



Uttlesford District Council

Uttlesford District Water Cycle Study

Stage 1: Scoping and Outline Study

High Level Summary Report



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1 Introduction

The study area for this Water Cycle Study (WCS) is the District of Uttlesford, located in northwest Essex. The District is predominantly rural in nature and includes the market towns of Saffron Walden and Great Dunmow, together with larger villages that perform the role of service centres and a large number of smaller villages and hamlets. Stansted Airport is also within the District.

Figure 1-1 below illustrates the market towns, key service centres, main watercourses and main roads within the District.

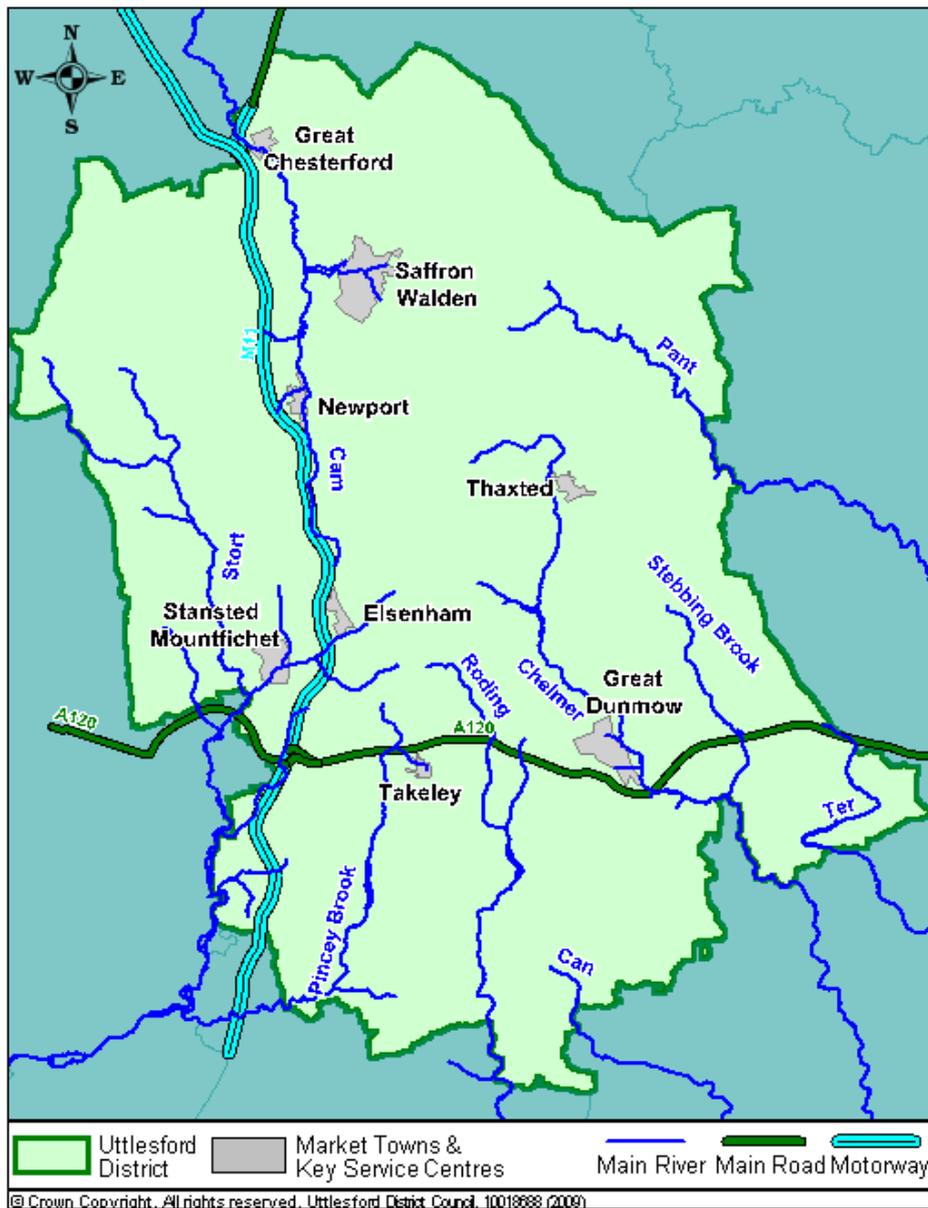


Figure 1-1 Uttlesford District Main Features

Uttlesford District Council (UDC) is in the process of compiling a Local Development Framework (LDF) to steer the development of the District during the next 15 years.

