

Environment Agency
Cambridge Water Cycle Strategy
Scoping Study

August 2007



Halcrow Group Limited



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1

Executive Summary

- 1.1 The Cambridge Sub-region (CSR), which is covered by Regional Spatial Strategy (RSS14), falls within the London-Stansted-Cambridge-Peterborough (LSCP) growth area as identified in the Government's Sustainable Communities Plan (2003). Cambridgeshire Horizons is the Local Delivery Vehicle (LDV) tasked with the delivery of 47,500 new homes within the CSR by 2016. The six local planning authorities (LPAs) located within the CSR are currently working in partnership to produce their Development Plan Documents (which form part of the Local Development Framework (LDF)). If submitted without a sufficient evidence base supporting the provision of infrastructure, there is a risk that these may be considered 'unsound'.
- 1.2 The need for a sufficient evidence base concerning the required water services infrastructure for the planned development in the CSR is upheld in the various water-related policies contained in the revised RSS14 (due for adoption in mid 2007). These changes include Policy WAT3 which requires LPAs to work with the water companies, the Environment Agency and other relevant stakeholders in order to pursue an integrated, evidence-based approach towards the management of the water environment. An integrated Water Cycle Strategy (WCS) will support the LDF by fulfilling this requirement for "demonstrable evidence" of an integrated, strategic approach to water infrastructure planning.
- 1.3 There is currently no statutory requirement to undertake a WCS: they have been born out of necessity as an effective means of addressing the above policy requirements. WCS guidance is currently under development by the Environment Agency to capture the collective experience of those involved in developing the concept.
- 1.4 Various localised studies have been undertaken in the Cambridge area to determine the capacity of the existing water services infrastructure and possible flood risk. Examples include assessments used to inform RSS14, Cambridgeshire's Structure Plan, South Cambridgeshire District Council's LDF and Cambridge City Council's Local Plan. South Cambridgeshire District Council has been the first in the country to have its LDF Core Strategy judged as sound. A WCS will assist the other councils in the Sub-region to achieve similar success by providing a collective evidence base regarding the ability of existing water infrastructure to support the proposed levels of housing growth.
- 1.5 This scoping study was commissioned by the Environment Agency in order to inform and facilitate the undertaking of a WCS for the Cambridge Sub-region which, whilst building upon the previous work, will comprise a wider, more holistic, evidence-based approach. Such action is required to further support the planned growth and to prepare for the new challenges of climate change, Government policies and European legislation, for example, the Water Framework Directive and the European Habitats Directive. The WCS will identify opportunities to deliver best practice solutions for maximising the existing infrastructure and establish the cost and timescales involved in providing required infrastructure for the new

developments (this includes consideration of upgrade requirements for existing infrastructure where interdependencies are identified). The proposed WCS will also:

- Identify the demands of the proposed level of growth on existing water services infrastructure and establish its ability to deal with it
- Review and incorporate as appropriate the findings of previous studies
- Consider the key areas of flood risk management, water resources and supply, foul sewerage and wastewater treatment, and other relevant aspects such as demand management, wetlands ecology and guidance for developers
- Identify capacity issues and potential blockers to growth, enabling these to be resolved at the earliest possible stage in the planning process
- Provide an open, collective approach which will allow stakeholders to plan and implement infrastructure in time to meet the needs of new housing and industry

1.6 A phased approach to the undertaking of WCSs has been established to be the most suitable method. This allows the process to be tailored to suit individual areas. There is no prescriptive system for the development and content of each phase, because every area has different concerns and timeline considerations.

1.7 This report recommends that:

- The next phase of the WCS includes environmental constraints analysis alongside more detailed consideration of infrastructure requirements for allocated sites
- The project steering group for the next phase is established as soon as possible in order that an appropriate scope may be agreed to suit the requirements of all key stakeholders
- Findings of the WCS inform the next stage of policy development as site specific allocations for growth are identified and brought forward via the LDFs and Development Plan Documents
- This scoping report be made publicly available as part of the LDF evidence base
- The steering group include representation from key stakeholders namely Cambridgeshire Horizons, relevant local planning authorities, the Environment Agency, the appropriate water companies and internal drainage board and, potentially, key local developers
- Cambridgeshire Horizons be responsible for co-ordinating the funding arrangements and establishing a steering group to oversee the development of the WCS

1.7 Whilst this report does not include any detailed conclusions concerning likely constraints within the water cycle, it summarises the available information, highlights preliminary findings and recommends further work to inform the next phase of a WCS.

2 Introduction

2.1 *Background*

2.1.1 The Government's Sustainable Communities Plan (2003), identifies Cambridge for significant development between now and 2031, as a sub-region of the London-Stansted-Cambridge-Peterborough (LSCP) Growth Area.

2.1.2 The East of England Plan is the Regional Spatial Strategy (RSS14) which covers the Cambridge Sub-region (CSR). This document is expected to be adopted mid-2007. RSS14 sets out ambitious growth targets for the CSR. The Local Delivery Vehicle (LDV), Cambridgeshire Horizons, is tasked with driving the delivery of 47,500 new homes in the Cambridge Sub-region by 2016.

2.1.3 The growth identified for the CSR involves six local planning authorities. A partnership approach is key to achieving growth targets and the local planning authorities are already working together to produce their Development Plan Documents (which form part of the Local Development Framework (LDF)). For example, Cambridge City Council and South Cambridgeshire District Council are jointly producing Area Action Plans (AAPs) for North West Cambridge and Cambridge East. It is this working together that will be required to satisfy the water policies identified within East of England Plan Proposed Changes document.

“Local planning authorities should work with other partners to ensure that their plans, policies, programmes and proposals take account of the environmental consequences of river basin management plans, catchment abstraction management strategies, groundwater vulnerability maps, groundwater source protection zone maps, and proposals for water abstraction and storage...The Environment Agency and water industry should work with local authorities and other partners to develop an integrated approach to the management of the water environment.”

(Policy WAT3: Proposed Changes to the Draft East of England Plan)

2.1.4 To date, various, essentially localised, studies have been undertaken in the Cambridge area to determine the capacity of the existing water services infrastructure and possible flood risk. Examples include assessments used to inform RSS14, Cambridgeshire's Structure Plan, South Cambridgeshire District Council's LDF and Cambridge City Council's Local Plan.

2.1.5 This scoping study was commissioned by the Environment Agency in order to inform and facilitate the undertaking of a WCS for the Cambridge area, which whilst building upon the previous work, will comprise a wider, more holistic, evidence-based approach. Such action is required to further support the planned growth and to prepare for the new challenges of climate change, Government policies and European legislation, for example, the Water Framework Directive and the European Habitats Directive. The need for this evidence base is discussed further in section 3.2.

2.1.6 The Cambridge Sub-region is the area defined by the outermost boundary of the map below.

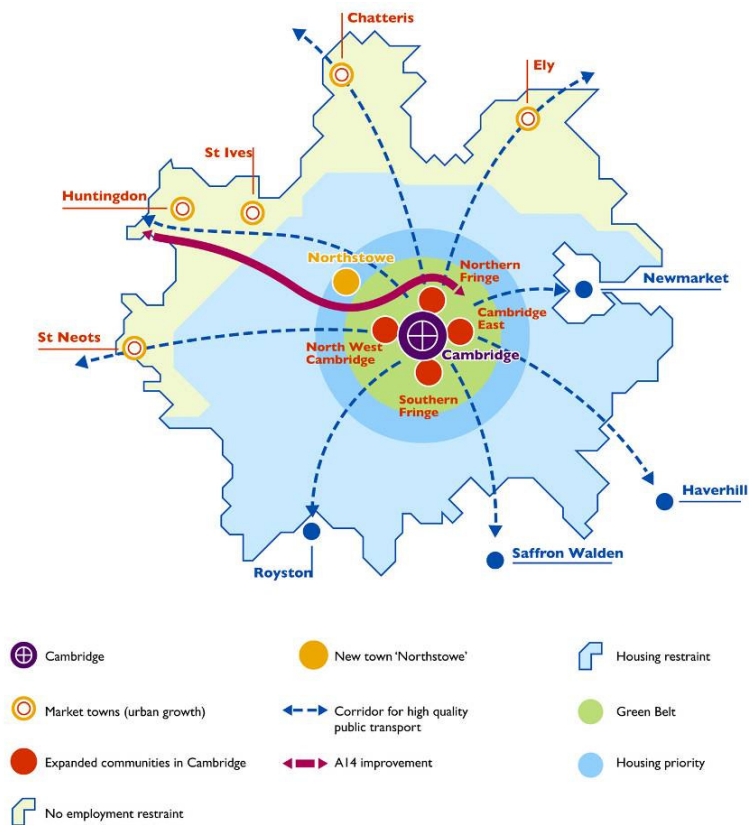


Figure 2.1: The Cambridge Sub-region

Source: Vision for the Cambridge Sub-region – Cambridgeshire and Peterborough Structure Plan 2003
 Crown Copyright All rights reserved Cambridgeshire County Council LA 07649X (2003)

2.1.7

It was agreed that this initial scoping exercise should focus on the main urban area of Cambridge and surrounding new settlements, since the most extensive development is concentrated in and around these areas, namely:

- Cambridge East – made up of 3 areas: Cambridge Airport; North of Newmarket Road & North of Cherry Hinton
- The Cambridge Northern Fringe – Arbury Camp
- Northstowe - the former Oakington Airfield and adjacent land near Longstanton
- The new settlement at Cambourne
- Cambridge Southern Fringe - consists of five main sites: to the east of Trumpington – Clay Farm and the showground site; to the south – Glebe Farm; to the south-west – the former Monsanto site; the expansion of Addenbrooke's.
- North West Cambridge - two new residential areas are planned - Land between Madingley Road and Huntingdon Road; & Land between Huntingdon Road and Histon Road

2.1.8

The two WwTWs relevant to the above development areas were highlighted by the East of England Capacity Study as potential constraints to growth. The catchments for these WwTW have therefore defined the boundary of this scoping study. The other WwTWs in the Cambridge Sub-region, which serve the surrounding market towns, were not identified as constraints by the East of England Capacity Study; however, these may need to be considered in the future. This could be done separately to the WCS for Cambridge as there are no known interdependencies between the areas in terms of wastewater.

