ARCADIS Design & Consultancy for natural and built assets

UTTLESFORD DISTRICT WATER CYCLE STUDY

Detailed Update – First Stage

APRIL 2018

Incorporating

EC HARRIS BUILT ASSET CONSULTANCY

Hyder

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Technical Glossary

- **Asset Management Period (AMP)** - A period of five years in which water companies implement planned upgrades and improvements to their asset base. For example, AMP5 is 2010-2015 and AMP6 is 2015-2020.
- **Biochemical Oxygen Demand (BOD)** – a measure of the oxygen demand that results from bacteria breaking down organic carbon compounds in water. High levels of BOD can use up oxygen in a watercourse, to the detriment of the ecology.
- **Catchment Abstraction Management Strategies (CAMS)** - the production of a strategy by the Environment Agency (EA) to assess and improve the amount of water that is available on a catchment scale. The latest CAMS strategies can be found at: https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process/
- **Combined Sewer Overflow (CSO)** – a point on the sewerage network where untreated wastewater is discharged during storm events to relieve pressure on the network and prevent sewer flooding. Sewerage systems that are not influenced by storm water should not require a CSO.
- **Deployable Output** – the amount of water that can be abstracted from a source (or bulk supply) as constrained by environment, license, pumping plant and well/aquifer properties, raw water mains, transfer, treatment and water quality.
- **Discharge Consent** – a consent issued and reviewed by the EA which permits an organisation or individual to discharge sewage effluent or trade effluent into surface water, groundwater or the sea. Volume and quality levels are set to protect water quality, the environment and human health.
- **Dry Weather Flow (DWF)** – an estimation of the flow of wastewater to a Water Recycling Centre during a period of dry weather. This is based on the 20th percentile of daily flow through the works over a rolling three year period.
- **Dry Year Critical Period (DYCP)** – the period of time during which the customer experiences the greatest risk of loss of potable water supply, during a year of rainfall below long-term average (characterised with high summer temperatures and high demand).
- **Eutrophication** – higher than natural levels of nutrients in a watercourse, which may lead to the excessive build-up of plant life (especially algae). Excessive algal blooms remove valuable oxygen from the watercourse, block filters at water recycling centres, affect the taste and smell of water, and can be toxic to other wildlife.
- **General Quality Assessment (GQA)** – The current assessment method used by the EA to describe the chemical and biological quality of watercourses, along with nutrient levels and aesthetic quality.
- **Habitats Directive** - promotes biodiversity by requiring measures to be taken to maintain or restore natural habitats and wild species to a favourable conservation status, introducing robust protection for those habitats and species of European importance.
- **Local Plan** – A document outlining the spatial planning strategy for each local authority. The Local Plan will contain a number of statutory documents setting out the long term planning and land use policies for a given area.
- **Local Nature Reserve (LNR)** – are areas with wildlife or geological features that are of special interest locally. Details of LNR can be found at http://www.natureonthemap.org.uk/.
- **National Nature Reserve (NNR)** – are areas of national importance, protected because they are amongst the best examples of a particular habitat in the country. Details of NNR can be found at http://www.natureonthemap.org.uk/.
- **National Planning Policy Framework (NPPF)** - The National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied. The framework acts as guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications.
- **Natura 2000 Sites** - Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right. It stretches across all 28 EU countries, both on land and at sea. The aim of the network is to ensure the long-term survival of

Europe's most valuable and threatened species and habitats, listed under both the Birds Directive and the Habitats Directive. More information is available at: http://ec.europa.eu/environment/nature/natura2000/index_en.htm.

- **Optant –** In terms of water supply the term optant is used to describe customer driven water reducing measures. A customer can choose to use these measures under recommendation from the water supplier.
- **Per Capita Consumption (PCC)** – the volume of water used by one person over a day, expressed in units of litres per person per day (l/p/d).
- **Population Equivalent** – is a method of measuring the loading on a Water Recycling Centre, and is based on a notional population comprising; resident population, a percentage of transient population, cessed liquor input expressed in population, and trade effluent expressed in population.
- **Potable Water** – is water that is fit for drinking, being free of harmful chemicals and pathogens. Raw water can be potable in some instances, although it usually requires treatment of some kind to bring it up to this level.
- **Raw Water** - is water taken from the environment, which is subsequently treated or purified to produce potable water.
- **River Basin Management Plans (RBMP)** – documents being produced for consultation by each of the EA regions to catalogue the water quality of all watercourses and set out actions to ensure they achieve the ecological targets stipulated in the WFD.
- **River Ecosystem (RE) Targets** – are the targets uses to assess quality against the above mentioned RQO.
- **River Quality Objective (RQO)** - targets for all rivers in England and Wales that specify the water quality needed in rivers if we are to be able to rely on them for water supplies, recreation and conservation.
- **Site of Special Scientific Interest (SSSI)** - an area of special interest by reason of any of its flora, fauna, geological or physiographical features (basically, plants, animals, and natural features relating to the Earth's structure). A map showing all SSSI sites can be found at: http://www.natureonthemap.org.uk/.
- **Source Protection Zones (SPZ)** - zones designated around public drinking water abstractions and sensitive receptors which detail risk to the groundwater zone they protect.
- **Special Area for Conservation (SAC)** - a site designated under the European Community Habitats Directive, 1991, to protect internationally important natural habitats and species. A map showing all SAC sites can be found at http://www.natureonthemap.org.uk/.
- **Special Protection Area (SPA)** - sites classified under the European Community Directive on Wild Birds to protect internationally important bird species. A map showing all SPA sites can be found at: http://www.natureonthemap.org.uk/.
- **Strategic Flood Risk Assessment (SFRA)** – document required by PPS25 that informs the planning process of flood risk and provides information on future risk over a wide spatial area. It is also used as a planning tool to examine the sustainability of the proposed development allocations.
- **Strategic Housing Market Assessment (SHMA)** - A study of local housing markets to assess needs and demand for different types of housing in the District.
- **Surface Water Management Plans (SWMP)** – assist in the assessment of flood risk to ensure that increased levels of development, and climate change, do not have an adverse impact on flooding from surface water sources within the catchment. SWMP were introduced following the severe flooding in 2007, as means for Local Authorities to take the lead in reducing flood risk.
- **Sustainable Drainage Systems (SuDS)** – a combination of physical structures and management techniques designed to drain, attenuate, and in some cases treat, runoff from urban (and in some cases rural) areas.
- **Target Headroom** - the threshold of minimum acceptable headroom, which would trigger the need for water management options to increase water available for use or decrease demand.
- **Type A Villages** – villages with a primary school with some local services e.g. village hall / pub / shop.

- **Urban Wastewater Treatment Directive (UWWTD) 1991** – A European Union directive (91/271/EEC) which sets treatment levels on the basis of sizes of wastewater discharges and the sensitivity of waters receiving the discharges. Under the Directive the UK is required to review environmental waters at four-yearly intervals to determine whether they are sensitive to the effects of wastewater discharges.
- **Water Available for Use (WAFU)** – the amount of water remaining after allowable outages and planning allowances are deducted from deployable output in a WRZ.
- **Water Framework Directive (WFD) 2000** - A European Union directive (2000/60/EC) which commits member states to make all water bodies of good qualitative and quantitative status by 2015. The WFD could have significant implications on water quality and abstraction. Important dates for the WFD are:

  2015
  - Meet environmental objectives
  - First management cycle ends
  - Second river basin management plan and first flood risk management plan

  2021
  - Second management cycle ends

  2027
  - Third management cycle ends, final deadline for meeting objectives
- **Water Neutrality** – the concept of offsetting demand from new developments by making existing homes and buildings more water efficient.
- **Water Resource Zone (WRZ)** – are areas based on the existing potable water supply network and represent the largest area in which water resources can be shared.
- **Wastewater** - is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture.
- **Water Recycling Centre (WRC)** – facility which treats wastewater through a combination of physical, biological and chemical processes.
- **Water Resource Management Plan (WRMP)** - Currently in their draft stages awaiting approval by OFWAT later this year, the Water Resource Management Plans are studies undertaken by every water company in England to determine the availability of water resources for the next 25 years. WRMPs can be found on most water company websites.

