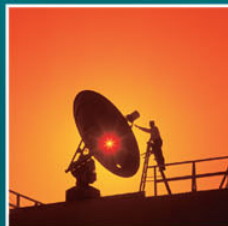


Braintree District, Haverhill and Clare Water Cycle Study

Water Cycle Strategy

Final Report

November 2008



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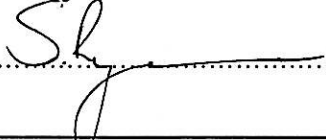
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Braintree District Council Braintree District, Haverhill and Clare Water Cycle Study

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Executive Summary

Purpose of this Report

Braintree District and St. Edmundsbury Borough Councils are preparing Core Strategies to plan for the local development that the East of England Regional Spatial Strategy (RSS) has identified as necessary. The RSS makes provision for at least 7,700 new dwellings in the study area between 2001 and 2021. The region requires investment in additional residential and commercial development to stimulate and accommodate economic growth and improve the quality of life in the area. The long term success of this development depends on appropriate locations being selected at the planning stage. Development will not contribute to economic and social well being unless future demand for water can be met, wastewater can be treated adequately, river water quality does not deteriorate, and drainage systems can cope with runoff.

Development plans and Council Concerns

The Core Strategy and supporting planning documents must identify suitable sites for residential and commercial development. These sites must offer the best planning solution both now and in the future. The Councils are required to justify their site selections to the Planning Inspectorate by demonstrating an objective and robust selection process.

The purpose of this Phase 1 – Outline Water Cycle Study is to identify if there are any water related issues that present significant obstacles to the success of development. This is to prevent wasting time and money developing detailed plans only to discover they are unsuitable at a later point. Braintree District Council published its Preferred Options for consultation at the end of October 2008. The conclusion of this Phase 1 study has notified the Council of the issues that could affect development in the district and will inform the selection its preferred development locations around Braintree and Witham. The Phase 2 study will commence after the development sites have been confirmed, and these may change as a consequence of the consultation.

This study examines how much growth can be accommodated within the existing infrastructure. It examines whether sufficient water resources are available to supply forecast demand, how much growth the existing drainage and wastewater treatment works (WwTW) can accommodate, and whether or not the streams and rivers in the area can absorb additional discharges without deterioration in water quality or water dependant habitats.

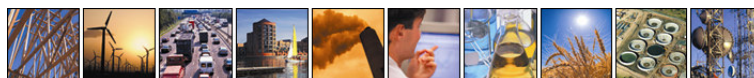
The study examines each of these issues in general across the whole study area, and then takes a closer look to prioritise areas that are more and less suitable for development, in terms of the water cycle. Where constraints are identified these are explored further and conclusions are made on the options to resolve these issues or recommendations made where further assessment is required in a detailed “Phase II” Water Cycle Study.



Key Messages that should inform the Core Strategy

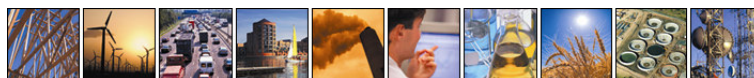
- Water is a precious and increasingly scarce resource in the East of England. Sufficient water resources should be available to supply the study area in the future provided that new developments meet water efficiency standards, and provided that Anglian Water and Essex and Suffolk Water are able to implement their 25 year plans;
- Significant work is required to engage with developers to ensure that new homes incorporate water efficient design. Currently, developers are not legally obliged to build homes incorporating water efficient design;
- Despite the projected overall decline in water demand, due to a lower occupancy rates and per capita consumption rates, those treatment works serving the main towns where significant growth is planned may see a marginal increase in wastewater flows. Additional demand from the commercial sector also has the potential to increase the strain on individual treatment works and the capacity of the existing wastewater infrastructure and the receiving water should be considered in selecting proposed development sites;
- The majority of rivers flowing through the study area are generally in good condition, meeting water chemical and biological quality objectives. However, many rivers exhibit high nutrient concentrations. Nutrients are derived from diffuse (e.g. runoff from agricultural land) and point sources (e.g. WwTW discharges) and elevated concentrations can impact the ecology of the receiving water. Therefore, the limiting factor constraining development is the capacity of a river to dilute discharges, even if the wastewater treatment works and its associated infrastructure can process the incoming polluting load; .