3 A Strategic Approach

3.1

3.1.1

The Water Cycle

Figure 3.1 shows the main elements that comprise the Water Cycle. Although the methods of dealing with these may change, the basic requirements never will. Rain will fall, clean water will be needed for life, and sewage treatment will be needed for public health. Ignoring climate change (which can only be modelled crudely as no-one yet knows the full impacts), the only variable that cannot be accurately assumed is water quality. The Water Framework Directive (which has already been transposed into UK law) will ensure standards improve significantly between now and 2015. Hence, standards that are acceptable now will not necessarily remain so in the future.

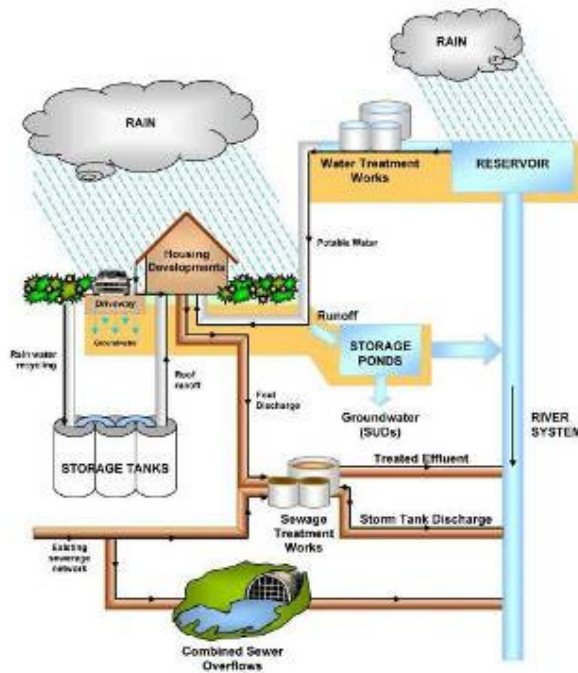


Figure 3.1: The Water Cycle

3.2

3.2.1

Implications for Development

The demand for clean water supply and sewage treatment can be expected to increase in proportion to the number of new homes being built, as can the risk of flooding if suitable mitigation measures are not provided. It will not be sustainable

to continue to develop new homes, employment land and community infrastructure at the scale proposed in RSS14 without due prior consideration of how to address factors such as flood risk, water resource, water supply, sewerage infrastructure, wastewater treatment and water quality.

The Proposed Changes to the Draft RSS14 (Secretary of State) include a chapter on water, which outlines four policies regarding the key topics of:

- Water efficiency
- Water resource development
- Integrated water management
- Flood risk management

3.2.2

Policy WAT2 (see below) in the draft plan emphasises the importance of water cycle infrastructure and the need for a strategic approach and investment programme. Stakeholders such as the local planning authorities, Cambridgeshire Horizons, Anglian Water, Cambridge Water, the Environment Agency and OFWAT are encouraged to work together in order to facilitate this approach.

“The Environment Agency and water companies should work with ... local authorities and delivery agencies to identify the appropriate additional infrastructure for both water supply and wastewater treatment to cater for levels of development provided through this plan [East of England Plan]...A co-ordinated approach to plan making should be developed through a programme of water cycle and river cycle studies to address water supply and wastewater treatment issues relating to development in this plan.”

(Policy WAT2: Proposed Changes to the Draft East of England Plan)

3.2.3

It is of critical importance to the delivery of the growth programme, that planning authorities not only address the provision of water cycle infrastructure in a strategic manner, but also that they demonstrate this commitment as part of the LDF process.

3.3

The Solution

3.3.1

An integrated WCS provides the ideal means by which to address this need. It will identify the demands of the proposed level of growth on existing water services infrastructure and establish its ability to deal with it. It will consider the key areas of flood risk management, water resources and supply, foul sewerage and

wastewater treatment, and other relevant aspects such as demand management, wetlands ecology and guidance for developers.

- 3.3.2 A phased approach to the undertaking of Water Cycle Strategies has been established to be the most suitable method. This allows the process to be tailored to suit individual areas, since although the topics covered will be the same, constraints and timeline are likely to vary from area to area. There is no prescriptive system for the development and content of each phase, because every area has different concerns and timeline considerations. Environment Agency guidance currently under development will instead aim to provide a 'roadmap' for the process and individual councils will be expected to interpret this in such a way as to best suit their own area's issues.

3.4 *The Benefits*

The planning process

- 3.4.1 A WCS can be used to provide supporting evidence for the development of planning documents at all levels, including national guidance, Regional Spatial Strategies (RSS), Local Development Frameworks (LDF) and the Core Strategy process. It also helps identify immediate funding and longer-term maintenance costs and enabling these to be factored into the planning process at an early stage.
- 3.4.2 One of the most important benefits of a WCS is that it offers a mechanism for engaging all the key stakeholders in the growth process and builds confidence between parties. A key benefit of this will be to help to generate ownership of an agreed strategy (reducing uncertainties and concern) which could resolve ongoing disputes such as the wastewater treatment and collection between AWS and Swavesey IDB.
- 3.4.3 By highlighting potential constraints to growth at an early stage of planning, a WCS can help to inform decisions regarding the scale and timing of required infrastructure, and provides a robust mechanism for determining the location and phasing of development. It will also assist the local planning authority with implementation of PPS25, PPS23 and the forthcoming PPS on climate change.
- 3.4.4 An added advantage is that by proposing a strategic and tactical environmental solution to necessary infrastructure provision, a WCS can help to reduce disturbance to existing communities e.g. avoiding repeated ad-hoc extensions.

3.4.5 Finally, the development of a WCS will help to demonstrate the local authorities' objective of upholding the economic, social and environmental well-being of local residents (Local Government Act 2000).

Ecological and environmental considerations

3.4.6 A WCS will assist the smooth progression of the LDF process and the granting of planning applications and consents by demonstrating to the Environment Agency that sustainability issues are being addressed. It will provide guidance to the planning authority and to developers in meeting Environment Agency requirements regarding flood risk management, water consumption targets and wastewater treatment and collection. A Strategy will benefit environmental water quality by mitigating the impact of sewage discharge on receiving watercourses and improving water quality, including consideration of future Water Framework Directive (WFD) targets. It can also include guidance concerning contributions towards green infrastructure and information on water-related ecological constraints and opportunities.

Water Company infrastructure provision

3.4.7 Improvements and upgrades to water company assets need to be programmed into the Water Company's capital programme, which runs in five year Asset Management Plan (AMP) cycles. We are currently in the AMP4 period (2005-2010) and Anglian Water Services Ltd (AWS) are in the process of preparing for their next submission to the Water Services Regulation Authority (Ofwat) for England and Wales. This will determine their allowable capital expenditure for AMP5 (2010-2015). Figure 3.2 illustrates the AMP cycle to 2015. This funding cycle and its associated constraints may have implications for the phasing of development.



Figure 3.2: Water Company capital funding cycle

3.4.8 A WCS will facilitate the timely provision of water infrastructure by providing supporting information for water companies to justify investment plans with the regulating body, Ofwat. It will also assist with the requirement to meet the expected higher standards of water management required by the Water Framework Directive (WFD).

Guidance for developers

3.4.9 A WCS will encourage developer and investor confidence in the study area by providing a clear understanding of their obligations with regard to planning applications, S106/PGS obligations and the phasing of their sites. It will inform them of the required flood mitigation infrastructure including Sustainable Drainage Systems (SuDS) and the likely programme of measures. A Strategy will offer general guidance on measures that developers should provide to reduce their impact on the water cycle for example, grey water recycling and rainwater harvesting and where possible make improvements.

Best practice approach

3.4.10 There has been widespread recognition of the value of Water Cycle Strategies in terms of sustainable water services infrastructure planning. The Environment Agency is now actively promoting them as best practice in their recently published Water Services Infrastructure Guide; a document which has been endorsed by water companies such as Anglian Water, Severn Trent, Thames Water and Cambridge Water as well as Regional Assemblies and Government Offices across South East England.

3.4.11 The Environment Agency is currently in the process of developing national policy guidance for Water Cycle Strategies. DEFRA has also lent its support to the process, recommending that the approach taken for Corby is used as a model for other growth areas.

4 Development

4.1 *Introduction*

4.1.1 There are six local planning authorities within the Cambridge Sub Region. These are: Cambridgeshire County Council (which has some planning powers concerning waste policy and development control powers in relation to schools, waste sites etc.); Cambridge City Council; South Cambridgeshire District Council; East Cambridgeshire District Council; Fenland District Council; and Huntingdonshire District Council.

4.1.2 Significant growth within the Cambridge Sub-region will occur in the market towns of St Neots, Huntingdon, St Ives, Chatteris and Ely. Given the urgency of issues around the major sites of Northstowe, Cambourne and the Cambridge urban extensions, this study has focussed on the catchments relevant to these major sites. The results of the East of England Wastewater Capacity study that are relevant to the market towns are discussed in Appendix A. It is recommended that further assessment of the market towns should be undertaken at a later stage.

4.2 *Local Policy Commitments*

4.2.1 The approach to development in the Cambridge Sub-region, as set out in the Cambridgeshire and Peterborough Structure Plan and the East of England Plan, is to provide housing and development at locations in the following order of preference:

- Within the built up area of Cambridge
- As an extension to Cambridge on land to be removed from the green belt
- In the New Town of Northstowe
- Within or as an extension of the surrounding market towns

4.2.2 The Cambridge Local Plan was adopted in July 2006 and is valid for three years until July 2009. Cambridge City Council is planning to apply for this date to be extended until the Core Strategy is adopted late in 2009.