A WCS is required to ensure that the water supply, wastewater collection and wastewater treatment infrastructure in the District can accommodate the required growth levels, whilst minimising flood risk and impact on the water environment (see Figure 1-2)

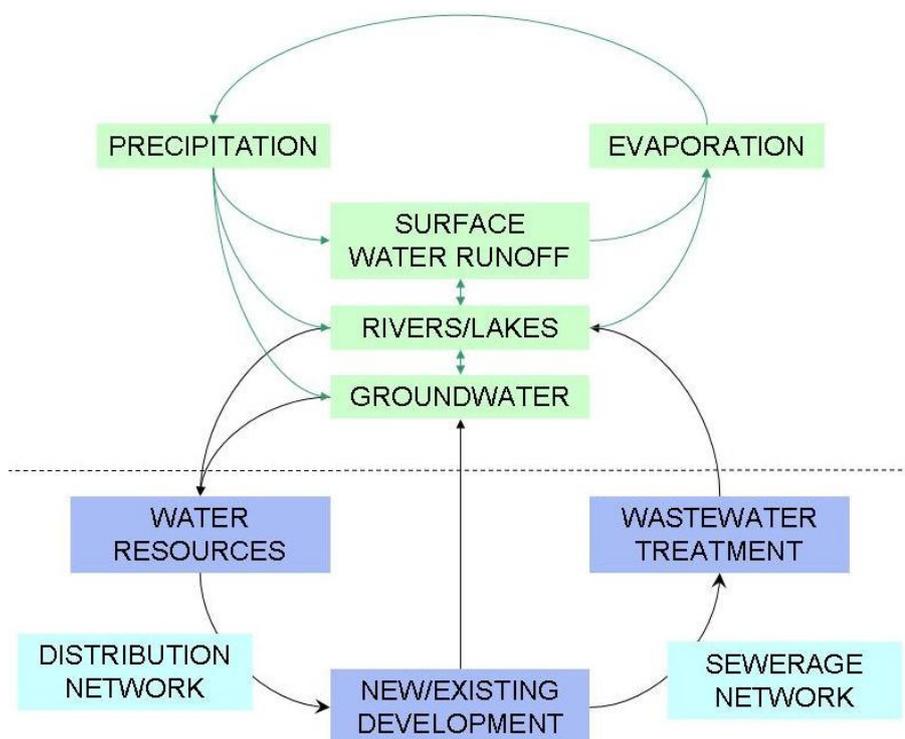


Figure 1-2 The Water Cycle

This document summarises the main findings of the Stage 1: Scoping and Outline Strategy WCS. The full document will form part of the evidence base for UDC, which will steer and reinforce a number of planning policies developed through the LDF process.

2 Methodology

The following stakeholders have been consulted during the development of the Water Cycle Study:

- Anglian Water Services (AWS);
- Environment Agency (EA);
- Natural England (NE);
- Thames Water Utilities (TWU);
- Three Valleys Water (TVW); and
- Uttlesford District Council.

In addition, Essex Wildlife Trust (EWT) also provided information.

The status of water resources in and around the district has been assessed through a review of the EA Catchment Abstraction Management Strategy (CAMS) documents. The capacity of the environment, that is the capability of the receiving watercourses to receive greater discharge from Waste Water Treatment Works (WwTW), has been assessed through a review of the EA River Basin Management Plans. A review of UK wide and local Biodiversity Action Plans has provided information on environmental and biodiversity constraints and data on important sites

has been collected from Natural England and Essex Wildlife Trust. Flood risk in the District has been assessed through a review of the UDC Strategic Flood Risk Assessment (SFRA) and the EA Catchment Flood Management Plans (CFMP) consultation documents and consultation with UDC.

In addition, the EA have contributed high-level water quality modelling results to determine the indicative WwTW discharge consent standards that would be required to protect the water environment, given the rise in discharge rates associated with the development options.

The capacity of the existing water infrastructure to accept the demands from the proposed development has been assessed through consultation with the water companies in the WCS Steering Group. In order to assess these impacts an estimate of water usage was determined by combining occupancy rate and per capita consumption (PCC) rate scenarios with four development options. This allowed the 'worst case' scenario to be developed to determine the required capacity of future infrastructure and the potential impact on the water environment.

This results in the possible major constraints being identified for further investigation in the upcoming Detailed Stage of the WCS.

However, it must be noted that the conclusions outlined in this report are based on the information received from the WCS stakeholders during the consultation period and as such may be subject to amendment and correction in the future.

3 Development

The housing target is set for Uttlesford District by the Regional Spatial Strategy. The target is to allocate 3,979 dwellings by 2026, through the LDF. This is in addition to the 2,572 completed since 2001, the 3,302 currently allocated and the 297 predicted on smaller sites.