1 Executive Summary

This Water Cycle Study (WCS) Detailed Update – First Stage Report has been commissioned by Uttlesford District Council (UDC) to provide further evidence that the development proposed within the emerging Local Plan can be accommodated by the existing or new water and wastewater infrastructure, without causing a detriment to the wider receiving water environment. Baseline data, collected from the steering group members, has been assessed along with current and emerging legislation. The potential impact of the proposed Local Plan Growth on water resources, the current water and wastewater infrastructure, and the water environment, has been broadly analysed. Following the request of the Environment Agency (EA) the focus of this report is to assess the provision of key wastewater infrastructure and any associated new environmental permit requirements for accommodating the proposed garden communities in the Uttlesford District. It will address the issues previously expressed by the Environment Agency during the Regulation 18 Uttlesford Local Plan Consultation.

1.1 Water Resources and Supply Infrastructure

The Uttlesford District is partly underlain by a chalk aquifer of regional importance and the Environment Agency 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.

Affinity Water have undertaken a strategic modelling exercise of Water Resource Zone 5 (Stort), which has assessed the combined hydraulic impact on the network of the proposed Uttlesford Local Plan site allocations, along with all other known Local Plan housing allocations and known large new developments in the surrounding boroughs. On a strategic level, the modelling shows that to meet the demand of the new developments within the Uttlesford District, water will need to be continued to be brought into this catchment from the west. This is already the case, with water moved around the network to ensure demand is met resiliently. Strategic and local network reinforcements will be required to facilitate this increased demand, and to individually supply the larger site allocations.

Uttlesford District Council is considering including a development control policy advised by the EA and partners to help mitigate impacts, requiring developers to show how, through the installation of certain components and fittings as well as rain water harvesting where possible, water use per person per day will be limited to a lower rate than the current statutory requirements.

Affinity Water anticipate needs being met with the growth proposals acceptable.

1.2 Wastewater Treatment and Sewage

Wastewater in the District is collected and treated by Thames Water Utilities (TW) in the southwest and Anglian Water Services (AWS) in the northeast. The treatment capacity of each Water Recycling Centre (WRC) and discharge consent constraints are summarised below along with sewerage network capacity issues.

1.2.1 Towns and Key Villages Growth Impact

Overall, there are limited constraints associated with the allocated development in the Towns and Key Villages, with the existing WRCs having the capacity to accommodate increased flows, with future investment and planning by the operating sewerage company.

Table 1: Dry Weather Flow (DWF) Impacts from new development in Towns and Key Villages only

WRC / Sewerage Company	Increase in Dwellings (2018-2033)	Summary Comments
Saffron Walden / AWS	799	WRC not at risk of exceeding available DWF headroom within existing permit. Further investment by AWS not anticipated to be required.
Great Dunmow / AWS	2921	Calculations indicate DWF headroom is only an issue with the current WRC configuration. A new WRC is due to open in the summer of 2018. Capacity for further growth will have to be reviewed by AWS following completion of the scheme planned as part of AMP6 (Great Dunmow and Felsted (AWS) catchments are currently interrelated).
Great Easton / AWS	103	Available DWF headroom at AMP7. Insufficient biological capacity in AMP7. Review as part of price review in 2024 for potential investment in AMP8 (2025 to 2030). Existing consent is marginally exceeded.
Newport / AWS	267	Flow compliance scheme anticipated to be required as part of AMP7, subject to business planning process. Existing consent is marginally exceeded.
Great Chesterford / AWS	82	WRC not at risk of exceeding available DWF headroom within existing permit. Further investment by AWS not anticipated to be required
Felsted / AWS	129	Calculations indicate DWF headroom is only an issue with the current WRC configuration, where flows from Great Dunmow are transferred to Felsted. A new WRC at Great Dunmow is due to open in the summer of 2018 and flow transfer will end. Capacity at WRC for further growth will be reviewed as part of AMP6 (catchment interrelated with Great Dunmow WRC).
Takeley / TW	47	Allocated development in Towns and Key Villages alone does not exceed the existing DWF consent.
Stansted Mountfitchet / TW	752	

1.2.2 New Garden Community Settlements Growth Impact

Due to the strategic scale development planned at the Garden Communities, a separate assessment has been undertaken for each development allocation to consider the cumulative impact on the relevant existing WRCs (i.e. over and above what is presented in Table 1 above). A summary of comments associated with each Garden Community is provided in Table 2 below.

Table 2: Dry Weather Flow Impacts with potential new settlements discharging to existing WRC

New Garden Community	Increase in Dwellings (2018-2033)	Option to Discharge to Existing WRC	Summary Comments
Easton Park	1800	Great Easton (AWS)	There would be insufficient headroom at the WRC by the end of AMP7 (by 2025). Insufficient biological capacity in AMP7. A review is required by AWS as part of price review in 2024 for potential investment in AMP8 (2025 to 2030).
		Great Dunmow (AWS)	Capacity for further growth will have to be reviewed by AWS following completion of the scheme planned as part of AMP6 (Great Dunmow and Felsted (AWS) catchments are currently interrelated).
		Takeley (TW)	TW are currently investigating options for serving Easton Park by utilising either the Takeley or Bishops Stortford WRCs. TW have indicated that using Bishops Stortford is likely to be the preferred option from a treatment perspective, but assessment is required to confirm and develop the best solution.
		Bishops Stortford (TW)	
North Uttlesford	1900	Great Chesterford (AWS)	There would be insufficient headroom and biological capacity during AMP7. Would require review by AWS.
West of Braintree	970	Rayne (AWS)	Existing DWF consent would be exceeded. Capacity is available at other WRCs in the catchment. Unlikely to be viable option to discharge due to small size of works.
		Bocking (AWS)	With West of Braintree Garden Community only there is sufficient headroom within existing permit to accommodate residential growth. Taking into account all development within Braintree District Council and the Garden Community the headroom at both WRCs is exceeded. There would a need for further investment to be reviewed by AWS as part of price review in 2024 for potential further investment relating to biological capacity in AMP8 (2025 to 2030).
		Braintree (AWS)	

Overall, no show stoppers have been found by this detailed First Stage WCS assessment that will prevent a timely delivery of at least one suitable technically feasible option for the above Garden Communities, by upgrading the impacted existing WRCs owned by AWS or TW.

Due to the large-scale developments at each of the Garden Communities there is also an option to provide a new separate onsite WRCs to serve each community. However, the EA have advised that in line with the current legislation and policies, new discharges should first consider connecting to existing infrastructure where it is reasonable to do so. Initial discussions with the EA have discounted onsite WRCs at Easton Park and North Uttlesford (see Section 6 for further details).

There are options for a new onsite WRC at the West of Braintree Garden Community, however, as stated above the options to connect to the existing works outlined in Table 2 should be explored initially. As the Garden Community spans both Uttlesford and Braintree Districts, continuous engagement is required between the site promoters, District Councils and AWS to determine the most appropriate WRC to serve the development.

1.3 Water Quality

The results of the indicative water quality discharge permit analysis indicate that the proposed development will not lead to a Deterioration of WFD status or will unduly compromise the achievement of WFD Good Status in the receiving watercourses although tightened water quality parameters will be required where existing WRC flow consents have been exceeded. The increased flows as a result of the proposed development trajectory do not present any major constraints in relation to wastewater treatment or water quality. Developers should engage with the EA and Water Companies as soon as possible in the planning process to facilitate timely site-specific assessments.

1.4 Flood Risk Management

Following a review of the Uttlesford Strategic Flood Risk Assessment and the latest EA Flood Map, small areas of the following sites are at high risk of flooding:

- Braintree- West of Braintree
- Great Chesterford- North Uttlesford
- Great Dunmow- Easton Park, West of Woodside Way and Oaklands, Ongar Road
- Stansted- Land West of 8 Water Lane and Land west of Hall Road

The Garden Communities are of sufficient area to allow all proposed development to be outside the areas at high risk of flooding. Furthermore, a high-level assessment indicates that none of the proposed increases in WRC discharges appreciably increase flood risk when compared against the current baseline situation and the increased flow from each WRC site is classified overall as having a low flood risk.