4.2.3 This Local Plan sets a target for 12,500 dwellings to be constructed in the period 1999 to 2016. Provision is to be made for 6,500 homes within the built up area of Cambridge and 6,000 on the edge of Cambridge on land to be released from the Green Belt.

4.2.4 Currently 2,684 dwellings have been completed leaving a requirement for 9,816 homes to be built by 2016.

- 4.2.5 The South Cambridgeshire Local Plan was adopted in July 2004 however some policies have since been superseded with the adoption of the Core Strategy in January 2007. This Local Plan identifies the developments at Cambourne and the Northern/North West Fringe of Cambridge. The Local Plan identifies 20,000 homes to be provided between 1999 and 2016, of which 5,088 have been built to date.
- 4.2.6 The Arbury Park development of 900 dwellings within the Northern/North West Fringe is currently under construction. Plans for the development of 2,000 dwellings at the eastern end of the Northern Fringe are also at an early stage.
- 4.2.7 The majority of the development at Cambridge East is planned to commence after 2016, however some development will commence once the vision for the site is established. The public examination into Cambridge East is expected to commence in July 2007.

4.3

LDF Timetable

	Commence Pre-production	Pre-submission	Submission to Secretary of State	Adoption
Cambridge City Core Strategy	May 06	Jan 08	Sept 08	Dec 09
South Cambridgeshire Core Strategy	Jun 03	Jun 05	Jan 06	Mar 07
Cambridge East AAP	-	Jan 06	Jan 06	-
Cambridge North West AAP	Jan 06	Jun 07	Jan 08	Feb 09
Cambridge Southern Fringe AAP	Jul 03	Jan 06	Jan 06	Mar 07
Northstowe AAP	Jun 03	Jun 05	Jan 06	Mar 07
Cambridge Site Specific Allocations	Sep 07	Nov 08	Oct 09	Feb 11

Table 4.1: Documentation Timetable (Cambridge LDS Jan 2007)

- 4.3.1 Preparation of the Cambridge Core Strategy is expected to be complete by the end of 2007 and will be submitted to the Secretary of State in Autumn 2008. Data gathering for the Cambridge Site Specific Allocation document will begin in Autumn 2007 with the public consultation upon preferred options beginning at the end of 2008.
- 4.3.2 The production of the South Cambridgeshire Development Plan Documents is at an advanced stage with all six documents submitted to the Secretary of State and released for public consultation on January 2006. South Cambridgeshire District

Council has been the first in the country to have their Local Development Framework Core Strategy judged as sound.

4.3.3 Work on planning for facilities and services at Northstowe has been progressing in line with the development of a new Masterplan including the preferred location, size, and specification for schools and a civic hub which incorporates a major health facility. The draft Masterplan is due to be completed by the end of July 2007 with the submission of an outline planning application expected at the end of October 2007.

4.3.4 At North West Cambridge, work on the Area Action Plan to cover the university site is well underway. The Issues and Options consultation took place between September and November 2006 and a Preferred Option for the site is being drawn up. A planning application was also submitted at the end of December 2006 by David Wilson Estates for the NIAB site which will provide 1780 new homes.

4.3.5 Four planning applications have now been submitted for the Cambridge Southern Fringe sites – Trumpington Meadows, Bell School, Clay Farm and Addenbrookes with determination expected in Autumn 2007.

4.3.6 At Cambridge East following the completion of a relocation options study, Marshalls are continuing with discussions about a move to Mildenhall or Wyton airfield. Work is progressing on the early stages of masterplanning, involving local authorities, Cambridgeshire Horizons and the landowners and the independent examination of the Area Action Plan is scheduled to begin in July 2007, with adoption expected by the end of the year.

4.4 *Housing Trajectory*

4.4.1 A considerable proportion of the 47,500 housing target has already been delivered with around 17,600 homes having been delivered since 1999.

4.4.2 A housing trajectory is available for both district councils up to 2016. It is noted that the Cambridge trajectory is expected to be an over estimate due to the uncertainty regarding Cambridge East. A strategic level programme for the Cambridge Sub-region is included in Appendix A.

4.4.3 Cambridgeshire County Council has estimated the 5-year increase in dwelling numbers for each ward, in order to accommodate the East of England Plan development figures.

4.4.4 Information from Cambridgeshire Horizons suggests that the following number of dwellings will be completed at the urban extensions before and after 2016.

Location	Number of dwellings by 2016	Longer Term Capacity
Northstowe New Town	6,000	10,000
Cambridge Northern Fringe	2,405	3,800
Cambridge Southern Fringe	3,500	3,500
Cambridge East	4,190	12,000 +
Cambridge North West	1,000	2,930
Market Towns	24,600	-
Infill / Residue	5,805	-
Total	47,500	

Table 4.2: Urban Extension dwelling numbers (Source: Cambridgeshire Horizons)

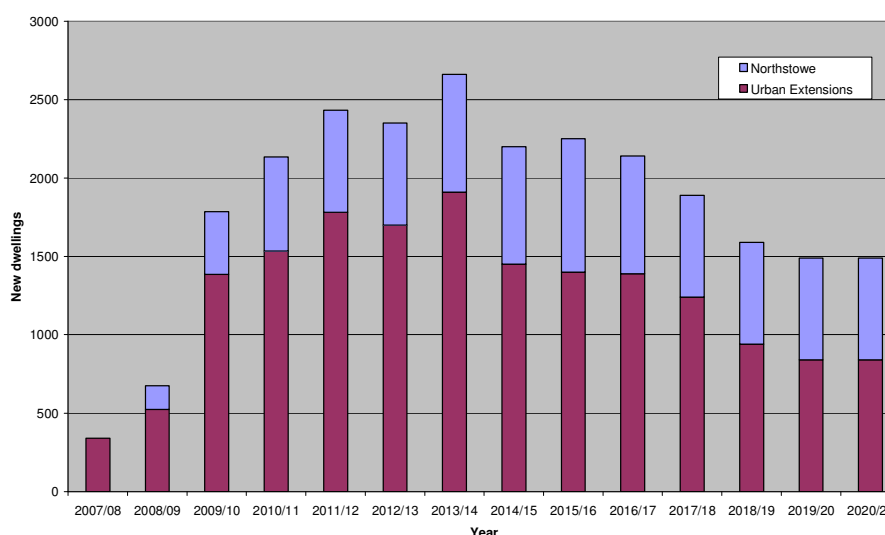


Figure 4.1: Cambridge and Northstowe housing trajectory (March 07)

4.5

Windfall Development

4.5.1

Windfall development is expected to contribute 100 dwellings per year each for Cambridge City and South Cambridgeshire District throughout the period of the Local Plans.

4.6

Development Mapping

4.6.1

The planned urban extensions to Cambridge and the new town development at Northstowe are shown on Figure 4.2.

4.7

Employment

4.7.1

The employment in Cambridge will be commercial and service based industries. It is not expected that Cambridge will develop any food, manufacturing or heavy industry which would place significant demand on water resources and sewage treatment processes.

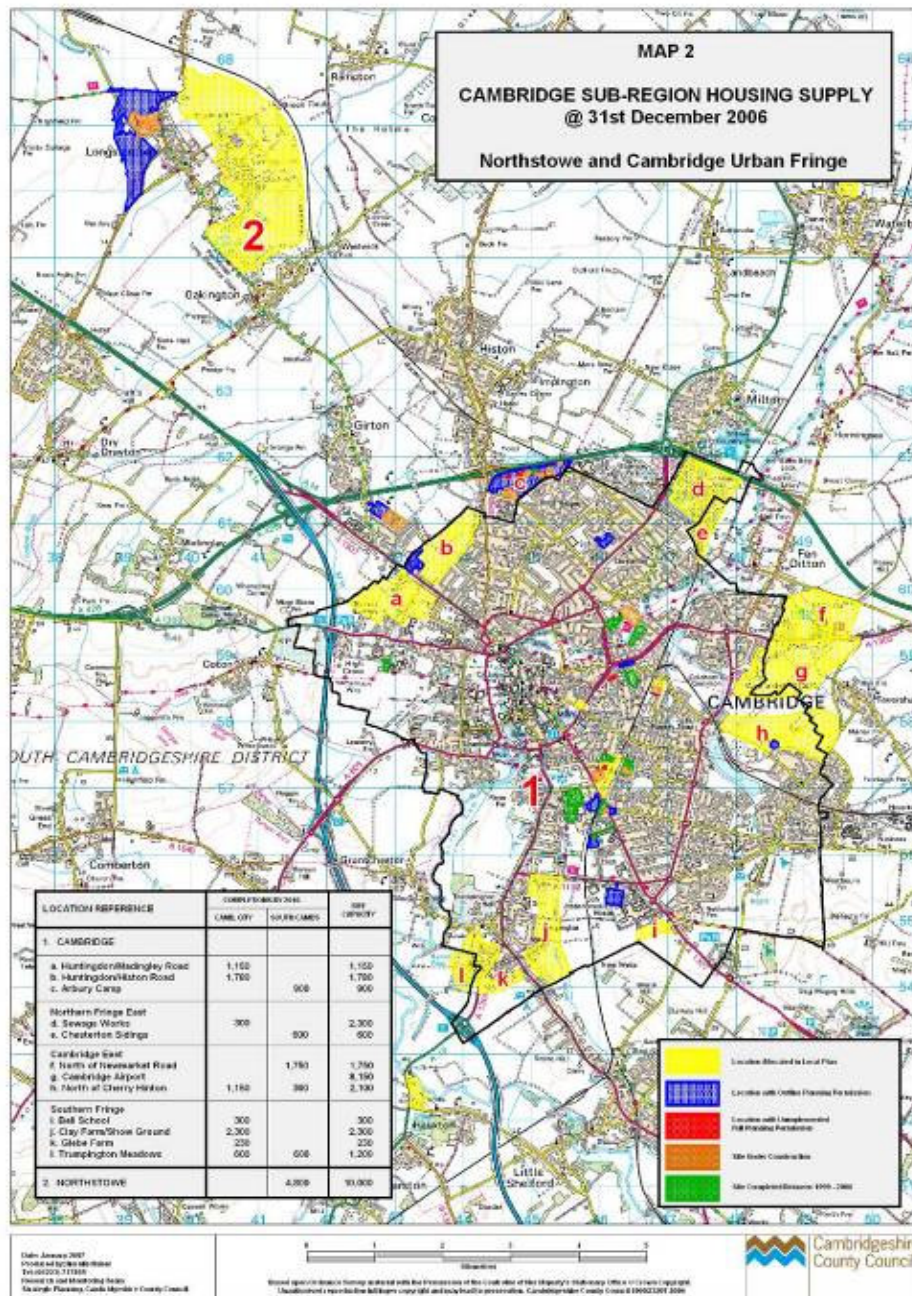


Figure 4.2: Northstowe and Cambridge Urban Fringe Developments

5 Water Cycle Infrastructure and Assets

5.1 *Introduction*

5.1.1 This study will break the water cycle down into its component parts to establish the existing situation and provide an initial assessment of the potential impacts from the proposed level of growth discussed in section 4. The following sections explain the base data that is available and outline the key issues that should be addressed by a Phase 1 Strategy.

