and are not just important in their own right, but also because they provide habitat corridors through the south of the county. They provide suitable conditions for species of conservation importance such as water voles, otter, wild brown trout and water crowfoot.</p> <p>Cambridgeshire has a number of chalk rivers, many of which are in need of conservation work to optimise their habitat, amenity and land drainage value. The main chalk rivers are the Cam, Granta and Rhee. Smaller tributary rivers include the Mel, Shep, Snail and Wilbraham Rivers, Hobson's Brook, Hoffer Brook, Guilden Brook, Cherry Hinton Brook and Bassingbourn's Well Head Springs.</p> <p>There are opportunities to undertake significant river restoration work to reverse the effects of past river engineering works and while access along the full length of these rivers would be detrimental to their role as wildlife habitats, there are opportunities for localised access enhancements linked to settlements.</p> <p>There are a growing number of local conservation groups implementing improvements from a bottom-up approach. With greater support it is felt that these groups could achieve even more and act as a catalyst for further action.</p> <p>Project objectives include to:</p> <ul style="list-style-type: none"> • enhance the habitat and amenity value of the Cambridgeshire chalk rivers; and • work in partnership with landowners, local groups and parish councils in the protection, enhancement and restoration of chalk rivers. |

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| | <ul style="list-style-type: none"> undertake monitoring to identify watercourses worthy of designation as County Wildlife Sites. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lead Delivery Agent and Partners | South Cambridgeshire District Council, Water for Wildlife, Environment Agency, Local Conservation Groups, Parish Councils, Landowners | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Funding (Partners and Mechanisms) | Phase 1 (to commence autumn 2011) aims to deliver selection of "quick wins" funded through capital grant schemes such as Awards for All, Sitta, Biffa or HLF. Phase 2 (to commence 2012 for 2yrs) seeks to part fund a project officer to deliver capital improvement works fund as well as securing additional external funding for capital works. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ball Park Costs (capital and operational expenditure where known) | <table> <tr> <td>£16,000 salary for part-time officer for 2yrs</td> <td></td> </tr> <tr> <td>£32K</td> <td></td> </tr> <tr> <td>Cost to hosting organisation</td> <td>unknown</td> </tr> <tr> <td>Travel costs</td> <td>£4K</td> </tr> <tr> <td>Site monitoring costs (for experts services)</td> <td>£4K</td> </tr> <tr> <td>Data capture by Cambs ERC</td> <td>£2K</td> </tr> <tr> <td>Equipment and training</td> <td>£1K</td> </tr> <tr> <td>Flow modelling and expert project dev input</td> <td>£20K</td> </tr> <tr> <td>Capital improvement works</td> <td>£50K</td> </tr> <tr> <td>Project promotion (website/leaflet)</td> <td>£2K</td> </tr> <tr> <td>Project management costs</td> <td>£5K</td> </tr> <tr> <td>Total (2yrs)</td> <td>£120,000</td> </tr> <tr> <td>Contingency @ 10%</td> <td>£ 12,000</td> </tr> <tr> <td>Grand total</td> <td>£132,000</td> </tr> </table> | £16,000 salary for part-time officer for 2yrs | | £32K | | Cost to hosting organisation | unknown | Travel costs | £4K | Site monitoring costs (for experts services) | £4K | Data capture by Cambs ERC | £2K | Equipment and training | £1K | Flow modelling and expert project dev input | £20K | Capital improvement works | £50K | Project promotion (website/leaflet) | £2K | Project management costs | £5K | Total (2yrs) | £120,000 | Contingency @ 10% | £ 12,000 | Grand total | £132,000 |
| £16,000 salary for part-time officer for 2yrs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| £32K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cost to hosting organisation | unknown | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Travel costs | £4K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site monitoring costs (for experts services) | £4K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data capture by Cambs ERC | £2K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment and training | £1K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flow modelling and expert project dev input | £20K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capital improvement works | £50K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project promotion (website/leaflet) | £2K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project management costs | £5K | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total (2yrs) | £120,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contingency @ 10% | £ 12,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grand total | £132,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Delivery Timetable | Jan 2012 to Jan 2014 (of phase 2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outputs (quantified where possible e.g. ha species rich grassland) | <p>500m of habitat enhancement and/or restoration of in channel features annually. Appropriate vegetation management regimes on specific reaches of rivers.</p> <p>500m of improved riverside access (where appropriate) annually.</p> <p>Promotion of a simple monitoring regime that can be undertaken by local people.</p> <p>A significant contribution to county and national BAP, especially for rivers and</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | stream, water vole and otter. River restoration projects on Rhee Clock Holt) & Granta (delivery of EA/RRC report actions) 2 community based projects with the River Shep and River Mel Groups (or similar) |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Reverse the decline in biodiversity Mitigate and adapt to climate change Support healthy living and well being |