2 Introduction

UDC previously prepared a Stage 1 Water Cycle Study (WCS) (Scoping and Outline Strategy) in 2010, a Stage 2 WCS (Detailed Strategy) in 2012 and a high-level update in 2017. The emerging Local Plan is looking to allocate sites for ~11,044 new dwellings up to 2033 with the proposed distribution strategy for UDC.

The UDC Local Plan makes provision, as part of its proposed housing growth, for three new Garden Communities within the District. Policy SP5 in the Local Plan – this is an overarching policy that sets out principles for the delivery of the Garden Communities and requires, among other things, that 'Phasing, infrastructure and delivery plans will form part of the development framework…'.

Preferred Option Local Plan Policies SP6, SP7 and SP8 are concerned with specific requirements for the proposed Garden Communities at Easton Park, North Uttlesford and West of Braintree respectively. Each of these three policies includes a similarly worded point 7 which requires: 'Enhancements to the water recycling centre at [Easton Park, North Uttlesford and West of Braintree respectively], new connections, network upgrades and reinforcements to the sewerage network. Although point 7 provides in each policy for enhancements to the water recycling centres, such provision had not been subject to detailed assessment in the earlier Water Cycle Study. The EA advised focus on the Garden Communities given the scale of the proposals.

Therefore, an update to the 2017 high -level WCS report is required to assess the likely impact of the new development trajectory on the water environment whilst mainly focussing on the proposed Garden Communities. The proposed detailed WCS update is being progressed in the format of a Two-Stage approach for the purposes of assessing the provision of wastewater infrastructure for the proposed garden communities. The First Stage considers the Anglian Water area in full and the Thames Water area as an interim assessment. The latter is at the request of Thames Water to allow them, in line with their projected financial resources, to perform detailed modelling of the options in their area in order to identify their preferred deliverable wastewater solution. The Second Stage of the WCS therefore covers the Thames Water area in more detail, modelling different potential options for the delivery of wastewater infrastructure requirements for the Easton Park Garden Community. UDC and the EA have agreed a position statement on the process.

This report presents the findings of the First Stage of the Detailed WCS Update in advance of the publication of the full WCS update, to guide UDC to make an informed decision and recommendations regarding development allocations taken forward for the emerging Local Plan. Consultation has been undertaken with Anglian Water (AWS), Thames Water (TW), Affinity Water (AW) and the Environment Agency (EA) as well as other relevant parties in order to provide an indication of the most up to date requirements for the water cycle and infrastructure impacts. These requirements have been reviewed on a site by site basis in reference to the locations identified in the emerging Local Plan detailing any issues and constraints for each.

This First Stage assessment has been based on the following key data sources:

- **UDC**- Housing Development Trajectory and distribution breakdown and Preferred site allocations mapping.
- **Anglian Water (AWS)** - Assets Datasets: Sewers / Assets / Water Recycling Centre (WRC).
- **Thames Water (TW)** - Assets Datasets: Sewers / Assets / WRC.
- **Affinity Water (AW)** - 2015 Water Resource Management Plan.
- **Environment Agency (EA)** - River Basin Management Plan and water body quality and Catchment Abstraction Licencing Strategies.

The findings relating to wastewater treatment have been reported separately for the TW and AWS operational areas. An initial assessment exercise has been undertaken with Thames Water based on identifying waste water infrastructure options.

Further consultation and data gathering will be undertaken with the key stakeholders, including TW and the EA, before completing the final Second Stage detailed WCS report.

2.1 The Water Cycle

The natural water cycle is the process by which water is transported throughout a region. The process commences with some form of precipitation, be it rain, snow, sleet or hail. This is then intercepted by the ground and either travels overland through the process of surface runoff to rivers or lakes, or percolates through the surface and into underground water aquifers.

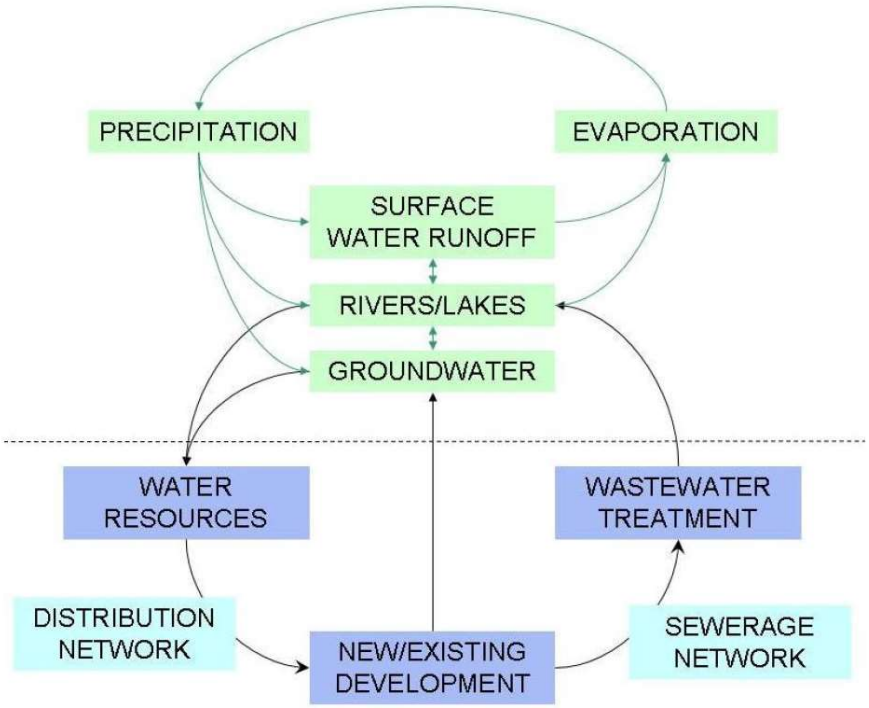
The presence of vegetation can also intercept this precipitation through the natural processes that plants carry out, such as transpiration and evapo-transpiration. The water will eventually travel through the catchment and will be evaporated back into the atmosphere along the way or will enter the sea where a large amount will be evaporated from the surface. This evaporated water vapour then forms into clouds and falls as precipitation again to complete the cycle.

Urbanisation creates a number of interactions with the natural water cycle. Abstraction of water, from both surface water and groundwater sources for use by the local population, interacts with the water cycle by reducing the amount of water that is naturally held within the aquifers. Following treatment at a Water Treatment Plant this water, now potable, is transported via trunk mains and distribution pipes to the dwellings in the area. The potable water is then used by the population within the dwellings for a number of different purposes, which creates large volumes of wastewater.

The use of paved and other surfaces in this development also reduces the amount of water that is able to percolate through the underlying soil to the groundwater aquifers. This therefore increases the rate of surface water runoff, which leads to flooding and increased peak discharges in rivers if not appropriately managed.

The wastewater from the developments is transported via the sewerage network to a water recycling centre (WRC), where the water is screened, treated, and then discharged back into the rivers or groundwater. Discharges from WRC require consent from the EA. This consent will set out the maximum volume of treated wastewater that can be discharged, and the quality standards that this discharge must meet. Typically, the consent will set limits on the concentrations of the following physiochemical determinands: Ammoniacal Nitrogen (Amm. N), Biochemical Oxygen Demand (BOD) and suspended solids in the discharge. In addition, the consent can stipulate a Phosphorous (SRP) concentration, along with limits on the concentrations of other chemicals (such as Iron) used in the Phosphorous stripping process.