5.2 *Flood Risk Management* Background

5.2.1 The initial scoping exercise focuses on the development areas set out in section 2.1.

5.2.2 The city of Cambridge lies within the River Cam catchment, part of the Ely Ouse system. The Northstowe development site falls across tributaries of Cottenham Lode which discharges to the Bedford Ouse and Swavesy Drain, again discharging the Bedford Ouse.

5.2.3 The Cam catchment, to Cambridge, has a contributing area of 800 km² and the flood response to rainfall is relatively slow with peak flows occurring some time after rainfall. Tributaries contributing to the Cam, notably Bin Brook have a more rapid response to rainfall and it is expected that, in common with other urban areas, local drainage will respond rapidly to rainfall.

5.2.4 Management of flood risk is shared between the Environment Agency, for enmained and critical ordinary watercourse, Cambridge City Council for adopted watercourse and Internal Drainage Boards within their specified areas. There are no Internal Drainage Boards within the Cambridge City Boundary.

5.2.5 The most relevant recent studies include:

- Strategic Flood Risk Assessment for Cambridge City conducted by Mott MacDonald in February 2006
- Bin Brook Feasibility Study being undertaken by Halcrow for the Environment Agency
- Great Ouse Catchment Flood Management Plan, which includes the Cam catchment. This document was published in draft form in February 2007

- Cam and Granta model improvements conducted by Halcrow for the Environment Agency in November 2006
- Pre-feasibility for the Environment Agency and Flood Risk Assessments currently underway for Cottenham Lode and Swavesey Drain by developers

5.2.6 The SFRA describes the current flood risk in each of the identified area of major change. The main findings include:

- Eastern Area: only localised area falls within Flood Zone 2 (1% AEP)
- Southern Area: current risk to properties in Newton Road and Queensway from Hobsons Brook downstream of the development site so management of additional runoff from the site will be required on-site
- Northern Area: falls outside the EA flood risk zone but there is risk from overtopping or embankment failure along First Public Drain
- North West Cambridge: localised flood risk from Madingley Ditch

Internal Drainage Boards

5.2.7 Internal Drainage Boards (IDBs) are long established bodies operating predominantly under the Land Drainage Act 1991. They have permissive powers to undertake work to secure drainage and water level management of their districts and undertake flood risk management works on ordinary watercourses within their districts (i.e. watercourses other than 'main river'). Their work includes the maintenance of rivers, drainage channels and pumping stations, facilitating drainage of new developments and advising on planning applications.

5.2.8 There are no Internal Drainage Boards (IDBs) within the Cambridge City Boundary; however, Swavesey IDB is represented on the Northstowe Technical Liaison Group because of their interest in Swavesey Drain area. This is the receiving watercourse for Uttons Drove Waste Water Treatment Works (WwTW) (see section 5.4). This works is due to receive the effluent from the Northstowe New Town development, and already treats flows from the recent development at Cambourne, where further development is proposed.

5.2.9 The IDB is concerned over the increased volumes of water entering watercourses within its area of responsibility owing to surface water run off from the Northstowe development and from the increased effluent discharge from Uttons Drove WwTW. The IDB has requested evidence that new development will not increase flood risk within their catchment.

5.3 ***Water Resources*** Introduction

5.3.1 The information in the following sections is derived from Cambridge Water Company's water resources plan, published in 2004 (WRP04), and from subsequent annual updates to the plan.

5.3.2 Cambridge Water is responsible for the existing potable water supply for the study area. The company supplies an average of 75ML/d of water to around 295,000 consumers in Cambridge City and the surrounding areas, with a total supply area of 453 square miles in South Cambridgeshire.

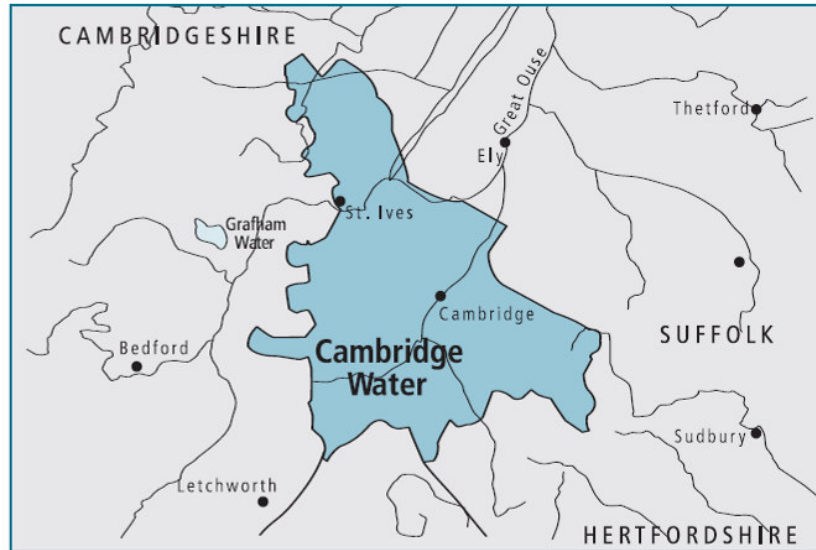


Figure 5.1: Cambridge Water supply area

5.3.3 Current population figures used by Cambridge Water in their demand forecasting are based on Cambridgeshire County Council's latest published population estimates. The household occupancy rate is forecast to reduce from 2.41 in 2002/03 to 2.28 in 2029/30.