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| Name of Project | Fowlmere Nature Reserve extension and development of facilities |
| Summary of Project and Core Objectives | The extension of Fowlmere Nature Reserve and the development of facilities to facilitate enjoyment of the site by an already increasing number of visitors, and in anticipation of further increases resulting from growth in the South Cambridgeshire area. |
| Lead Delivery Agents and Partners | RSPB South Cambridgeshire District Council, Natural England |
| Outputs (quantified where possible e.g. ha species rich grassland) | Acquisition of c.10ha of adjacent agricultural land and plantation to develop species rich grassland c.6ha and wet woodland/fen c.4ha Provision of replacement hides and viewing facilities and building of new visitor reception and educational facility. |
| GI Outcomes (which GI objectives is it hitting - in order of importance) | Objective 1: Reverse the Decline in Biodiversity. Objective 4: Support healthy living and wellbeing. |

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| Name of Project | Linear monuments |
| Summary of Project and Core Objectives | The ancient monuments of the Devil's Ditch, Fleam Dyke and Roman Road cut across the chalk of south-east Cambridgeshire. As well as their intrinsic heritage and biodiversity value they are public rights of way and as such act as multi-functional green corridors. |
| Outputs (quantified where possible e.g. ha species rich grassland) | Devils' Dyke restoration project Fleam Dyke & Roman Road management Fleam Dyke / Roman Road access project Chalk grassland habitat linkages across the |

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| | landscape (using road verges, green lanes and field margins) Access route linking Roman Road and Fleam Dyke |
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▪ **Woodland Linkage Project**

| Name of Project | Fens Waterways Link |
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| Summary of Project and Core Objectives | The Fens Waterways Link (FWL) will enhance river navigation to connect the Cathedral Cities of Lincoln, Peterborough and Ely as well as King's Lynn, Denver, March, Ramsey, Huntingdon and Cambridge. |
| Outputs (quantified where possible e.g. ha species rich grassland) | <p>Opening up 240km of contiguous waterway (80km of new waterway and increased access to 160km of existing navigations) the project will:</p> <ul style="list-style-type: none"> • Improve access to the rich heritage and landscape of the Fens; • Benefit the natural environment by linking major wetland sites and creating new habitats; • Improve and increase GI assets, and give local people a sense of ownership of their waterways as a place of belonging with rich opportunities for recreation, enjoyment and healthy activities; • Promote waterways as a venue for 'real world' learning, training and skills development; and • Enable visitors, businesses and others to become champions for the waterways at the heart of local communities. |
| Lead Delivery Agent and Partners | <p>Environment Agency</p> <p>Initial consultation by the Environment Agency led to the formation of a strategic group of more than 40 stakeholders contributing to the FWL vision.</p> |
| Funding (Partners and Mechanisms) | In November 2009 Environment Agency appointed a new Project Manager, whose role is to provide strategic leadership for the project and drive forward partnership development and fundraising efforts. |
| Ball Park Costs (capital and operational expenditure where known) | <p>Cambridgeshire-based phases of the project:</p> <p>Total cost £63.6m Total navigation 105km</p> |
| Delivery Timetable | Overall the project can be seen as a long-term vision, with completion expected in fifteen to twenty years. The precise delivery timetable will be largely dependent on the availability of funding. |