Four development options have been tested in this WCS:

- **Option 1:** Distribution between the three main urban areas, Great Dunmow, Saffron Walden and Stansted Mountfitchet.
- **Option 2:** Development located around the market towns and key service centres, with around 500 dwellings at Elsenham and larger scale growth (750 dwellings) in Takeley;
- **Option 3:** Development located around the market towns and key service centres, with around 1,450 dwellings at Elsenham; and
- **Option 4:** A new settlement of 3,000 dwellings at Elsenham (or *other location*, see list below) with the remaining 1,000 dwellings distributed around the existing urban areas.

Other potential locations for a new settlement are currently being proposed by developers, at Boxted Wood/ Andrewsfield, Chelmer Mead, Easton Park and Great Chesterford.

4 Water Resources and Supply Infrastructure

The District is partly underlain by a chalk aquifer of regional importance. However, the Environment Agency (EA) currently class the surface water and groundwater resources within the District as over-licensed or over-abstracted, meaning that there is **no additional water available** for supply. This highlights the importance of further developing policies to encourage the conservation of water in new and existing dwellings and commercial properties.

Three Valleys Water (TVW) supply the District with water from a combination of groundwater and surface water abstractions, some of which are outside the District, allowing additional water

to be transferred into the District to accommodate the proposed growth. However, the scale of growth proposed throughout the region, and increasing pressure on TVW from environmental constraints, means that **high levels of water efficiency** are still required. This is particularly important in existing dwellings, where reductions in consumption have the potential to offset the increased demand from new dwellings.

The TVW distribution network becomes more rural in nature (smaller in capacity) towards the east of the District. However, as the proposed growth is most likely to be located around the market towns and key service centres, TVW are confident that the potential development sites **can be supplied** without the need for major infrastructure upgrades. Option 4 however, may result in large-scale development in new rural locations, requiring extensions to the TVW trunk main network, entailing significantly higher costs.

5 Flood Risk

Flood risk within the District can be exacerbated by development, unless the run-off from surface water is managed appropriately. The existing national Planning Policy Statement 25 provides the framework for managing and mitigating flood risk from new development.

The Strategic Flood Risk Assessment completed for the District in 2008 contains policy guidance that should be complied with, to ensure any development does not occur in areas of flood risk or increase the flood risk of downstream properties.

This WCS has identified, at a high level, the types of Sustainable Drainage Systems (SUDS) that may be appropriate at the potential growth locations. It also reiterates the importance that these features have with regards to attenuating and disposing of surface water runoff.

Basins, ponds and wetlands are considered the most sustainable SUDS techniques because of their wildlife benefits, but the land needed and safety considerations may limit their use on some sites – underground storage and infiltration techniques may be suitable alternatives.

In addition, consultation with the stakeholders for this WCS has revealed that the **following additional policies** would be beneficial:

- Using SUDS to limit surface runoff from both greenfield and brownfield development sites to the equivalent greenfield rate; and
- Ensuring that surface water is always separated from foul wastewater systems, even on brownfield development sites. This will minimise the impact on the sewerage network and wastewater treatment works (WwTW) and hence reduce the risk of sewer flooding and pollution of watercourses.

6 Wastewater Capacity

Wastewater in the District is collected and treated by Thames Water Utilities (TWU) in the southwest and Anglian Water Services (AWS) in the northeast.

Consultation with these stakeholders has revealed the following areas of concern with regards to the potential growth:

- The potential new settlement location at Elsenham would require around 3.5 km of existing sewer to be upgraded to allow connection to the WwTW that currently serves the village. The TWU WwTW (which discharges to the River Stort) would need **major capacity upgrades**. Availability of land to support these upgrades may be an issue, as will achieving the necessary discharge consent standards. In addition, the sewers that

approach the WwTW would be restricted from being upsized by the narrow streets and existing utilities, requiring the construction of new bypass sewers around the urban areas. The possible need for a direct connection from the development site to the WwTW increases the total length of new and upgraded sewer required to at least 5.5 km. The other possible solution, a new local WwTW, would be constrained by the **low dilution** available in the headwaters of the nearby watercourses.