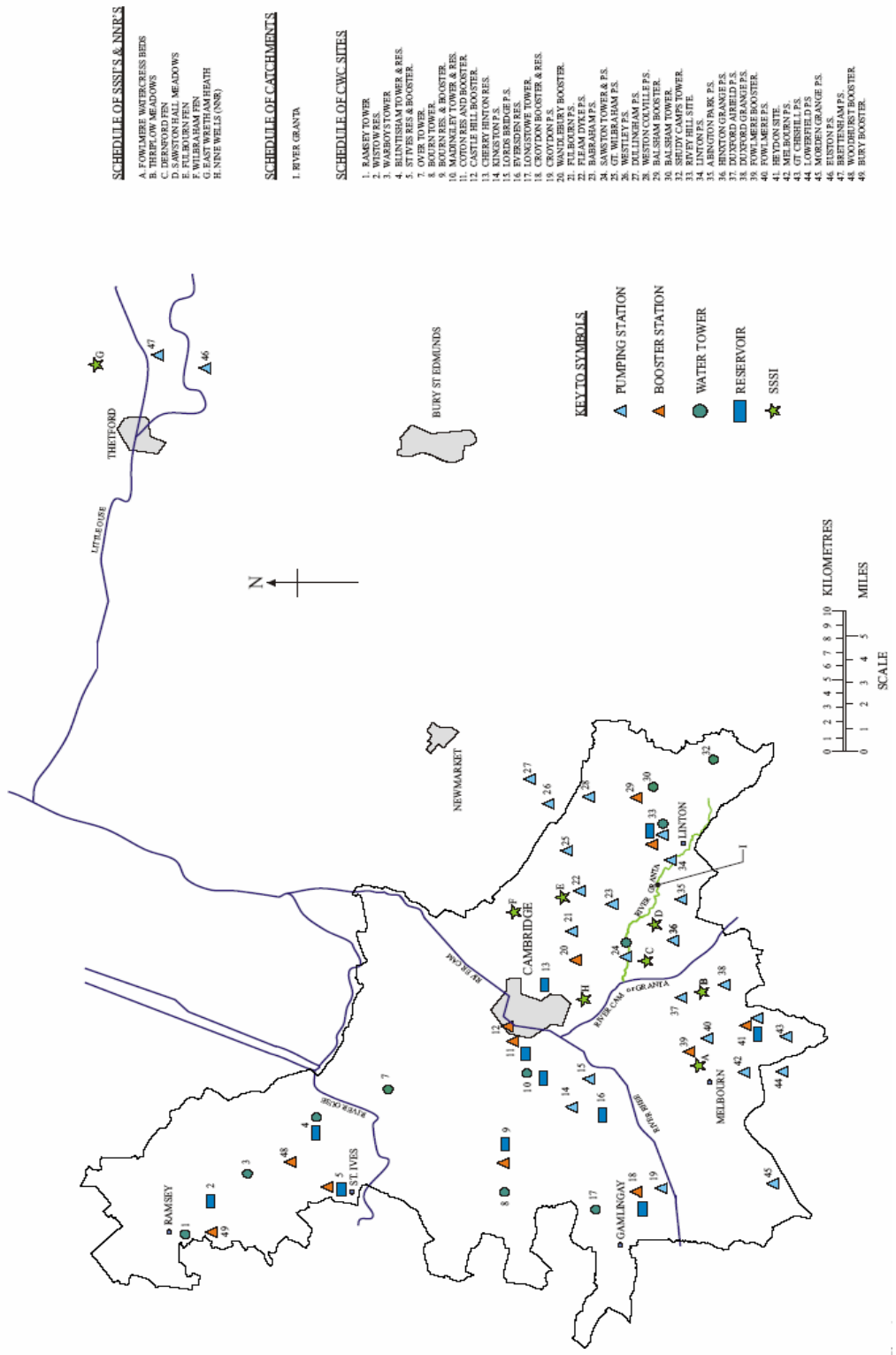


Figure 5.2: Overview of Cambridge Water's supply area

- 5.3.4 Per Capita Consumption (PCC) figures used by Cambridge Water were derived from property and population forecasts, and factored to take into account underlying levels of growth. Unmeasured household PCC has been assumed to rise from 152.8 l/h/d in 2002/03 to 162.6 l/h/d in 2029/30. Similarly, measured household consumption is forecast to rise from 136.3 l/h/d to 147.1 l/h/d during the same period.
- 5.3.5 Analysis of occupancy rates and PCC used by Cambridge Water should be undertaken within the next phase of this WCS. In addition, the WCS should consider the potential impacts of water efficiency measures and alternative consumption figures on demand forecasts.
- 5.3.6 Cambridge Water's observations support official reports that climate change effects will decrease summer rainfall by 20% and increase winter rainfall by 10% over the next 30 years. Three sources are identified as potentially vulnerable, however, the effects are not considered to be significant. The possible impacts of climate change could also be considered in more detail in a detailed Strategy.
- 5.3.7 The Environment Agency manages water resources at the local level through the use of Catchment Abstraction Management Strategies (CAMS). Both Cambridge and Northstowe lie within the Cam and Ely Ouse Catchment.
- 5.3.8 Within the CAMS, the Environment Agency's assessment of the availability of water resources is based on a classification system which states the perceived resource availability status, indicating:
- The relative balance between the environmental requirements for water and how much is licensed for abstraction
 - Whether water is available for further abstraction
 - Areas where abstraction may need to be reduced
- 5.3.9 Groundwater abstraction is limited within the Cam and Ely Ouse CAMS. This constraint would be assessed further within a Phase 1 WCS.

Existing situation

- 5.3.10 All the water supplied by Cambridge Water is derived from underground borehole sources. Total deployable output is determined by the licensed quantity of each borehole, but taking into account any local effects (geological conditions,

limitations of pumping plant, etc). Around 22 deep chalk borehole sources make up a total of 97% of the total supply, with the remainder coming from greensand aquifers. The company also receives a small bulk transfer of water from Three Valleys Water Services into a discrete water supply zone.

5.3.11 Strategic plans for meeting future demand over a 25 year period are detailed within Cambridge Water's Water Resources Plan 2004 (WRP04), which has been prepared in response to the Environment Agency's Water Resources Planning Guideline (developed jointly by the Environment Agency and Ofwat). Detailed design of capital schemes identified within WRP04 will not be undertaken until funding has been granted by Ofwat. This funding review occurs in 5 yearly cycles and we are currently in Asset Management Plan (AMP) 4 (2005-10). Cambridge Water typically undertakes a yearly review of its WRP as part of the June Return process.

5.3.12 The existing potable water supply network within the study area is operated and maintained by Cambridge Water Company. There is an existing network model which was produced in 2003 and was last updated in 2006. There are no plans to replace it at this time.

Future plans

5.3.13 In order to cope with future housing development over the next 25 years, Cambridge Water has identified two principal aims within its WRP04 in terms of water supply:

- Utilise the full licensed potential of its Thetford sources
- Refurbish two existing pumping stations, in order to realise their full licensed output

5.3.14 Considerable investment has been made by Cambridge Water in their Thetford resource. Part of the original licence for this source was time-limited, and therefore uncertain. Since the production of WRP04 Cambridge Water has negotiated to extend the time limited part of the licence to run until 2015. This will need to be re-negotiated with the Environment Agency at that time.

5.3.15 In the WRP04 it has been assumed that the rate of new house-building will increase significantly beyond 2010, as more developments commence, and those already under way accelerate. The rate of development has been and will continue to be higher than that anticipated by Cambridge Water. This is partly due to the

increased housing targets set by the revised East of England Plan (issued subsequently to the release of WRP04). In spite of this, average daily distribution input has remained within the range forecast in WRP04.

Risks to supply

- 5.3.16 Under the Water Act 2003, the Environment Agency may vary or revoke an abstraction licence if it is causing serious damage to the local environment. Whilst there are no plans for sustainability reductions on any of Cambridge Water's licences at this time, there are ongoing investigations and this remains a risk to supply in the long term. In addition, future cycles of the CAMS (reviewed on a 6 yearly basis) may look to recover resources, which could impact upon the availability of water for public supply.

Impact of Development on Water Quality

- 5.3.17 There are two main ways in which new development can affect the hydro-ecology and water quality of the receiving watercourses.
- Alterations in the volume and quality of surface water runoff
 - Increases in treated foul sewerage effluent and frequency of storm discharges from the foul sewerage network.

- 5.3.18 The effect of the former problem can be mitigated by the use of SuDS techniques.

- 5.3.19 The effect of the latter problem can be assessed through water quality modelling techniques.

Headroom for development

- 5.3.20 The future expansion potential of a wastewater treatment works (WwTW), with respect to water quality, is determined by assessing the discharge consent, set by the Environment Agency. This consent specifies a maximum flow and a minimum effluent quality that the WwTW has to achieve to meet water quality targets without causing environmental damage. In addition, there may be capacity issues and associated flood risk impact on receiving watercourses which will need to be assessed.

- 5.3.21 As population connected to sewage treatment works increases, the amount of treated sewage, or effluent, being discharged to the receiving water generally increases in proportion to the population increase. When this increased

population causes the works to exceed the consented maximum discharge volume, improvements are likely to be required to the works to increase the standard of treatment to prevent failure of water quality. Crucially, there may be constraints where it may not be feasible and/or sustainable to further improve the quality of the wastewater treatment.

5.3.22 A detailed WCS will need to identify the different sewage treatment and water quality constraints to development. In particular, a WCS will help distinguish between:

1. **Absolute environmental constraints** whereby new development would result in a failure of statutory water quality targets even if best available technology is used;
2. **Short term constraints** where the current WwTW is deemed to be incapable of coping with additional development unless and/or until it is upgraded to prevent water quality deterioration.

Water quality modelling and assessment

5.3.23 The current statutory water quality objectives for the receiving waters are shown in Figure 5.3. The River Quality Objectives (RQOs) were agreed by Government as targets for all rivers in England and Wales when the water industry was privatised in 1989. These targets specify the water quality needed in rivers if we are to be able to rely on them for water supplies, recreation and conservation.

5.3.24 There are other water quality guidelines, targets and standards which, although not statutory, may need to be assessed dependant on local considerations. The RQO does not monitor or assess compliance for all substances that may exert an impact on ecological water quality, for example nutrients such as phosphorus and nitrates, and discharges from sewer systems during storm conditions.

5.3.25 The WCS should consider the impact of discharges from the WwTW storm tanks in combination with the WwTW final effluent as a minimum. It may also be necessary to extend this to additional storm discharges if there are known issues with discharges from combined sewer overflows and pumping stations in the catchment. This could be carried out using the Urban Pollution Management modelling.

5.3.26 The extent to which a WCS should consider the ecological quality depends on the conservation interest of the receiving water and it may prove necessary to assess

the nutrient levels and ecological quality in the watercourse. Watercourses designated high conservation status would include those which:

- form part of a Site of Special Scientific Interest (or Special Protection Area or Special Areas of Conservation)
- are designated under the EC Freshwater Fisheries Directive
- include a national Biodiversity Action Plan priority habitat, notably chalk river (relevant to Cambridge)
- support species protected by UK legislation, including otter, water vole and white-clawed crayfish

5.3.27 The nutrients in the Cambridge study area are, in some reaches, categorised as excessively high. The WCS will need to identify, by consultation with stakeholders, if these levels are of water quality or ecological concern. If they are, integrated catchment modelling may be required to identify all sources of phosphate and propose mitigation options to reduce the inputs.

5.3.28 The statutory River Quality Objective (RQO) scheme is likely to be replaced at some point during the draft RSS14 period by new standards brought in to meet the Water Framework Directive, which came into law in December 2000. A cross body technical advisory group (UKTAG) has recently published a set of draft environmental standards which were subject to public consultation. Whilst it remains uncertain whether these standards will become statutory in their current form, they represent the best available understanding of how standards may change. Hence an assessment of development on these standards will need to be carried out¹.