Figure 1- The wider Water Cycle



2.2 Study Area

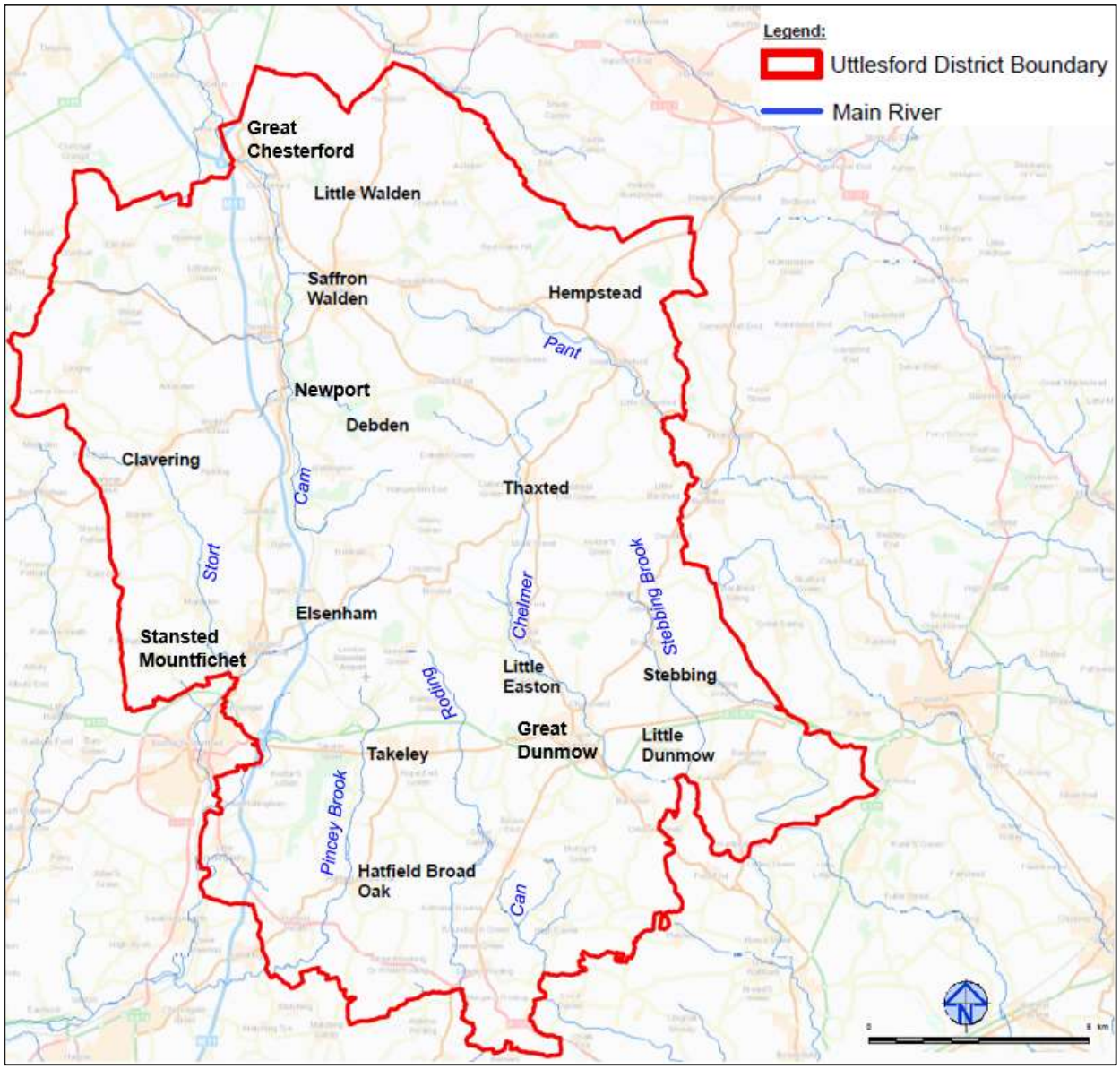
Uttlesford District is located in the northwest of the County of Essex, in the East of England. The District is predominantly rural in nature, although it includes the market towns of Great Dunmow and Saffron Walden, and the key service centres of Elsenham, Great Chesterford, Newport, Stansted Mountfitchet, Takeley, and Thaxted. The District also contains a large number of smaller villages.

In respect to the water environment, Uttlesford District is located at the headwaters of four river catchments:

- The Cam and Ely Ouse;
- The Combined Essex rivers (Rivers Cam, Chelmer, Ter and Pant, and Stebbing Brook);
- The Roding, Beam and Ingrebourne; and
- The Upper Lee (River Stort and Pincey Brook).

Figure 2 below illustrates the locations of the main watercourses within the catchment in relation to the larger settlements. These river catchments are described in more detail in Section 3.

Figure 2- Study Area



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The Cam is the largest river in the district in terms of flow. The northern half of the District is underlain by the chalk aquifer (a major store of the UK's groundwater resources). However, the majority of the chalk in the District is overlain by a layer of clay. More information regarding water resources is included in Section 5.

Potable water is supplied to the District by Affinity Water and the District lies completely within Water Resource Zone (WRZ) 5 in the Central region. This WRZ is supplied via a number of groundwater abstractions from the underlying chalk aquifer and the import of treated water from neighbouring water companies. More information regarding potable water supply is included in Section 5.

The companies responsible for collecting and treating wastewater within the District are AWS and TWU. More information is included in Section 6.

Sources of flood risk within the District were identified in the Uttlesford District Strategic Flood Risk Assessment (SFRA). Key messages from this report, and other relevant flood risk policies, are highlighted and built upon in Section 7.

2.3 Key Stakeholders

Stakeholder engagement is key to informing and providing an evidence base for the WCS in terms of the water resource, wastewater treatment capacity and water environmental capacity constraints. The following Stakeholders have been engaged throughout the WCS preparation process from the Outline to the current Detailed Stages:

- EA - Water Resources and Water Environment;
- AWS - Sewerage and Wastewater;
- TW - Sewerage and Wastewater; and
- AW - Water Resources and Supply.

Essex County Council engaged as Lead Local Flood Authority (LLFA) on pluvial flooding issues.

Consultations have been undertaken through meetings and teleconferences, and representation provided to UDC.

3 Water Environment Evidence Review

3.1 Policy Context

The following sections introduce the national policies relating to mitigating the impacts on the water environment from new development.

3.1.1 National

3.1.1.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) represents an effort by the Government to achieve a reduction in the complexity of the planning system. The NPPF relies on the fact that specific details of the requirements previously obtained from national planning policy will be set out in local plans. These plans will be founded on a locally developed evidence base, including relevant technical studies, such as this Water Cycle Study. By emphasising the importance of local plans local communities will feel empowered to decide the look and feel of the local area.

Local authorities should ensure that planning documents consider these policies, and they can use some of the policies contained within NPPF to make decisions on individual planning applications. The key themes in NPPF that are most relevant to this WCS are:

- Delivering Sustainable Development and Climate Change;
- Housing;
- Biodiversity and Geological Conservation;
- Planning and Pollution Control; and
- Development and Flood Risk.

Relevant topics that consistently occur within the above mentioned NPPF are:

- Conservation / biodiversity;
- Sustainable use of resources;
- Mitigation of flood risk and the use of Sustainable Drainage Systems (SuDS);
- Suitable infrastructure capacity; and
- Protection of groundwater and freshwater.

3.1.1.2 Flood and Water Management Act 2010

The Flood and Water Management Act passed into statute in April 2010. It sets out a number of changes to the way that new development and water infrastructure will interact, including the proposed future mechanism for utilising SuDS where practical. SuDS assist in reducing the rates (and potentially volumes) of surface water arising from new developments and therefore reduce the impacts on the existing water cycle. This is important in ensuring that existing flood risks do not increase as a consequence of new developments and can reduce (or even eliminate) the need to use existing sewerage systems to convey surface water. This reduces unnecessary expenditure in the uprating of existing sewers and WRC, reduces the probability of untreated discharges of wastewater during flood events, and can delay the requirement to consent increased flows from WRC.

3.1.2 Local

3.1.2.1 Uttlesford Local Plan

The Uttlesford Local Plan was adopted in 2005. It currently forms the basis for making planning decisions within the district alongside the National Planning Policy Framework published in March 2012 and the Planning Practice Guidance. UDC have identified that it is becoming increasingly out of date, therefore and a

replacement plan is currently being prepared and is due for submission to the Secretary of State in Autumn 2018.

3.2 Previous Water Cycle Studies

The Council has previously prepared a Stage 1 (Scoping and Outline Strategy) (2010), Stage 2 (Detailed Strategy) (2012) WCS for the withdrawn 2014 plan. The Outline high-level WCS Update (2017) was prepared for the current plan. These noted that possible constraints to development related to sewer capacity or wastewater treatment in some areas to be further investigated, including Great Easton, Newport and Great Chesterford.