- Similar **sewerage network capacity** issues to those described above are apparent at Newport, Thaxted, Saffron Walden and Stansted Mountfitchet, where the locations of the potential development sites are on the opposite periphery of the settlement to the WwTW. At Newport, the cost of the required bypass sewer (and pumping) to remedy this problem, compared to the relatively low level of development, makes this location unviable.
- The potential new settlement location at Boxted Wood/ Andrewsfield is 4 km from the nearest WwTW, and the construction of a new local WwTW would be constrained by the **low dilution** available in the headwaters of the nearby watercourses.
- The Great Chesterford sewerage network has no capacity for additional dwellings. Any development would be best served by a direct sewer linking it to the WwTW, which results in sites closest to the WwTW to the north of the town being the most financially viable. Great Chesterford WwTW can accommodate the limited growth proposed under the development options, however, should a new settlement be connected, an increase in **treatment capacity and discharge consent** would be required, subject to land availability and EA consent.
- Great Dunmow WwTW currently has no capacity for additional development and limited opportunity to expand due to land and environmental constraints. AWS are already investigating **potential solutions** in this catchment, with either an upgrade to the WwTW at nearby Felsted, or a new WwTW discharging to the River Chelmer (subject to EA consent). If new settlements were constructed at Chelmer Mead, Easton Park, or perhaps Boxted Wood/ Andrewsfield, it is likely a similar solution within this catchment would be the most viable solution, due to the land availability and the potentially larger capacity of the River Chelmer to accept the increased discharge.
- Large-scale development at Takeley (Option 2) could be accommodated by Bishops Stortford WwTW, which serves this area, but would require the **upsizing** of around 2.5 km of pumped sewer, as this is only sized for the current allocations.
- The WwTW that serve the villages of Debden and Ashdon **do not** currently have available capacity, or headroom against discharge consent, to accommodate any growth.

7 Environmental Capacity

Uttlesford District is located at the headwaters of four river catchments. As such, the dilutive capacity of the watercourses to receive increased discharges from WwTW is limited.

The development options propose large-scale growth in three of these catchments; the Rivers Stort, Cam and Chelmer.

The River Stort and Cam are listed as UK Biodiversity Action Plan priority habitats, due to their importance with regards to supporting biodiversity. In addition, a number of nationally and locally important water dependant environmental sites are located on these rivers.

As such, the River Chelmer is initially assessed as having the higher capacity to accept increased discharges. However the water quality modelling results received from the EA highlight that the new indicative discharge consent standards (required at all the WwTW where growth is likely to cause the existing volumetric consent to be exceeded) will be **stringent** regardless of the receiving watercourse. It may be possible for the water companies to meet the

tighter discharge consent standards required, if they operate at Best Available Technology (BAT). However this may require the use of unconventional methods and as such will be subject to internal financial decisions and may be infeasible at the more sensitive sites. If this proves to be the case, development options may have to be modified by Uttlesford District Council to ensure the most sensitive catchments are protected from adverse increases in WwTW discharge.

Additional consultation with AWS and TWU is required at the Detailed Stage of the WCS to ensure that the most sustainable wastewater strategy is developed for the District.

8 Conclusions and Recommendations

The following conclusions and recommendations may be **subject to change** following the input of the water companies with regards to the indicative discharge consents received from the EA, which are outstanding at this stage. It was originally intended that this would be included in the Detailed Stage of the WCS. However, as parts of this Detailed WCS require confirmation of development locations from UDC, it is now anticipated that such a study would occur in parallel to the finalisation of the Core Strategy, towards the end of 2009 or even in early to mid 2010. It is therefore suggested that the indicative discharge consent information be discussed with the water companies as soon as possible, as an interim measure between the Outline and Detailed WCS, to minimise risks and to ensure robust decisions are taken at this stage to progress the emerging LDF.

Whilst water resources, water supply and flood risk, remain important considerations that must be reinforced by appropriate policies throughout the LDF, the capacity of the **sewerage network, wastewater treatment and receiving watercourses** has the highest potential to constrain development within the District.

At this stage, **Option 1** appears the most favourable development option. This option minimises the length of new strategic sewers required, and prevents large-scale growth at Elsenham (and the associated increase in discharge to the River Stort) from occurring. **Option 2** would also be viable, dependant on the financial viability of upsizing the pumped sewers that serve Takeley.

A new settlement, as in Option 4, creates significant challenges for water supply and wastewater collection/ treatment. However, of all the potential locations, **Chelmer Mead** appears the most favourable. This location would make it possible for a relatively straight forward connection into the WwTW solution that AWS decide upon in the Great Dunmow/ Felsted catchment. This may however delay development in this location until 2020 (unless alternative systems are proposed by the settlement developers) whilst the necessary infrastructure is planned and constructed. There is also a risk that achieving the required discharge quality from a WwTW solution in this area would render this Option economically unfeasible.

It is recommended that a Detailed WCS be completed to:

- Assess the costs and phasing of the required supply and sewerage infrastructure, particularly the sewers in and around Saffron Walden and Stansted Mountfitchet;
- Liaise with the water companies to understand the implications of achieving the water quality of WwTW discharges required to accommodate the large scale growth;
- Consult AWS and the EA with regards to a solution to the WwTW capacity issues in the Great Dunmow/ Felsted catchment;
- Recommend SuDS and biodiversity enhancement opportunities once the preferred development option is identified; and

- Discuss the responsibilities of the various stakeholders, with regards to removing the constraints that could delay the proposed growth.