¹ UKTAG (August 2006) UK environmental standards and conditions (Phase 1)

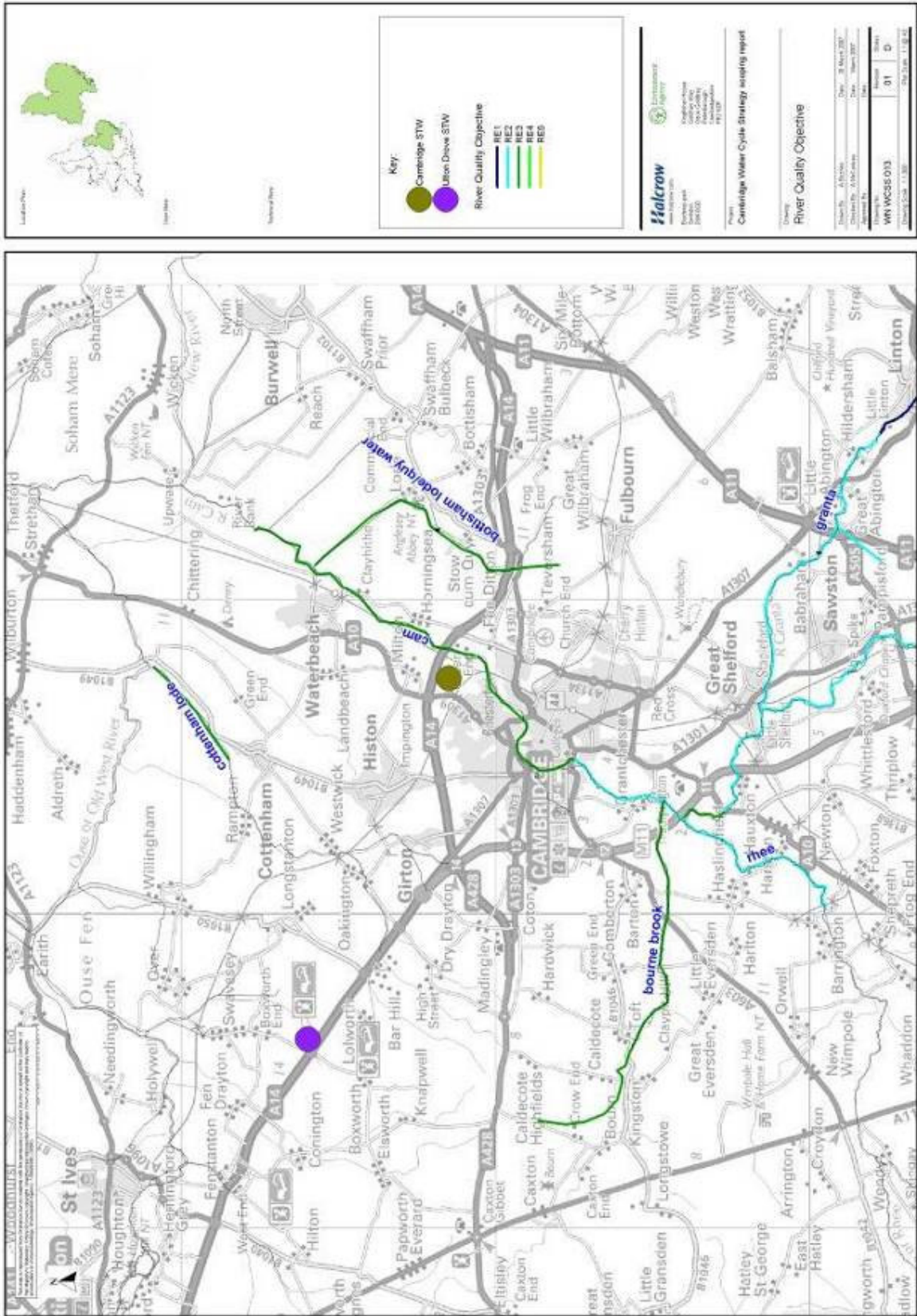


Figure 5.3: River quality objective (RQO)

5.4

Wastewater Treatment and Collection

Milton Wastewater Treatment Works (WwTW)

5.4.1

Milton WwTW is situated on the Northern Fringe of Cambridge at the Junction of Milton Road and the A14, an area earmarked for future development. In order to determine the most cost effective solution to providing wastewater treatment work infrastructure, AWS previously considered the option of either upgrading the existing site or relocating the works elsewhere in the catchment, thereby releasing the existing site for future development.



Figure 5.4: Milton WwTW aerial photograph

5.4.2

In 2005, Cambridgeshire Horizons commissioned a study to assess the practicalities and estimate the cost of relocating the works in order to release the site for residential development. The relocation of this works would be a major project for AWS. However, the costs of any relocation and the increased operating costs would have to be paid from the value of the land released.

5.4.3

The study estimated that the cost of relocating the works would be between £129m and £161m with an increased annual operation expenditure of £1.2m.

5.4.4

Deloitte estimated that this project would have a negative net present value of -£112m and therefore it would not be realistic for AWS to undertake this project. The study did highlight additional opportunities for reducing this negative value.

5.4.5

The proposed site for relocation the WwTW, referred to as Honey Hill, Fen Ditton, is located adjacent to A14, north to the Newmarket Road and is shown in Figure 5.5.

5.4.6

This WCS scoping document considers the potential for future expansion at the current site. The possibility of relocating the works remains under discussion and should be considered within a Phase 1 WCS.

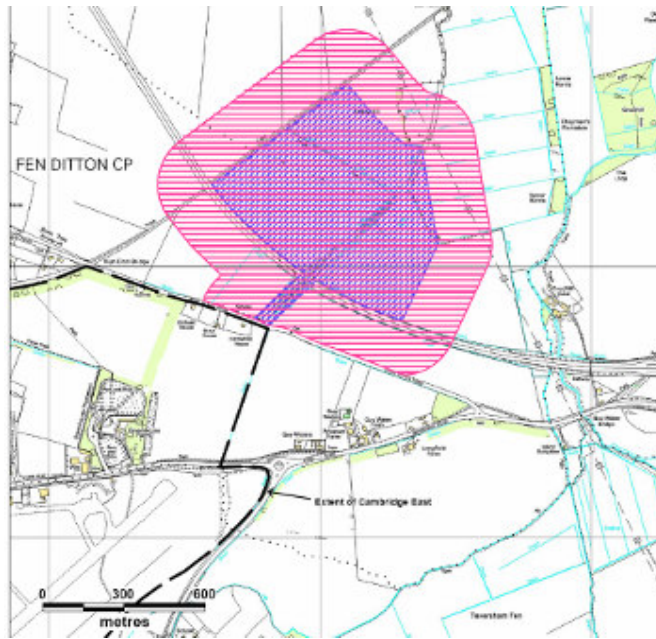


Figure 5.5: The proposed site for the relocation of Milton WwTW

5.4.7

The dry weather flow at Milton WwTW is expected to approach its consented value in AMP6 (2015-20) and the Environment Agency is likely to impose revised consent conditions at that time. It is not thought that this revised consent will be a constraint to growth, although the implications of the Water Framework Directive are unknown at this point in time. The impact of increased flows on the receiving watercourse needs to be assessed and considered, both in terms of the environment and flood risk.

5.4.8

Improvements may be required in 5-10 years to ensure continued compliance with the ammonia consented limit. Further assessment of the works treatment capacity will be required at this time and AWS is awaiting commitment to development sites before applying for funding to extend Milton WwTW. It is recommended that a detailed WCS incorporates collaborative work with AWS to develop options

for expanding the existing site, in advance of firm commitment to development sites.

Cambridge foul sewerage network

- 5.4.9 AWS has a network model of Milton WwTW foul sewerage network and has a good understanding of the network performance.
- 5.4.10 AWS anticipate the Northern Fringe can be connected to the works relatively easily. There is currently no infrastructure in place to serve Cambridge East and the Airport Expansion. AWS are in discussion with Cambridge City Council to highlight the work required to serve this development.
- 5.4.11 AWS report that a dedicated sewer is required around the edge of the city to accommodate growth at the Cambridge Southern Fringe.
- 5.4.12 Improvements will be required within the existing network to accommodate the expansion at North West Cambridge.
- 5.4.13 There are two known sewer flooding locations within the Cambridge network and AWS expect these will be resolved by providing the additional capacity to accommodate the North West expansion.

Uttons Drove WwTW

- 5.4.14 Uttons Drove WwTW currently serves the settlements of Cambourne, Bar Hill, Girton, Hardwick, Oakington, Westwick and Dry Drayton.
- 5.4.15 Anglian Water's proposed foul water strategy is to pump the flows from the Northstowe development to Uttons Drove WwTW and also divert Longstanton's wastewater from Over WwTW. Longstanton currently has a population equivalent of around 2,500. This treated flow will increase at Uttons Drove WwTW to around 50,000 population equivalent by 2021.
- 5.4.16 The existing Oakington Immigration Centre (formerly RAF Oakington) is served by a separate, non-adopted foul drainage system and treatment works installed and maintained by Defence Estates. The centre is due to close and will be demolished to accommodate the Northstowe development.

- 5.4.17 Constructing a new WwTW at Northstowe has been considered, but is not considered a viable proposition, given it is likely it would ultimately discharge to the same receiving watercourse as Uttons Drove WwTW.
- 5.4.18 Anglian Water is currently undertaking a project to provide additional short-term capacity at Uttons Drove WwTW. A major £10m project has been identified for the AMP5 investment period (2010-15) to accommodate planned growth within the Uttons Drove catchment to 2021.
- 5.4.19 When the new development at Cambourne was proposed Swavesey IDB expressed concerns that the increased effluent discharge resulting from this growth may be greater than the conveyance capacity of the receiving watercourse, potentially increasing flood risk. To overcome these concerns a temporary land drainage pump was installed by AWS at Webb's Hole Sluice to ensure that the continued increase in discharge from development did not increase flood risk. The legal agreement for this pump expires on 31st March 2008, by which time a permanent solution needs to have been identified and agreed. This is even more critical due to the development of Northstowe.
- 5.4.20 Anglian Water commissioned a study in January 2006 which concluded that the final effluent flows are minor compared to the land drainage flows, and that a larger, permanent land drainage pumping station should be installed at Webb's Hole Sluice, complete with remedial works to the existing watercourses (see below). Swavesey IDB has not accepted this study on the grounds that it is not detailed enough. A further study by WSP has been commissioned, which is being co-ordinated by Cambridgeshire Horizons.
- 5.4.21 This scoping study has identified no additional technical constraints to expanding the existing treatment site other than the effect of the increased volume of discharge upon the watercourse, as discussed above.