3.3 Water Resource Management Plan (WRMP)

Affinity Water is currently the sole statutory supplier of potable water to UDC and the entirety of the study area is located within the Central Supply Region. The Central Region abstracts 60% of the water supply from groundwater sources (with boreholes abstracting from chalk and gravel aquifers), 40% from surface water sources and imports from neighbouring water companies: (Thames Water, Anglian Water and Cambridge Water). Water is also exported from the Central Region to South East Water and Cambridge Water. The Central Region has an average Distribution Input of 840Ml/d.

The Central Supply Region is further subdivided into six water resource zones (WRZs) and these are broadly integrated areas in which customers are supplied by a common strategic pipe network from a number of local water sources. WRZs also allow water to be transferred between zones to enable operational flexibility and they are created as a strategic framework to facilitate assessment of the supply and demand. UDC is located within WRZ5 (Stort).

Affinity Water is currently preparing the WRMP19 in order assess and prepare suitable strategies over a longer planning horizon of 60 years until 2080, going beyond the minimum 25-year statutory period. The draft plan in currently out for public consultation and a revised draft plan will be published in mid-2018. The final WRMP19 will be integrated with Ofwat's Price Review 2019 programme and Affinity Water's Business Plan covering the years 2020 to 2025. The draft Business Plan is also currently under public consultation and the final plan is due for submission to Ofwat in September 2018.

In developing our dWRMP19 plans, Affinity Water has sought to:

- further reduce **household consumption** through a range of demand management options in line with government aspirations;
- further **reduce abstraction** from existing sources where there is evidence that this will deliver environmental benefit;
- share **resources** with neighbouring companies and third party licence holders;
- explore a wide range of possible futures using scenarios to develop a '**resilience tested plan**';
- **promote resilience** by having a balanced programme of investment that does not rely on any one single option type.

3.3.1 Water Demand

The impact on water resources and infrastructure as a result of new development within the Uttlesford District does not solely depend upon the number of dwellings constructed. Demographic changes, i.e. changes in population and occupancy rates, will influence the impact of each new dwelling. Behavioural changes such as changes in per capita consumption (PCC), in both new and existing dwellings, will also affect the impact that the development has on the water infrastructure. Section 5 provides further discussion on water resources and supply.

3.4 Catchment Management Abstraction Strategy (CAMS)

The EA monitors existing abstractions so as to understand the water balance within catchments and what water may be available for future use. The EA prepares Catchment Abstraction Management Plans (CAMS) to make sure there is enough water for people and the environment. The results of the CAMS process are published in abstraction licensing strategies.

CAMS assess the amount of water available in each river catchment and review all abstraction licenses to determine whether or not they are having an unsustainable impact on the environment. The CAMS help to identify where water may be available for future use but also where water resource demands may be impacting the water balance and no further water is available for abstraction. There are four main strategies which cover UDC study area and the details are contained within Table 3.

Table 3: Catchment Abstraction Management Plans Summary

CAMS catchment	WRMU reference	Uttlesford Rivers Affected	Resource Availability Status
Cam and Ely Ouse	A: (Cam, Rhee and Granta)	Cam and tributaries, Granta (River Bourn near Ashdon)	Surface Water- restricted water available for licensing during high flows. No water available for licensing during moderate to low flow. Groundwater- not available for licensing. Overall consumptive abstraction available is less than 30% of the time.
Combined Essex	1: Pant/Blackwater, Ter, Roman/Layer, Wid, Brain, Chelmer	Pant, Ter and Chelmer	Surface Water and Groundwater- No water available for licensing.
Roding, Beam and Ingrebourne	2: Upper Roding	Roding	Surface Water - No water available for licensing. Overall consumptive abstraction available is less than 30% of the time.
Upper Lee	1: Rivers Lee, Mimram, Beane, Rib, Ash and Upper Stort	Stort	Surface Water and Groundwater- No water available for licensing. Overall consumptive abstraction available is less than 30% of the time.
	2: River Stort and Pincey Brook	Stort, Pincey Brook, Stansted Brook	

The CAMS indicate that overall no further consumptive licences will be granted for the existing groundwater or surface water sources. There is no further water for abstraction as overall further abstraction would result in an unsustainable impact on the environment. Water may be available to 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder.

In summary, with no further licences being granted within the majority of UDC water efficiency measures relating to the existing supply will need to be implemented to safeguard water supplies into the future. Further sustainability reductions may be required in the future to support the aspirations of the Water

Framework Directive (WFD). Development of additional resources, or increased efficiency through demand management, will be required to maintain the supply required for new developments.

3.5 River Basin Management Plan (RBMP)

River Basin Management Plans (RBMP) have been developed by the various regional offices of the Environment Agency and were published in 2009 and updated in 2014. The RBMPs set out a strategy, including a Programme of Measures, for each catchment to comply with the requirements of the WFD. An assessment of the current status of the rivers has been made, showing the rivers and lakes that currently fall below the 'good' status required to meet the WFD targets. The documents then set out those rivers that should be at 'good' status by 2027. As with the CAMS designations, Uttlesford District falls within the Thames and Anglian RBMP areas. Further information on the WFD, the current status, and future targets of the District's watercourses is included in Table 4.

Table 4: RMBP Summary

Catchment	Sub Catchment	River Reach	RMBP Cycle 2 2015			
			Overall Status	Ecological Status	Chemical Status	Objectives
Cam and Ely Ouse	Cam, Rhee and Granta	Cam (Audley End to Stapleford)	Poor	Poor	Good	Moderate by 2027
		Wenden Brook	Good	Good	Good	Good by 2015
		Slade	Poor	Poor	Good	Poor by 2015
		Cam (Newport to Audley End)	Moderate	Moderate	Good	Good by 2027
		Wicken Water	Moderate	Moderate	Good	Good by 2015
		Cam (Upstream of Newport)	Poor	Poor	Good	Good by 2027
		Debden Water	Moderate	Moderate	Good	Good by 2027
Combined Essex	Chelmer	Great Easton to River Can	Moderate	Moderate	Good	Moderate by 2015
		Upstream of Great Easton	Moderate	Moderate	Good	Good by 2027
		Stebbing Brook	Good	Good	Good	Good by 2015
		Can	Poor	Poor	Good	Good by 2021

Catchment	Sub Catchment	River Reach	RMBP Cycle 2 2015			
			Overall Status	Ecological Status	Chemical Status	Objectives
Thames	Upper Roding	To Cripsey Brook	Poor	Poor	Good	Poor by 2015
	Upper Lee	Stansted Brook	Bad	Bad	Good	Good by 2027
		Pincey Brook	Moderate	Moderate	Good	Moderate by 2015
		Great Hallingbury Brook	Moderate	Moderate	Good	Moderate by 2015
		Stort at Clavering	Moderate	Moderate	Good	Moderate by 2015

Reviewing the RBMPs reveals that, with the exception of Stebbing Brook, and Wenden Brook, all of the main watercourses within the District **cannot currently achieve 'good' status (or GEP)** in the above timescales.

According to the RBMPs, throughout the District the main barriers to achieving 'good' status are:

- Sewage Discharge
- Groundwater abstraction
- Impoundments
- Urbanisation
- Barriers to fish migration
- Excessive Phosphate concentrations;
- Low Dissolved Oxygen concentrations;
- Low Fish and Invertebrate population levels;
- Failure to adequately mitigate the impacts of modification (which is preventing the majority of the HMWB in the District achieving GEP).

Discharges from WRC and industry, and surface water runoff (in particular from agricultural areas) can lead to nutrient enrichment, or eutrophication, of the receiving watercourses. High levels of nutrients such as phosphorous or nitrates can encourage excessive algal growth. This can adversely affect the biodiversity of the watercourse, particularly as it decreases the oxygen levels in the water that other life forms depend upon.