Effective drainage offers the potential to reduce the problems of surface water flooding during heavy rain and can also be used to enhance both biodiversity and the aesthetic appeal of an area, providing ponds and reed beds for example. Drainage schemes must consider the underlying geology of any given site and its surrounding area. In the study area, chalk underlies the north of the study area, therefore infiltration based drainage schemes are suitable. However, this area also has groundwater sources for public water supply so drainage must be managed carefully. Further south, the underlying clay makes infiltration unsuitable. In this area drainage may be better managed using attenuation ponds. It is therefore recommended that location specific drainage plans form an integral part of all significant developments in the study area.



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Contents

1.	Introduction	1
1.1	Aims and Objectives	2
1.2	How to Use this Water Cycle Study	2
2.	Development and Growth	5
2.1	Planning Policy	5
2.1.1	National policy	5
	PPS 1 – Delivering sustainable development	5
2.2	The Development Situation in Braintree District, Haverhill and Clare	6
2.2.1	The Development Plan	6
	The East of England Plan	6
3.	The Water Cycle	9
3.1	Introduction	9
3.2	Integrated Catchment Management	10
3.3	The Study Area	11
3.3.1	Surface Water	12
3.3.2	Geology and Hydrogeology	13
3.4	Climate Change	14
4.	Water Resources and Public Water Supply	15
4.1	Introduction	15
4.2	Availability of Water Resources	16
4.3	Public Water Supply	17
4.4	Demand in Braintree	19
4.4.1	New Household Demand Scenarios	19
4.4.2	Non Household Demand	22
4.4.3	Options to Maintain Public Water Supply	23
4.5	Interim Conclusion	25
5.	Water Quality and Wastewater Treatment	27
5.1	Legislative Drivers	27
5.1.1	Urban Wastewater Treatment Directive	27



5.1.2	Habitats and Birds Directive	28
5.1.3	Sites of Special Scientific Interest	28
5.1.4	Water Framework Directive	28
5.2	Receiving Water Environment	29
5.2.1	Environmental Capacity	33
5.3	Water Quality Interim Conclusion	34
5.4	Wastewater Infrastructure Capacity	34
5.4.1	Capacity Assessment	36
5.4.2	Headroom	41
5.4.3	Wastewater Asset Growth Summaries	44
5.5	Wastewater infrastructure assessment and potential development locations	45
5.6	Wastewater Treatment Interim Conclusion	49
6.	Sustainable Drainage	51
6.1	The Benefit of Sustainable Drainage Systems	51
6.2	Planning Context	52
6.3	Braintree Local Plan Review (2005)	52
6.4	Flood Risk	53
6.5	Current Drainage Infrastructure	53
6.6	Infiltration and Groundwater Vulnerability	54
6.7	Attenuation Techniques	56
6.8	Interim Conclusion	57
7.	Integrated Recommendations and Guidance	59
7.1.1	Water Resources and Demand Management	59
7.1.2	Water Quality and Wastewater	61
7.1.3	Drainage Recommendations	63
7.2	Recommendations for Phase 2 Analysis	67
8.	References	69
Table 2.1	Overview of the main areas highlighted for the proposed growth under the two different scenarios (300 and 500 per annum)	8
Table 4.1	Definition of Demand Scenarios	19
Table 4.2	Anglian Water network requirements – Braintree area	24
Table 5.1	Sensitive water bodies and designations	27
Table 5.2	Compliance Against River Quality Objectives (Study Area)	31
Table 5.3	Current consent conditions in the study area	35
Table 5.4	Population Equivalent Growth Predictions for to Wastewater Treatment Works across the study area	43
Table 5.5	Potential Constraints at Sites within the Study Area – (A3 print out)	52
Table 6.1	Definition of Source Protection Zones	54
Table 6.2	Acceptability for discharges to SPZs	55