Uttons Drove WwTW options

- 5.4.22 AWS has evaluated the following options with regard to the effluent discharge from Uttons Drove WwTW:
1. On-line storage in Swavesey Drain for the worst duration storm during the Webb's Hole Sluice closure period (current temporary pump at Webb's Hole Sluice ignored) – Estimated capital cost £326k.

2. Install a new land drainage pumping station at Webb's Hole Sluice capable of pumping all additional flows from new development past sluice – Estimated capital cost £361k.
3. Permanent pumping of Uttons Drove WwTW effluent to the River Great Ouse – Estimated capital cost £6.5m.

5.4.23

AWS recommends Option 1 or 2 based upon capital cost and sustainability. As these are land drainage solutions the local authority should seek funding from developers via Section 106 agreements to undertake the installation of the pumping station and necessary mitigation works to Swavesey Drain. If the IDB continues to object to AWS' preferred options then AWS will be obliged to implement Option 3. Based on current understanding the Environment Agency is unable to determine its likely position and further details will be required.

5.4.24

In order to prevent this issue from becoming a potential 'showstopper' continued discussions are required through the Northstowe Technical Liaison Group. A WCS will help to manage the ongoing discussions between AWS and Swavesey IDB by actively engaging both parties in the WCS steering group. This will help to reduce the risk of delays in resolution posing a constraint to future development.



Figure 5.6: Uttons Drove aerial photograph

Uttons Drove Foul Network

5.4.25

Anglian Water does not have a foul drainage network model for the Uttons Drove WwTW catchment and currently there are no plans to commission one. There are no significant performance issues with the current foul sewerage system. There are no surface water sewers within the network.

5.5

Groundwater and Hydrology

5.5.1

These issues will be assessed within a Phase 1 WCS.

5.6

Ecology and biodiversity

5.6.1

A green infrastructure map and strategy is available on the Cambridgeshire Horizons website. A Phase 1 strategy could assess the constraints and opportunities of development upon the water related aspects of ecology, biodiversity and green infrastructure.

6 Preliminary Findings

6.1 *Flood Risk Management*

6.1.1 It is crucial to the sustainable management of flood risk that all new developments take account of the guidance provided in PPS25. Flood risk mitigation measures will be required on development sites, and potentially on a more strategic basis as well, to ensure that this guidance is adhered to.

6.1.2 There is a risk of flood mitigation measures in one area exacerbating flood risk in other parts of the catchment, even if accepted guidance for individual sites is followed. It is therefore recommended that detailed consideration is given to the cumulative impact of development across the study area.

6.1.3 Swavesey IDB is concerned over the increased volumes of water entering its water courses due to surface water run off from the Northstowe development and from the increased effluent discharge from Uttons Drove WwTW. The IDB has requested evidence that new development will not increase flood risk within their catchment.

6.1.4 A Phase 1 WCS should consider the likely impact of proposed development on existing flood risk and investigate the potential for strategic flood risk mitigation solutions.

6.1.5 Additional discharges from WwTWs may have an impact on river flood risk. This needs to be ascertained in combination with the flood risk management strategy to determine how strategic flood risk management measures may be used to eliminate additional flood risk.

6.2 *Water Quality*

6.2.1 The nutrients in the Cambridge study area are, in some reaches, categorised as excessively high. Integrated catchment modelling may be required to identify all sources of phosphate and propose mitigation options to reduce the inputs.

6.3 *Wastewater Treatment and Collection*

6.3.1 The two WwTWs relevant to the most urgent development areas have been considered within this scoping study. The other WwTWs in the Cambridge Sub-region, which serve the surrounding market towns, may need to be considered in

the future. This could be done separately to the WCS for Cambridge as there are no known interdependencies between the areas in terms of wastewater. The foul sewerage network and necessary upgrades will also require more detailed consideration in the Phase 1 WCS.

- 6.3.2 Milton WwTW (which serves Cambridge City) is one of AWS' largest works. The dry weather flow is expected to approach its consented value in AMP6 (2015-20) and the Environment Agency is likely to impose revised consent conditions at that time. It is not thought that this revised consent will be a constraint to growth, although the implications of the Water Framework Directive should be taken into account when looking at this in more detail in the Phase 1 WCS.
- 6.3.3 Improvements may be required at Milton WwTW in 5-10 years to ensure continued compliance with the ammonia consented limit. Further assessment of treatment capacity will be required at this time. It is recommended that a detailed WCS incorporates collaborative work with AWS to develop options for expanding the existing site; if necessary, in advance of firm commitment to development sites.
- 6.3.4 AWS has a network model of Milton WwTW foul sewerage network and has a good understanding of the network performance. AWS anticipate the Northern Fringe can be connected to the WwTW relatively easily. There is currently no infrastructure in place to serve Cambridge East and the Airport Expansion. AWS are in discussion with Cambridge City Council to highlight the work required to serve this development. AWS report that a dedicated sewer is required around the edge of the city to accommodate growth at the Cambridge Southern Fringe. Improvements will be required within the existing network to accommodate the expansion at North West Cambridge. There are two known sewer flooding locations within the Cambridge network and AWS expect these will be resolved by providing the additional capacity to accommodate the North West expansion.
- 6.3.5 There is a potential constraint regarding the capacity of the receiving watercourse for Uttons Drove WwTW. This had been recognised previously and is currently being investigated by WSP on behalf of Cambridgeshire Horizons. The existing Technical Liaison Group would need to be represented on the project group for a detailed WCS. The momentum must be maintained to ensure that development is not delayed. A detailed WCS led by Cambridgeshire Horizons would fulfil this function and help to mitigate the risk of this issue becoming a 'showstopper'.

6.3.6 Anglian Water does not have a foul drainage network model for the Uttons Drove WwTW catchment and currently there are no plans to commission one. There are no significant performance issues with the current foul sewerage system. There are no surface water sewers within the network.

6.4 ***Water Resources and Supply***

6.4.1 Although this study has not identified any immediate constraints to the proposed level of growth, it does highlight the fact that there is potential a cap on the available water resource within Cambridge Water's supply area. This cap is more likely to decrease than to increase between now and 2031, as more information is gathered to support the Environment Agency's case for sustainability reductions in the catchment.

6.4.2 Cambridge Water has existing plans to meet predicted demand; however, one of the licences relevant to the study area is time limited and will need to be re-negotiated beyond 2015. This could pose a potential risk to security of supply in the longer term.

7 Recommendations

7.1 *Progression of the Water Cycle Strategy*

7.1.1 This report proposes that the next phase of this WCS be an Outline Strategy comprising environmental constraints analysis and high level infrastructure capacity assessment to identify any absolute environmental capacity constraints and any infrastructure constraints to development. It is noted, however, that some of the issues which would be considered within an Outline Strategy are already being addressed through other ongoing studies. This, combined with the advanced stage of the development proposals for some areas of Cambridge, has prompted the recommendation that the next phase of the WCS should go beyond environmental constraints analysis. It is therefore recommended that the WCS should include the development of a holistic, integrated infrastructure strategy for those areas where site specific information is available. It is proposed that the next phase of the WCS focus on the main urban area of Cambridge and surrounding new settlements, since the most extensive and urgent development is concentrated in and around these areas. The market towns may need to be considered at a later date but this could be done separately.

7.1.2 This next phase of the WCS should determine what infrastructure needs to be provided, by when, to ensure that housing provision does not outstrip water services infrastructure capacity. It should also provide high level cost estimates to inform funding decisions. It may also be useful to consider alternative growth scenarios within the WCS, to take account of potential uplifts to the regional targets and possible slowing of the housing market.

7.1.3 As stated in section 3.3 there is no prescriptive guidance as to what must be covered in each phase of a WCS. Instead, the issues of environmental capacity and achievable infrastructure delivery should be addressed in such a way as to meet the planning requirements and political timeline of the area in question. It is therefore recommended that the project steering group for the next phase is established as soon as possible in order that an appropriate scope may be agreed to suit the requirements of all key stakeholders.

7.2 *Project Group*

7.2.1 The Environment Agency's position is to support and not manage future water cycle strategies. Cambridgeshire Horizons has indicated² that it would be an appropriate stakeholder to lead the steering group for the next phase of the WCS.

² Initial scoping update meeting (23 March 2007) between Cambridgeshire Horizons, the Environment Agency and Halcrow consultants

7.2.2

It is suggested the following additional stakeholders be represented within the project steering group.

- The Local Planning Authorities
- EEDA
- The Environment Agency
- Northstowe Technical Liaison Group
- Swavesey Internal Drainage Board representative
- Cambridge Water
- Anglian Water

7.2.3

There are a number of stakeholders involved with the growth of the Cambridge and the surrounding areas, all of whom should be invited to contribute towards a detailed WCS. The majority of these stakeholders are landowners or developers in the Cambridge Sub-region. They include:

- Gallagher Estates (Northstowe and Arbury Camp)
- University of Cambridge
- English Partnerships (Northstowe)
- Addenbrooke's Trust in partnership with University of Cambridge and Medical Research Council (Southern Fringe)
- Countryside Properties (Showground, Clay Farm and Glebe Farm)
- Trumpington Meadows Land Company (Former Monsanto site)
- The Bell School (South-east of Addenbrooke's)
- David Wilson Estates (North West Cambridge)
- Marshalls (Cambridge East)
- EEDA who have indicated a willingness to work with local authorities to develop a Regional Investment Strategy as part of an Implementation Framework addressing infrastructure requirements.