The key development site locations within each river catchment are detailed below:

- **Cam and Ely Ouse**- Saffron Walden, Newport and Great Chesterford
- **Thames**- Elsenham, Takeley, Stansted andLittle Easton
- **Combined Essex**- Thaxted, Great Dunmow and Great Easton, Felsted, Stebbing

The major impact of the potential development sites on the water environment will be the variations in water quality and quantity discharged to receiving watercourses from the site itself (surface water runoff) and the WRC that serve the sites. Water discharged from the sites will require careful management to ensure that the development does not have a detrimental impact on the water environment.

3.6 Surface Water Management Plan (SWMP)

Surface Water Management Plans (SWMPs) outline the preferred surface water management strategy in a given location. SWMPs are undertaken, when required, by Lead Local Flood Authority (LLFAs) in consultation with key local partners who are responsible for surface water management and drainage in their area. SWMPs establish a long term action plan to manage surface water in a particular area and are intended to influence future capital investment, drainage maintenance, public engagement and understanding, land-use planning, emergency planning and future developments.

There are currently no SWMPs covering Uttlesford District. Saffron Walden has been identified by Essex County Council as a Tier 2 area, to be completed in the future. Clavering, Great Dunmow, Takeley, Thaxted and Stansted Mountfitchet have been identified as Tier 3 areas. Any future SWMPs carried out for these areas should be considered by a future review of Local Plan.

Essex County Council advised that it has recently carried out a review of the Preliminary Flood Risk Assessment which includes SWMP areas and has re-classified a number of areas. The final outcome of this review will be notified to all districts and boroughs as part of the sign-off process. As part of this review Tier 3 has been removed as a classification so all areas that were previously Tier 3 are now considered unclassified. Therefore, Saffron Walden will be downgraded to unclassified.

3.7 Catchment Flood Management Plan (CFMP)

Catchment Flood Management Plans (CFMP) are high level policy documents covering large river basin catchments prepared by the Environment Agency. They aim to set policies for sustainable flood risk management for the whole catchment covering the next 50 to 100 years.

Uttlesford is part of three different CFMP areas: the Great Ouse (CFMP7), the Thames (CFMP8) and the North Essex (CFMP9). CFMPs split their catchments into sub areas with similar flood risk management types and assign one of six policies to each sub area. Table 6 summarises the policy statements relating to Uttlesford District for each CFMP.

Table 5: CFMP Summary For Uttlesford Study Area

CFMP	Sub Area	Policy
Great Ouse	Bedford Ouse rural and eastern rivers	Policy 3- Areas of low to moderate flood risk where we are generally managing existing flood risk effectively.
Thames	Towns and villages in open floodplain (north and west)	Policy 6- Areas of low to moderate flood risk where we will take action with others to store water or manage runoff in locations that provide overall flood risk reduction or environmental benefits.
North Essex	Blackwater and Chelmer, upper reaches and coastal streams	Policy 2- Areas of low to moderate flood risk where we can generally reduce flood management actions.

Action and objectives are then identified for each sub area based on the policy assigned. These actions have been summarised in Table 6. Despite the different policies, all areas have been identified as rural areas of low to moderate risk and therefore there are some common themes in the proposed actions, most notably the need to work with Local Planning Authorities (LPAs) to ensure that floodplain is protected from development, and to maintain or improve local flood warning services.

Table 6: CFMP Policy Summary For Uttlesford Study Area

CFMP	Policy	Actions
Great Ouse	Policy 3	Investigate opportunities to reduce levels of flood risk management on Main Rivers. Continue with current levels of flood risk management on Ordinary Watercourses. Improve flood warning service Work with partners to develop emergency response plans for critical infrastructure/ transport. Take opportunities to use mineral extraction sites to store water. Investigate land use change. Develop environmental enhancement projects to improve river state/ habitats
Thames	Policy 6	Maintain existing capacity of the system Identify locations where storage of water could benefit communities Work with LPAs to retain the floodplain for flood storage and adapt the urban environment to flood risk Continue flood warning service Help local communities manage flood risk (e.g. flood resilience)
North Essex	Policy 2	Reduce flood risk management activities e.g. channel maintenance Investigate land use change Work with LPAs to reduce the number of properties in the floodplain. Continue flood warning service and maintain flood warning infrastructure

Many of the actions proposed across all CFMPs relevant to the Uttlesford District area centre around changing behaviour of communities rather than investment in hard engineering, however a number of improvements to existing surface water drainage systems in the urban areas will be required to ensure suitable and reliable flow paths exist for effectively draining the development areas without increasing flood risk elsewhere.

3.8 Strategic Flood Risk Assessment (SFRA)

A Strategic Flood Risk Assessment (SFRA) for Uttlesford District Council (JBA, 2008) was completed in 2008. Since that time there have been significant changes to legislation relating to both flood risk and planning policy. Therefore an updated SFRA was completed in May 2016 (JBA, 2016) to take account of these factors.

The SFRA identified that many of the settlements across Uttlesford have experienced flooding in the past, including (but not limited to), Debden, Elsenham, Great Chesterford, Great Dunmow, Newport, Saffron Walden, Stansted Mountfitchet, Stebbing and Takeley. Sources of past flooding have been predominantly from main rivers, ordinary watercourses and surface water.

Uttlesford is located in the headwaters of three major catchments (Great Ouse, North Essex and Thames). Fluvial floodplains tend to be well-defined and limited in extent by the existing topography. The majority of the main rivers have hydraulic models from the Environment Agency and flood risk is well understood in the main settlements. The exacerbation of flood risk by poorly maintained or blocked culverts in the District, particularly in Saffron Walden, continues to be an issue for the Environment Agency and LLFA, Essex County Council.

Local sources of flooding, particularly from ordinary watercourses and surface water, are also a problem in the District. Saffron Walden has been identified as a Tier 2 area of local flood risk by the LLFA due to its surface water risk and flood history, and Great Dunmow, Takeley and Stansted Mountfitchet have been identified as Tier 3 areas. Groundwater and sewer flooding are limited and very localised.

Discussion with the LLFA concluded that focus of the WCS be the Garden Communities
.

4 Methodology and Assumptions

The following section lists the methodology and assumptions applied to the Detailed WCS First Stage update.

4.1 Development Trajectory

UDC is currently preparing a new Local Plan for the period 2018- 2033. The emerging Local Plan is looking to allocate sites for housing provision across new Garden Communities, existing towns and villages. The UDC Issues and Options Document (October 2015) assessed seven new Garden Communities settlement sites, with a combination of different spatial mixes of town and villages. Following this assessment, the UDC Preferred Options Draft Plan evidence base (July 2017) concluded that due to unresolvable constraints only three potential locations were worth pursuing for Garden Community scale development (Table 7 and Figure 3). The remainder of growth within the district will achieved from site allocations in the existing towns and villages. Between 2018 and 2033 the projections estimate an average annual increase of 692 dwellings per year within the Uttlesford District. A breakdown of the development trajectory considered in this assessment is summarised in Table 7 and a detailed breakdown is contained in Appendix A.

Table 7: Development Trajectory

LOCATION	*Total (from 2018 to 2033)*
ALLOCATION TYPE: NEW GARDEN COMMUNIY SETTLEMENTS Three Garden Community Settlements are proposed at the locations listed below: • Easton Park Garden Community • North Uttlesford Garden Community • West of Braintree Garden Community	**4,670**
ALLOCATION TYPE: TOWNS AND VILLAGES	
For settlement see trajectory Appendix A	**6,374**
TOTAL	**11,044**

The West of Braintree Garden Community is located within both Braintree and Uttlesford districts and Braintree District Council have been consulted during this assessment.