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| <p>Outputs (quantified where possible e.g. ha species rich grassland)</p> | <ul style="list-style-type: none"> • Wildlife habitat enhancements • Links to large-scale habitat restoration projects • Capital improvements to the waterway and associated amenities • Promoting sustainable transport via waterway, cycleway, bridleway, footpaths etc • Creating major countryside tourism asset that connects existing and new attractions • Providing focus for economic regeneration centred around new development adjacent to the waterway • Protecting and enhancing cultural heritage and landscape character of the Fens • Providing increased access to outdoor destinations, sporting, recreation and leisure opportunities • Giving local people a sense of ownership of their local waterways as a place of belonging • Promoting waterways as a venue for learning and skills development |
| <p>GI Outcomes (which GI objectives is it hitting - in order of importance)</p> | <p>Objective 3: Promote Sustainable Growth and Economic Development Objective 4: Support Healthy Living and Wellbeing Objective 2: Mitigate and Adapt to Climate Change</p> |

Target Area 6.1 Northstowe:

- Northstowe Enhanced Rights of Way Links

Target Area 6.2 Wicken Fen:

| Name of Project | Wicken Fen Vision |
|------------------------|---|
| <p>Project Summary</p> | <p>Wicken Fen is an ambitious project to create a new nature reserve on land between Cambridge and Wicken Fen. In the long-term Wicken Fen aims to create a diverse range of habitats providing suitable environments for a huge number of species, including many which are rare and threatened, as well as providing different landscapes for visitors to explore, with benefits for health, quality of life and community engagement.</p> <p>The area will be used to support wider issues created by climate change including potential carbon storage benefits and floodwater storage to allow water to percolate into soils and replenish ground water resources.</p> |

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| | <p>Core objectives of the project are to:</p> <ul style="list-style-type: none"> ▪ Open up land for wildlife and people; ▪ Create a mosaic of habitats, providing new sustainable opportunities for rare fenland species, securing the essential resource of water and protecting peat soils; ▪ Provide opportunities for visitors, tourists and local residents to benefit from access to the Wicken Fen area; ▪ Provide new economic opportunities for the local economy; |
| <p>Lead Delivery Agents and Partners</p> | <p>The National Trust, Environment Agency; Natural England; DEFRA; Cambridgeshire Horizons; EEDA; Cambridgeshire County Council; South Cambridgeshire District Council; Cambridge City Council; Greater Cambridge Partnership; Swaffham IDB; Cambridge University; Anglia Ruskin University; Sustrans; local business representatives.</p> |
| <p>GI Outputs</p> | <ul style="list-style-type: none"> - Creation of nature reserves - (BAP habitat) composed of fen, reed bed, wet grassland, open water, dry grassland, scrub and woodland; Creation of mitigation habitat for costal losses, particularly Reed Bed, and adaptation to protect 255 hectares of SSSI, NNR, Ramsar and SAC sites from impacts of climate change. - Creation of a more accessible countryside; including 14km of new cycleway, and new or improved multi users (walkers, cyclist and equestrian) accessible routes. Improved access and facilities for recreational use of over 10km of water way. Support the health and well being of the region by the provision and easy access to an inspiring landscape. - Creation of numerous jobs and spend within local economy, (presently 20,000 visits per annum to Wicken Fen are tourists, potentially spending £1 million per annum in the region). Total visitors at Wicken circa 50,000pa in 2009. - The potential to halt the loss of 100's of tonnes of carbon from peat soils. |
| <p>GI Outcomes</p> | <p>Objective 1: Reverse the Decline in Biodiversity Objective 2: Mitigate and Adapt to Climate</p> |