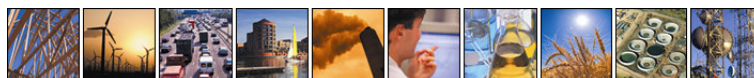


Table 6.3	Suitable Attenuation SuDS techniques	56
Table 7.1	Excerpt from Interim Code of Practice for Model Agreements	64
Figure 3.1	Schematic of the Urban Water Cycle	9
Figure 3.2	Map of the Braintree District, Haverhill and Clare Study Area	12
Figure 3.3	Hydrology and Geology of the Braintree District, Haverhill and Clare Study Area	
Figure 4.1	Water Resource Zones and Existing Housing Structure in Braintree District, Haverhill and Clare Study Area	16
Figure 4.2	Water Resource Zone (Baseline) and CAMS Assessment of Water Availability	18
Figure 4.3	Forecast Demand from New Households (300 per year)	20
Figure 4.4	Forecast Demand from New Households (500 p.a. scenario)	21
Figure 4.5	Forecast Demand – All Households (300 p.a. scenario)	21
Figure 4.6	Forecast Demand – All Households (500 p.a. scenario)	22
Figure 5.1	Nitrate Categories under GQA in Braintree	
Figure 5.2	Phosphate Categories under GQA in Braintree	
Figure 5.3	Forecast Waste water Flows to Braintree, Bocking and White Notley	39
Figure 5.4	Forecast Waste water Flows to Witham	39
Figure 5.5	Forecast Waste water Flows to Haverhill	40
Figure 5.6	Forecast Waste water Flows to Earls Colne	40
Figure 5.7	Development locations around Braintree	
Figure 5.8	Development locations around Witham	
Figure 6.1	Source Protection Zones	
Figure 7.1	Key Elements of the Water Companies draft Water Resource Management Plans	60
Figure 7.2	Drainage Strategy Flow Diagram	66
Appendix A	Glossary of Terms	
Appendix B	Planning Context	
Appendix C	Water Resource Availability	
Appendix D	Water Demand Calculation – Methodology	
Appendix E	Water Efficiency	
Appendix F	The Code for Sustainable Homes and Water Consumption	
Appendix G	Water Quality	
Appendix H	Wastewater Treatment Works and Sewerage Catchments	
Appendix I	Drainage	



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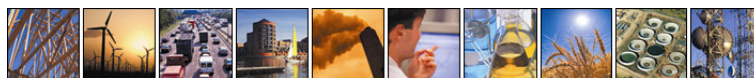
1. Introduction

Local demand for additional housing is driving development for new homes in Braintree District and around the towns of Haverhill and Clare (within the St. Edmundsbury Local Authority area). Braintree District Council expects between 300 and 500 new homes to be built each year to 2026. The plans do not include potential increases or decreases in population. The specific development locations had not been confirmed when defining the scope of this Phase 1 Water Cycle Study, but the development was expected to be distributed throughout the study area. In April 2007 the Council published a consultation document setting out the issues and options for the future development of the District up to 2021 and beyond. No preferences are expressed in this document and it includes a Settlement Strategy that conforms to the East of England Plan (formerly known as the Regional Spatial Strategy). The dwelling provision in the East of England Plan for Braintree District for the period 2001 to 2021 is 7,700 dwellings. This is regarded as a minimum figure, not a ceiling, and the achievement of additional housing would be acceptable if it can be delivered without breaching environmental and infrastructure constraints. The development plans have progressed in parallel with the Water Cycle Study and these are considered within the conclusions.

Braintree District Council procured Entec UK Ltd to undertake an outline or Phase I Water Cycle Study (WCS) to investigate the environmental constraints affecting Braintree, to assess the capacity of the environment and existing water / wastewater infrastructure to accommodate proposed growth and to identify improvements to ensure that the development is both sustainable and sensitive to these constraints.

This WCS examines all elements of the water environment in relation to development, particularly drainage and flooding, water supply and availability, wastewater treatment and quality of receiving waters (i.e. rivers, lakes estuaries and groundwaters).