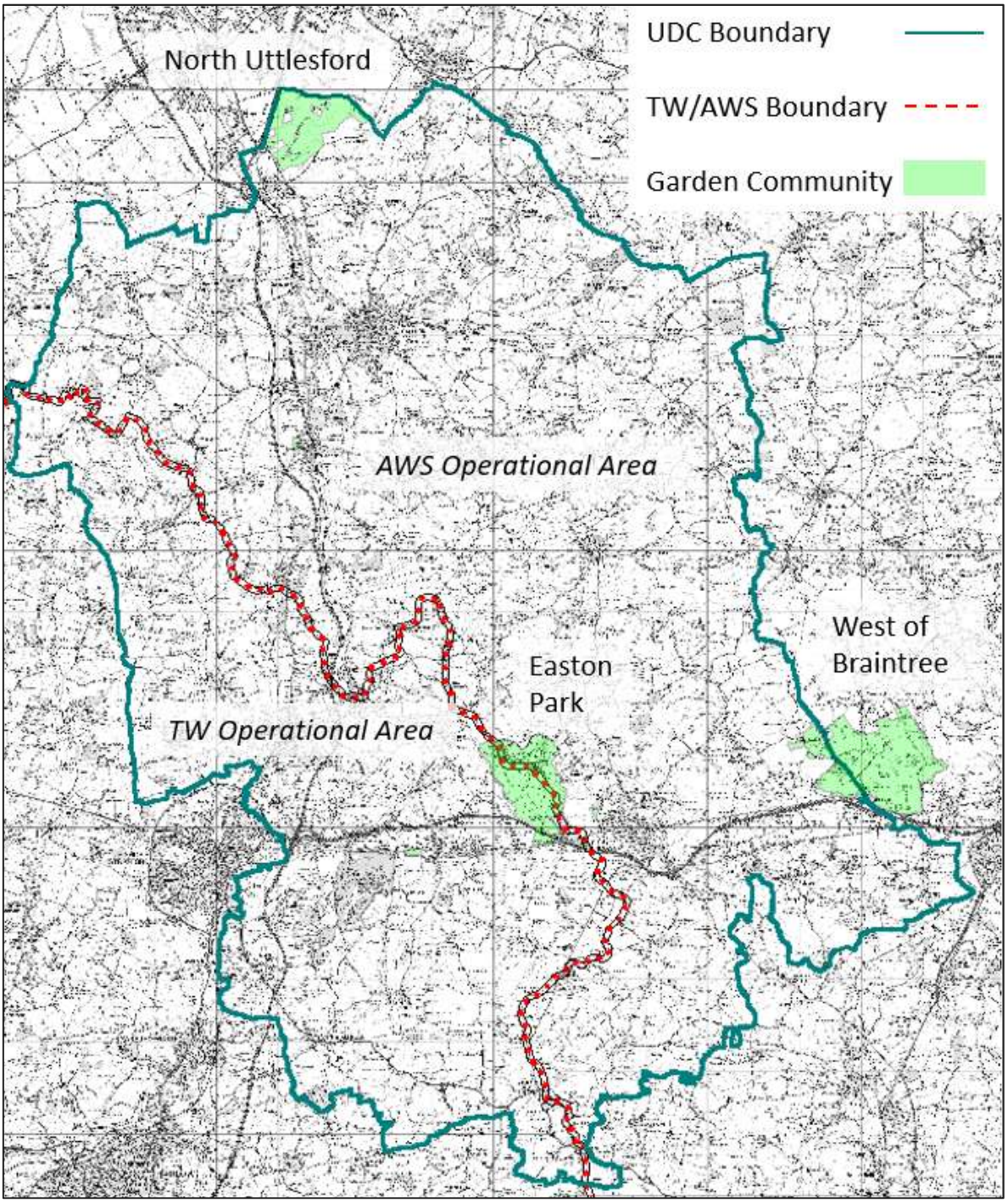
4.1.1 Occupancy Rates

To assess the impact of the proposed development within the District on the water infrastructure, an estimate of the predicted population and dwellings amounts, and hence occupancy rate, is required. As per the 2017 Outline WCS, an average Occupancy Rate of 2.35 has been adopted as a constant occupancy rate for calculations in the detailed WCS based on UDC's supplied data. This occupancy rate will ensure a conservative estimate of the impacts on the water infrastructure and wider water environment.

4.1.2 Non Residential Sites

Non-residential sites have not been included in the WCS. The approach has been taken to not include the employment sites within the WCS assessments as an assumption has been made that workers will mostly be included within the population estimations from within the residential development trajectory above.

Figure 3- Garden Community Locations



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5 Water Resources and Supply

Affinity Water have undertaken a strategic modelling exercise of WRZ5 (Stort), which has assessed the combined hydraulic impact on the network of the proposed Local Plan site allocations, along with all other known Local Plan housing allocations and known large new developments in the surrounding boroughs. On a strategic level the modelling has shown that to meet the demand of the new developments within Uttlesford, water will need to be continued to be brought into this catchment from the west. This is already the case, with water moved around the network to ensure demand is met resiliently. Affinity Water have confirmed strategic network reinforcements will be required to facilitate this increased demand, and to individually supply the larger site allocations. On a more granular level, local network reinforcements will be required to supply many of the new housing sites, and where necessary new mains will need to be laid to connect new developments. Behavioural changes such as changes in per capita consumption (PCC), in both new and existing dwellings, will also affect the impact that development has on the water infrastructure. A summary of a range of PCC figures that has been assessed in this WCS is provided in Table 8 below.

Table 8: Uttlesford District PCC Scenarios

Scenario	PCC of Existing Dwellings	PCC of New Dwellings
Best Case	161.95-143.17 l/p/d. As per Affinity's preferred option NYAA PCC rates as detailed in the 2014 WRMP.	105 l/p/d – In line with DEFRA's requirements for social housing.
Preferred Business Case	161.95-143.17 l/p/d. As per Affinity's preferred option NYAA PCC rates as detailed in the 2014 WRMP.	110 l/p/d – As defined by Building Regulations optional requirements.
Worst Case	161.95-152.46 l/p/d. As per Affinity's baseline option NYAA PCC rates as detailed in the 2014 WRMP.	125 l/p/d – As defined by Building Regulations minimum requirements.

Affinity Water strongly encourage policies which requires all new developments to meet the highest water efficiency standards (best or preferred business case scenarios). The South East of England is a heavily water stressed area, so this is well justified.

5.1 Development Impacts

In order to assess the developing trajectory's impact on water demand the following equation was used:

Total District Demand = Change in demand from existing dwellings + new dwelling demand

Where demand from new and existing dwellings is calculated from:

Number of dwellings * occupancy rate * Per capita Consumption (PCC)

The above methodology requires a number of assumptions:

- Water distribution leakage values have been discounted from the calculation;
- Non-residential and employment sites have also been discounted as per best practice for WCSs to avoid double counting; and
- Occupancy has been assumed to remain at a flat rate of 2.35 for new and existing dwellings across the assessment period.

In line with the 2017 WCS update, three potable water demand scenarios, dependant on PCC projections have been developed. The demand projection results for Uttlesford District are shown in Figure 4 below. This includes likely water demand from the existing dwellings and planning commitments as well as the new dwellings.

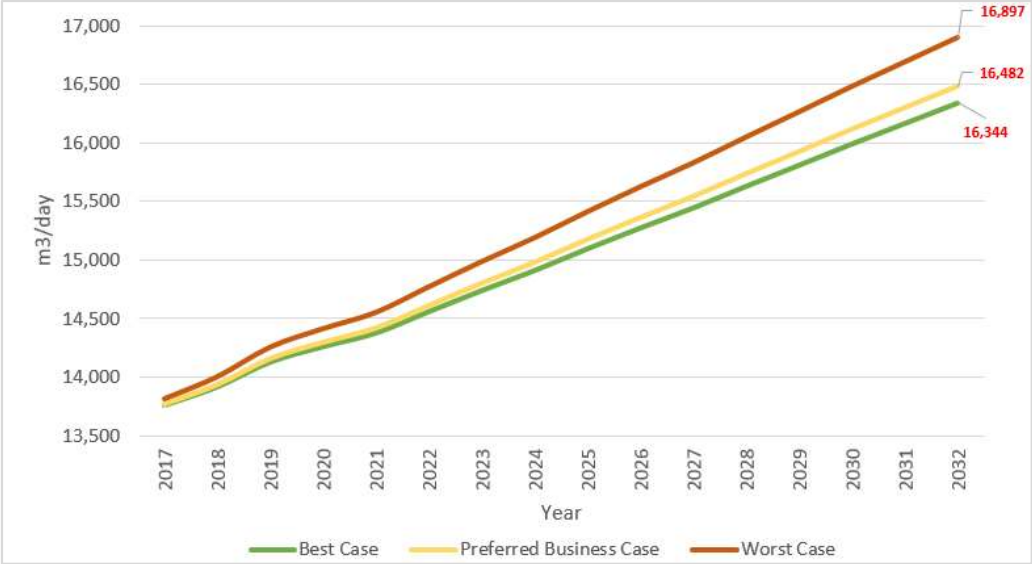

Figure 4: Uttlesford District Demand Projections 2015-2032 (Final 2032 figures shown in red).