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| | <p>Change</p> <p>Objective 3: Promote Sustainable Growth and Economic Development</p> <p>Objective 4: Support Healthy Living and Wellbeing</p> |
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| Name of Project | Wicken Fen Heritage Trails |
| Project Summary | <p>Heritage Trails</p> <p>Heritage Trails would use the historic assets of the area to add value for visitors to the area. Accessible by walking or cycling, each would address a key historical theme, and would be thematically waymarked, interpreted and, where appropriate, reconstructed.</p> <p>Fen Horizons Trail: Circular route, with information points at Anglesey Abbey and Burwell, via Reach, along the Reach Lode to the fen, along the fen edge and then down Burwell Lode to Burwell, and back to Anglesey.</p> <p>Religious Houses Trail: Circular route, with information points at Waterbeach and Bottisham LAPs, Burwell, Ely and Soham Libraries, and Ely, Burwell and Denny Museums, connecting Fen Ditton and Horningsea to Waterbeach Abbey, Denny Abbey, Spinney Abbey, Fordham Abbey, Burwell Bishop's Palace, Anglesey Abbey and back to the Visitor Centre. Spurs might extend from Wicken to Fordham Abbey, Ely Abbey and Cathedral, and Isleham Priory.</p> <p>Barrows: In prehistory, large barrows or burial mounds were built along the fen edge to denote identity and ownership. Their scale would have made a significant impact on the flat fenland landscape, and it would be possible to recreate this effect using earthen mounds or viewing platforms, creating views across the newly recreated Wicken Fen not seen since prehistory.</p> <p>Devil's Dyke: Currently under development by a partnership of SHAPE Cambridge, Cambridgeshire County Council and English Heritage</p> |

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| | Fleam Dyke: A long distance footpath is already in place |
| Lead Delivery Agents and Partners | Cambridgeshire County Council, The National Trust, English Heritage |
| GI Outputs | <p>A network of interlinked and related trails in the areas of Wicken Fen.</p> <p>Information points based at libraries, access points, mobile libraries, museums and other local venues.</p> <p>A network of downloadable resources accessed from Cambridgeshire County Council terminals, information points and mobile devices.</p> <p>Waymarking and interpretation explaining the key features of the historic landscape, with further information available via downloadable media.</p> <p>A permanent reminder of the prehistory and importance of the site through the causeway</p> |
| GI Outcomes | <p>Objective 4: Support Healthy Living and Wellbeing.</p> <p>Objective 3: Promote Sustainable Growth and Economic Development.</p> <p>Objective 1: Reverse the Decline in Biodiversity.</p> |

Target Area 6.3 Cambridge:

- Cambridge Nature Conservation Strategy

Cambridge Fringe Sites

| Name of Project | Cambridge Southern Fringe |
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| Summary of Project and Core Objectives | <p><u>Trumpington Meadows</u></p> <p>Throughout the residential development there will be 'green fingers' - areas of open space that extend into the development from the arable fields to the south and country park to the west. All 'green fingers' except one, which runs above the main gas pipeline, will be planted with two rows of trees to create avenues. Pocket parks and greens will also be provided throughout the development.</p> <p>A new riverside community park (Country Park) is to be provided along the River Cam</p> |

extending north and south of the M11 motorway. It will include a variety of habitats, including wet and dry meadowland, wet and dry woodland and tussocky grassland at the river edge. There will be two balancing ponds within the Country Park, sited on land to the north of the M11 and east of the River Cam. There will be new planting around the balancing ponds.

Shared cycle and pedestrian routes will be provided, linking the country park to the built up area. The two parts of the country park on either side of the M11 will be linked by a cycle and footpath using the existing bridge over the motorway. There will be a good network of informal footpaths across the park.

Land directly to the south and south west of the built up area will remain in arable use and be rented out to local farmers. The illustrative landscape strategy plan within the Design and Access Statement accompanying the planning application seeks to break up these large fields between the M11 and the development edge into smaller fields that replicate the old pattern of field boundaries. New trees will be planted within the new hedgerow boundaries to break up the expanse of arable fields and improve biodiversity.