The results of this Phase 1 study will help inform Braintree District Council and St Edmundsbury Borough Councils Preferred Options documents, due to be published for consultation at the end of October 2008. The WCS has highlighted those areas where investment will be required to increase the capacity of the existing water infrastructure, in order to facilitate development. Once the consultation is complete the Council will select and confirm the preferred development locations. A Phase II Water Cycle Study should be conducted to examine the issues highlighted in Phase 1 in more detail, including the need for development to be phased in line with the required upgrades to the water infrastructure. The study area is within a region that has been classified by the Environment Agency as under 'Serious Water Stress'. The rivers are generally slow flowing with elevated nutrient concentrations making them susceptible to eutrophication. Additional housing growth has the potential to exert increasing pressure on the environment, particularly at the local (parish) level in proximity of the more significant developments. The proposed development must therefore be managed to maintain (and improve) the quality of the receiving water. The Water Framework Directive (WFD) advocates an integrated approach to water and land management at the catchment scale and is driving increasingly tight environmental standards so that current standards must not only be maintained but potentially improved upon. The threat of flooding is increasing as



climate change alters weather patterns and storms become more frequent. The risk of flooding is compounded by increased urbanisation that reduces the land's capacity to absorb rainfall, leading to localised surface water flooding and drainage problems. New development creates the opportunity to integrate the different elements of the water cycle and thus achieve sustainable management of water supply (demand), wastewater treatment and drainage (capacity), whilst also protecting the environment and enhancing the amenity value of the development locations.

1.1 Aims and Objectives

The objectives of this Phase I - Outline Water Cycle Study are to:

- Present the elements of the water cycle for use by Local Authority Planners;
- Highlight the issues that are relevant to Braintree District and St. Edmundsbury Borough Councils, arising from National and local planning policies and environmental legislation;
- Determine the existing capacity of the water supply, wastewater and drainage infrastructure in the study area;
- Identify potential barriers to development, considering the combination of environmental and water infrastructure constraints;
- Prepare guidance for Local Authorities and Developers.

Flood risk in the district is being considered within the Strategic Flood Risk Assessment (SFRA), currently being produced for the Council's Local Development Framework (LDF). Flood risk is therefore outside the scope of this study, although generic recommendations regarding site drainage and the use of SuDS are made.

In assessing the capacity of existing water infrastructure (supply, wastewater, and drainage) this Phase 1 WCS will help to inform the development of the Councils' Preferred Options and highlight areas that should be investigated further in Phase 2.

1.2 How to Use this Water Cycle Study

A WCS provides an agreed plan, backed up with evidence, for providing integrated solutions to sustainably manage the water cycle, whilst meeting any additional demands associated with growth. This Phase 1 document brings together environmental and water infrastructure asset information that has been provided by the Environment Agency and the water companies. It sets out the capacity of existing infrastructure, highlighting where the main pressure points are and identifies the environmental constraints to growth and sets out the areas for further investigation in Phase 2.



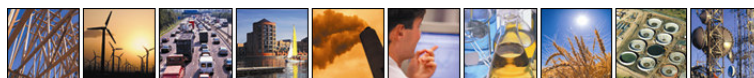
The data and analyses presented in this Phase 1 document provide a robust evidence base for making informed planning decisions. It does not provide an instant answer for determining planning applications. This evidence should be used to consider which options will best support the LDF Core Strategy and related policies.

It is important to understand the different scales at which the elements of the water cycle (water supply, sewerage and drainage) are managed, and the impacts this has on assessing constraints to growth. The different legislative and regulatory frameworks used to manage water resources, wastewater, and floods and drainage also needs to be considered.

Water supply is managed strategically, as there is a high level of connectivity in the water supply network. Water can be moved great distances from the raw water sources (rivers, reservoirs, or groundwater) to the point of delivery. New developments can generally be connected to the main system relatively easily. In contrast, WwTWs have much smaller defined catchment areas and so the location of development relative to the capacity of the nearest treatment works and its receiving water can be critical. Although drainage issues will be specific to an individual development, the integration of drainage across sites offers significant potential for green space / habitat creation and can also increase the amenity value of a site(s), in addition to reducing flood risk and potentially water demand.

This report contains three technical sections presenting the water resource, receiving water quality/wastewater infrastructure and potential drainage issues across the study area. The evidence in these sections is examined in the context of the whole water cycle and integrated conclusions drawn with recommendations for the Local Authorities and Developers to ensure sustainable delivery of the proposed development in the study area.

Detailed information on the methods used to assess the environmental constraints, and on sustainable development features, such as demand management measures and sustainable drainage techniques, are included within a series of appendices.



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