7.3

7.3.1

Funding

The current position regarding funding for the undertaking of a Phase 1 WCS is as follows:

- Cambridgeshire Horizons have agreed to lead the project
- It remains unlikely Cambridgeshire Horizons will provide all the funding and they propose to secure financial contributions from the other project partners – a view supported the Environment Agency who consider this to be important in terms of ensuring stakeholders take ownership and engage in the process
- Cambridgeshire Horizons will be approaching EEDA to explore possible funding
- Anglian Water has previously indicated that whilst they are unlikely to provide any funding, they will provide in-kind contributions including staff time and the necessary data and technical support. A similar level of assistance is anticipated from Cambridge Water
- The Environment Agency has advised it can contribute £10,000, plus an in-kind contribution in terms of technical support, data provision and staff time. These contributions are in addition to the Environment Agency's funding of the initial scoping study
- If deemed appropriate by the project steering group, the possibility of securing Developer contributions may be explored

Appendix A: Supporting Information

A.1 Market Towns – other WwTW within the Cambridge Sub-region

The East of England Capacity Delivery Strategy Study, which addressed the impact of development identified within the East of England Plan upon the regions wastewater treatment works, identified the following;

- St Neots WwTW will require improvements within AMP5 (2010-15) to accommodate growth.
- Data suggests that the WwTW serving Chatteris will require expansion before 2021. The study identified that there is a risk that the increased effluent discharge upon the watercourse may increase flood risk.
- Huntingdon WwTW was not assessed as part of this study.
- Further investigation is required to assess the capacity of St Ives WwTW to accommodate growth beyond 2011.
- The new WwTW at Ely is expected to have the capacity to accommodate the rates of growth identified in the East of England Plan.

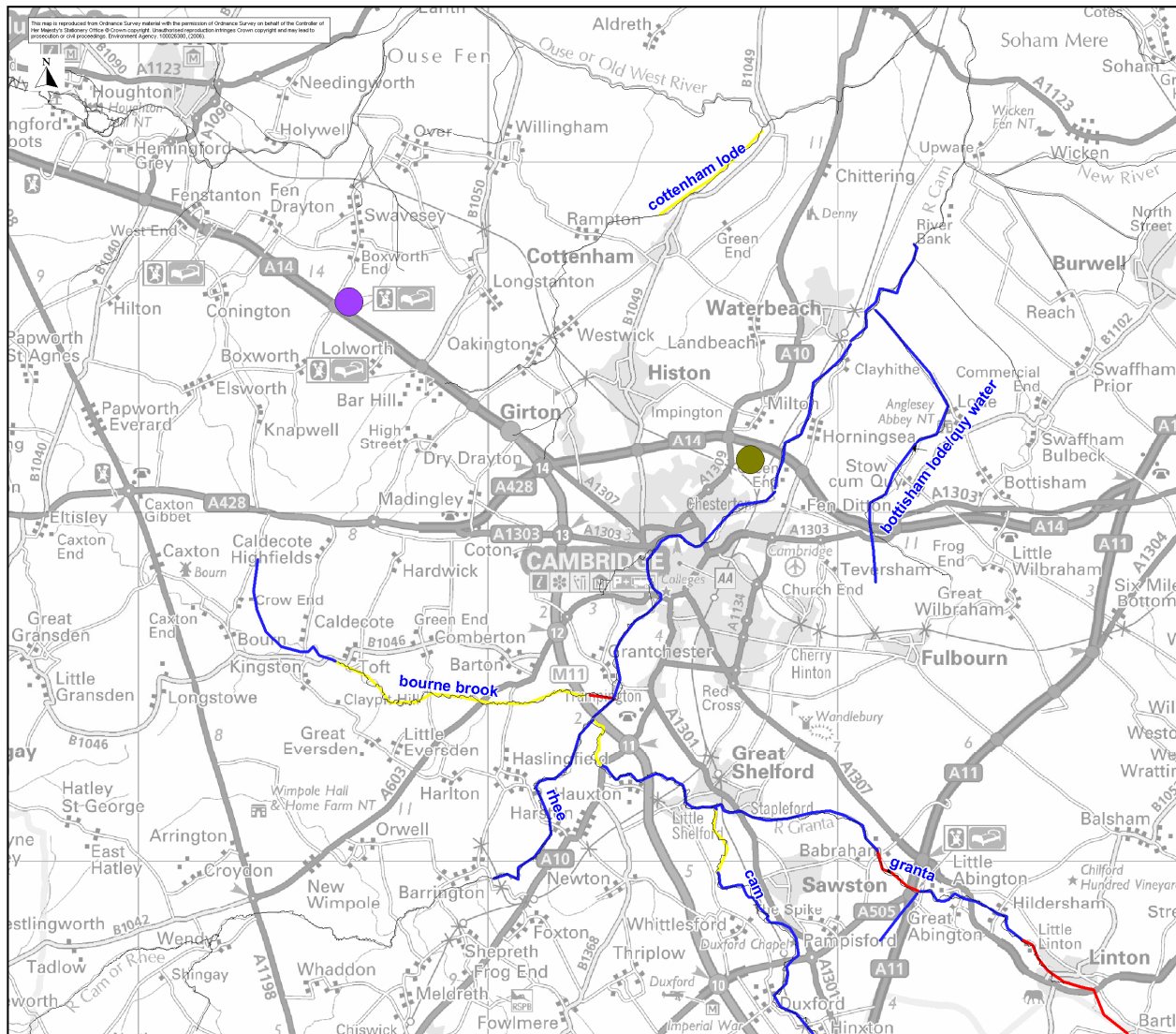
Any additional WwTWs outside of the market towns are not expected to receive rates of development above windfall rates, and would already be considered within AWS' existing strategy.

A.2 Water Quality

The current consent at Cambridge WwTW is 15mg/l Biochemical oxygen demand (BOD) and 5mg/l ammonia.

The current consent at Utton Drove WwTW is 17mg/l Biochemical oxygen demand (BOD) and 9mg/l ammonia.

The latest results published by the Environment Agency, for the period 2003 – 2005 show that all river reaches within the Cambridge Sub-region are currently compliant with the RQO, as shown in the map below.



Location Plan:

User Note:

Technical Note:

Key:

- Cambridge STW
- Utton Drove STW

RQO compliance

- comp
- marginal
- significant failure

halcrow
www.halcrow.com

Business park
Sawley
SN4 9DD

Environment Agency
Kingfisher House
Godby Way
Oton Colby
Peterborough
Cambridgeshire
PE2 5ZR

Project:
Cambridge Water Cycle Strategy scoping report

Drawing:
River Quality Objective compliance (2003 - 2005)

Drawn By: A Bocko	Date: 26 March 2007
Checked By: A McConkey	Date: March 2007
Approved By:	Date:
Drawing No: WNWCS014	Revision: 01
	Status: D

Drawing Scale: 1:1000 Plot Scale: 1:1 @ A3

A.3 Strategic Level Programme (April 2007)

Sub Regional Programme of Sustainable Growth and Infrastructure (maintained by Cambridgeshire Horizons)
Based on information available April 2007

Planning Process	Dependency	2007			2008			2009			2010			2011	2012	2013	2014	2015	2016				
		Jan	Mar	Apr	Jun	Jul	Sep	Oct	Dec	Jan	Mar	Apr	Jun	Jul	Sep	Oct	Dec	Jan	Mar	Apr	Jun	Jul	Sep
1 Regional Spatial Strategy		◆ Early summer 2007 - Govt publish final RSS																					
2 South Cambridgeshire LDF		◆ Northstowe ◆ Cambridge Southern Fringe ◆ Cambridge East																					
3 Huntingdonshire LDF		◆ July 2007 - Core Strategy ammendment Preferred Options ◆ December 2008 Adoption																					
4 East Cambridgeshire LDF		◆ Sept 2007 Consultation Core Strategy and Sites ◆ Late 2008 - Adoption																					
5 Fenland LDF		◆ June 2008 - Core Strategy Adoption ◆ August 2009 - Site Specific Policies adoption																					
6 Minerals & Waste LDF		◆ Inspectors Report ◆ Dec 08 Adoption																					
7 City Council LDF																							
Major Developments	Dependency	2007			2008			2009			2010			2011	2012	2013	2014	2015	2016				
8 Northstowe	2, 15, 16, 17, 23	◆ Oct 2007 - Submission of OPA ◆ May 2008 - Section 106 signed ◆ July 2009 - Occupation of first dwelling ◆ Sept 09 - Occupation of first Primary School ◆ July 2009 - Occupation of first dwelling																					
9 Cambridge Southern Fringe	2, 15, 16	◆ Spring 2009 - Scheme opening																					
10 Cambridge East	2, 15, 16	◆ Mid 2008 - Relocation SUV to Mildenhall ◆ June 2008 - Submission of PA (North of Newmarket Road) ◆ Mid 2009 - Commence Infrastructure / Housing																					
11 Cambridge Northern Fringe East	2, 18, 15, 16, 20	◆ June 2011																					
12 Cambridge North West	2, 15, 16	◆ August 2008 - Determination of PA (subject to S106) ◆ Oct 2008 - Sign S106 Document ◆ December 2008 - Adoption of AAP ◆ Jan 2009 - Commence Housebuilding																					
13 Northbridge	3, 15	◆ Committee ◆ Early 2008 - Commence Housebuilding																					
14 Loves Farm, St Neots	3, 15	◆ Early 2007 - Start on site ◆ Mid 2007 Commence Housebuilding																					
Infrastructure	Dependency	2007			2008			2009			2010			2011	2012	2013	2014	2015	2016				
15 Cambridge Challenge		◆ May 07 - Select Partner																					
16 Housing Market Assessment																							
17 A14 Upgrade	8																						
18 Guided Busway	8	◆ Early 2009 - Scheme Opening																					
19 A428 Caxton Common to Hardwick		◆ Autumn 2007 - Scheme Opening																					
20 Chesterton Station & Interchange	11	◆ June 2011 - Scheme Opening																					
21 Papworth Everard Bypass		◆ Mid 2007 - Scheme Opening																					
22 Strategic Transport Corridors (Bus Measures)																							
23 North Cambridge Grid Station		◆ Late 2008 - Commissioning																					
24 Waste PFI Scheme		◆ 2010 - Scheme online																					
25 Addenbrooke's		◆ July 2007 ◆ Spring 2011 - opening ◆ Early 2013 - occupation																					