The site contains archaeological remains from the Palaeolithic period through to the Second World War. Several areas of remains are sufficiently important to warrant designation as scheduled ancient monuments, including an area of Iron Age and Roman British Settlement remains within the site close to the River Cam.

Bell School

Bell School has a soft buffer of informal open space centred around two balancing ponds along the southern edge, the provision of allotments, play areas and pocket parks together with a central linear informal space terminating in a crescent on its southern end and a landscaped buffer adjacent to

Greenlands on its northern end. The layout provides an opportunity for an attractive pedestrian link with views out to the countryside beyond the site, including the Gog Magogs and Wandlebury Country Park to the south.

Clay Farm

Landscape and open space are key elements contributing to the overall character of the proposed development. The existing trees, plantations, hedges, Hobson's Brook and associated ditches are significant components that characterise the development, and provide the background around which the new landscape will be designed. A very high proportion of these features have been developed into the masterplan.

The green corridor provides the transition between the urban fabric and the open countryside to the south, and remains in the Green Belt. A transition is proposed within this corridor from more formal recreation/open space adjacent to Long Road to more informal open space further south to merge with the countryside character beyond. This is achieved with the majority of active uses located north of the Cambridgeshire Guided Busway Addenbrooke's spur. South of the Cambridgeshire Guided Busway spur will comprise wet/dry balancing ponds, a permanent wetland feature, informal species rich grassland and tree planting primarily along the western and southern edges. An allotment site of 1 hectare is included on the western edge of the southern section. This is acceptable in landscape terms provided appropriate boundary treatment is included. The South Cambridgeshire Cambridge Southern Fringe Area Action Plan identifies a countryside enhancement area south of Clay Farm seeking enhancements to the landscape setting of Cambridge and improved public access to the countryside adjoining this major new urban extension to Cambridge.

Glebe Farm

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| | <p>The public open space is spread across three main areas: a central open space, a western open space and an eastern open space, each of which contains a play area. These three spaces are subject to a similar palette of street furniture. The layouts and play specification for the spaces provide for a range of different ages, from toddlers to teenagers. The open space on the northern side of the site, which has previously been referred to as the 'Zone of Integration', is much less animated and smaller in scale and seeks to implement a native tree planting mix with a wildflower seeded area along its northern margins. Along the sides of the site that face Hauxton Road and the Addenbrooke's Access Road is a buffer strip of native structural landscaping arranged in a series of thickets. The allotments are provided at the very eastern side of the site and are sub-divided by a roadway and potential strategic pedestrian/cycle link to Exeter Close. A number of pedestrian and cycle links are provided at regular intervals. A strategic link is provided centrally that meets with Bishop's Road and crosses to meet Hauxton Road further north. Along the western side of the site adjacent to Hauxton Road, the proposal extends the off-road pedestrian/cycleway provided as part of the Addenbrooke's Access Road further northwards, connecting to the existing Park & Ride Toucan crossing.</p> <p><u>Addenbrooke's 20:20</u> The Addenbrooke's site has a number of areas of public realm within it and provides scope for informal areas for relaxation. The site links with the wider City and the surrounding countryside via strategic footpath and cycleway routes.</p> |
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| Name of Project | North West Cambridge |
| Summary of Project and Core Objectives | <p>Land between Huntingdon Road and Histon Road (NIAB 1)</p> <p>A park is proposed in the centre of this development of 1,780 dwellings within Cambridge's boundaries and a green corridor</p> |

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| | <p>is proposed along the outer boundary of the development that runs between Cambridge and South Cambridgeshire. The green corridor along the boundary will include the retained hedgerows and additional planting; the existing definitive footpath linking Huntingdon Road and Histon Road, an additional cycle route and new drainage facilities which take the form of swales, ditches or ponds. The park will be provided in the centre of the development, near the mixed-use community centre and linked to two of the green corridors that cross the site. This park will contain sports pitches, landscaped areas for informal play and recreation, drainage facilities including drains or swales along the edges of the park and wetland areas. Children's equipped play areas will be provided throughout the site.</p> <p><u>Land between Huntingdon Road and Histon Road (NIAB 2)</u></p> <p>The development must enhance the landscape, biodiversity and public access in the open countryside area adjoining the development, including hedgerow management and enhancement, measures to protect and enhance wildlife habitats and new links to the countryside via the existing farm bridge over the A14.</p> <p><u>Land between Madingley Road and Huntingdon Road</u></p> <p>A large central area of open space will be provided in the strategic gap between the two parts of the site, which will be retained as Green Belt. There will also be a substantial open landscaped area between the development and the M11, retained in the Green Belt. The Plan requires improved linkages into the wider countryside and other areas of publicly accessible open space such as the Coton Countryside Reserve and the NIAB 1 and 2 developments.</p> |
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| Name of Project | Cambridge East |
| Summary of Project and Core Objectives | In addition to the creation of strategic routes connecting Green Infrastructure in the City with the surrounding districts and key |

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| | <p>projects such as Wicken Fen and Anglesey Abbey, a Country Park is proposed to the east of Airport Way, as part of the development of this site as a new urban quarter for Cambridge. An urban park is also proposed on the existing Park and Ride Site, along with a range of smaller open spaces and allotments. A Green Corridor will be retained through the new urban quarter, linking Coldham's Common with the wider countryside, such as to the fens and the Gog Magog Hills. This corridor is retained as Green Belt.</p> |
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| Name of Project | Cambridge Northern Fringe |
| Summary of Project and Core Objectives | <p><u>Orchard Park</u> The South Cambridgeshire Site Specific Policies Development Plan Document provides for a further 220 dwellings in place of some of the employment uses and requires the creation of cycle and footpath links to the rural area to the north of the A14.</p> <p><u>Cambridge Northern Fringe East</u> A joint Area Action Plan will be prepared to address the redevelopment potential of this area lying largely in Cambridge, with a small part adjoining the railway line located in South Cambridgeshire.</p> |

Cambridge 'Necklace' Projects

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| Name of Project | Coton Countryside Reserve |
| Summary of Project and Core Objectives | <p>Located in Cambridge's western rural/urban fringe, the 120ha Countryside Reserve is being developed for enhanced biodiversity, farming operations (arable land and pastures), public access and visitor facilities as well as educational opportunities. This will provide free/ low-cost recreational opportunities as well as enhanced quality of life for local people and visitors.</p> |

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| Name of Project | Gog Magog Countryside Project |
| Summary of Project and Core Objectives | <p>Based on partnership working developed some years ago between Cambridge Past, Present & Future; the Wildlife Trust; Magog Trust; and local authorities, this project aims to protect and enhance the high quality landscape of the Gog Magog Hills just to the south of Cambridge. The vision is to provide an expanded and linked set of green infrastructure sites on the southern edge of Cambridge linking Cherry Hinton chalk pits to Wandlebury Country Park and Magog Down. The aims</p> |

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| | are to provide improved recreational areas including the existing country park at Wandlebury, to enhance biodiversity such as the restoration of Cherry Hinton chalk pits, and to provide new and improved access such as the new cycle route to Wandlebury and the opening up of East Pit. The project area is located close to major new urban extensions including Cambridge southern Fringe and Cambridge East and the area has the potential to become far more important in meeting the recreational needs of the new and existing communities of south and east Cambridge. |
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| Name of Project | North Cambridge Heritage Trail |
| Summary of Project and Core Objectives | This proposed circular recreation route will encompass scheduled and non-scheduled sites such as Worts Meadow, Landbeach Roman sites, Carr Dyke and Waterbeach Abbey. |

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| Name of Project | Cambridge Sports Lake |
| Summary of Project and Core Objectives | Located on the edge of Cambridge, Cambridge Sport Lakes will be one of the country's largest purpose-built sports facilities and competition venues for rowing, triathlon, BMX, cycling and canoeing. The multi-sport outdoor centre offers facilities suitable for international competition while preserving essential green space for the region. |

Cambridge City Centre

- Restoration of Cambridge Commons and Floodplain

Target Area 6.4 Cambourne:

- Cambourne Green Infrastructure

Target Area 6.5 Wimpole:

- Wimpole Cycling Link

Target Area 6.6 West Cambridgeshire Woodlands:

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| Name of Project | West Cambridgeshire Hundreds |
| Project Summary | The West Cambridgeshire Hundreds Habitat Enhancement project aims to enhance biodiversity through the better management, expansion and linkage of habitats, concentrating on the ancient woodlands and hedgerow network across the project area. It |

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| | <p>aims to do this by working in partnership with local landowners to identify opportunities for environmental enhancements and co-ordinating action across property boundaries to increase landscape connectivity over a large area and to accomplish greater success than could be realised by landowners working independently. It is a joint project between local landowners, the Wildlife Trust, Woodland Trust, National Trust, Forestry Commission, Natural England and FWAG.</p> |
| Lead Delivery Agents and Partners | <p>Partnership steering group of above project members. Wildlife Trust co-ordinates project meetings & liaison and project work</p> <p>Local landowners, the Wildlife Trust, Woodland Trust, National Trust, Forestry Commission, Natural England and FWAG</p> |
| Funding | <p>Individual landowners fund capital and operation management and enhancement of environmental features on their own land, often through agri-environment schemes such as Environmental Stewardship and Woodland Grant Scheme.</p> <p>Wildlife Trust provides £7,500 of staff time annually to manage the partnership, co-ordinate the partnership work plan and take forward specific projects.</p> <p>Project partners commit staff or their own time to partnership events and meetings.</p> |
| Delivery Timetable | 50 years |
| GI Outputs | <p>The project was initially instigated by the Wildlife Trust to address the issues of isolation of our woodland nature reserves in west Cambridgeshire. However, in parallel to this a group of local landowners had come together to explore how they could better manage their woodlands and farmland and the Woodland Trust had identified an opportunity for the creation of a new woodland with a private landowner.</p> <p>The location was selected because of the importance of the ancient woodlands within this part of the county and the fact that they form an ancient woodland cluster.</p> |

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| | <p>The project design succeeds in meeting the project's objectives by taking a landscape approach to nature conservation and by respecting the privately owned and productively farmed nature of the project area. The project aims to integrate nature and landscape conservation and enhancement with viable and economic farming. The approach is a "bottom up" approach having a shared long-term vision, but implementing changes on an individual property at a pace that the landowner is comfortable with. A "masterplan" document has been produced with landowners actively involved with and consulted upon its production. This sets out the long-term vision, a rationale for action and a series of shared objectives.</p> <p>The project partners commissioned an external consultant trusted by the landowners (LDA Design) to produce the "masterplan". The local knowledge of project partners such as the Wildlife Trust and National Trust ensured that the document was robust and locally appropriate and the Wildlife Trust managed the contract on behalf of the partnership.</p> |
| GI Outcomes | <p>Objective 1: Reverse the Decline in Biodiversity. Objective 2: Mitigate and Adapt to Climate Change. Objective 4: Support Healthy Living and Well-being.</p> |

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| Name of Project | Bourn Brook Enhancement |
| Summary of Project and Core Objectives | River and floodplain restoration, water vole population protection and restoration. |
| Lead Delivery Agent and Partners | Countryside Restoration Trust, South Cambridgeshire District Council, FWAG |
| GI Outcomes (which objectives is it hitting - in order of importance) | Reverse the decline in biodiversity Mitigate and adapt to climate change Support healthy living and well being |