The projections show that there is limited variation between scenarios with a final difference of 553m^3/day between best and worst-case scenarios by 2033. This is due to these figures being mainly influenced by the demand from the existing dwellings. Table 9 provides an overview of consumption within the District.

Table 9: Uttlesford District Extra Water Demand Summary (when compared with 2017 baseline).

Scenario	2033 Increase in Demand (m^3/day)	Change in Demand
Best Case	2,903	+22%
Preferred Business Case	3,042	+23%
Worst Case	3,456	+26%

5.2 Opportunities and Constraints

The WCS outputs provide the following in terms of opportunities and constraints for water resources and supply within the catchment.

5.2.1 Opportunities

- Implementation of the optional Building Regulations water usage values of 110 l/p/day for all new development to minimise water demand impact in a water stressed area. Consider implementation of more tighter water efficiency targets (e.g. 90 l/p/day) for Garden communities where possible. Encourage community engagement and awareness regarding water efficiency and water usage;
- Provision of mandatory infiltration SuDS requirements for new development where ground is permeable in order to aid groundwater recharge on which the District relies. Water-reuse is also encouraged to reduce extra water demand.
- There is an opportunity to harvest rainwater directly from roofs and surfaces to provide water for toilet flushing, clothes washing and garden irrigation. This approach could help to reduce the amount of potable water that is imported into the area while providing the additional benefit of reducing flood risk.

5.2.2 Constraints

- For the new Garden Community settlements substantial new water supply infrastructure will be required, it is recommended that site specific assessments are undertaken as part of the development planning process to cover the detailed requirements of these sites through early engagement with Affinity Water.

6 Wastewater Treatment and Sewerage

Wastewater treatment and conveyance within Uttlesford District is managed by both Anglian Water and Thames Water, an overview map of wastewater collection and treatment assets is provided in Figure 5 below.

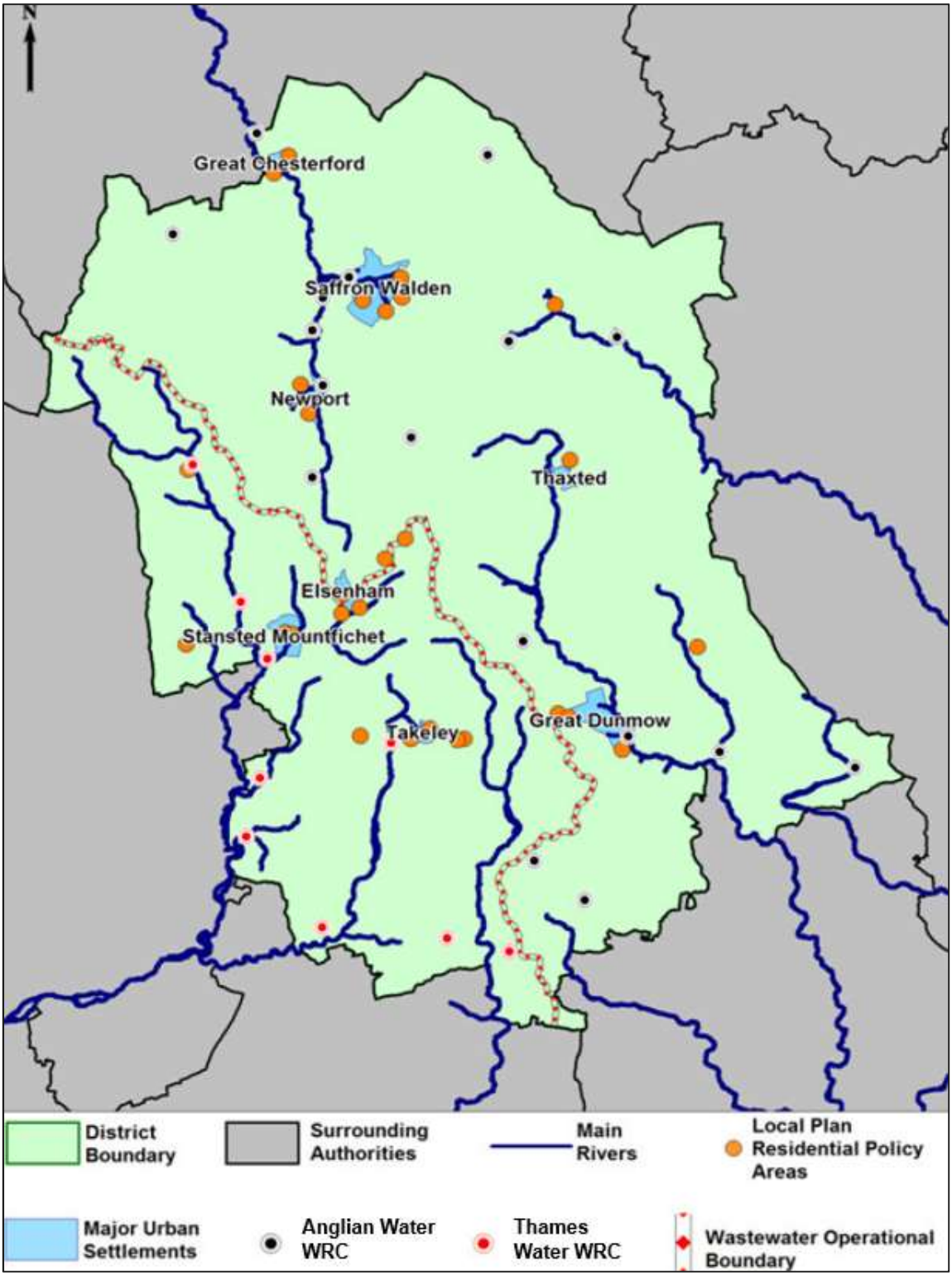

Figure 5: Wastewater collection and treatment assets

In order to confirm the impact of the proposed residential development, the following aspects have been assessed as part of this WCS update:

- Impact of development trajectory on volumetric discharge in terms of Dry Weather Flow (DWF) in relation to existing discharge consents;
- Identification of WRCs which require upgrading or where upgrades are not feasible, identification of potentials for new WRCs;
- Identification of key wastewater constraints in relation to each site considered within UDCs proposed development trajectory;
- Commentary on the sewerage network constraints; and
- Recommendations for future detailed studies.

6.1 Wastewater Treatment Projections

The methodology used previously in the 2017 Outline WCS has been re-applied using the latest variables as below:

Total DWF = Existing DWF + New DWF

Where

DWF = (number of dwellings × occupancy rate ×PCC) +I infiltration + trade flow

In line with the 2017 Outline WCS update, the PCC rate used is 131 l/p/d, this is above the maximum requirement for Building Regulations (125 l/p/d), using the higher rate provides a conservative estimate. The allowance for infiltration, which accounts for water entering the sewerage network from incorrect or illegal connections, and through defects in the existing assets, is estimated to be an additional 25% of the DWF from dwellings. Occupancy rates have been set at 2.35.

It has been assumed that trade effluent remains constant for the foreseeable future across the District. Intensification of existing employment areas is unlikely to result in a net increase in industrial demand, as it is predicted that existing companies with heavy water use will improve efficiency and be replaced with service-orientated industry over time.

Discussions with AWS and TW engineers and planners, based on their knowledge of current capacity and performance at the WRCs have been undertaken to assess the potential impact from the proposed development.

For the purpose of the calculations, dwellings outlined within the proposed development trajectory (including existing and committed development) have been assigned to a WRC dependant on the catchment in which they are located in, as summarised in Table 10. It should be noted however that for the WCS calculations that the following dwellings have not been included:

- Small sites (<6 dwellings) with existing planning permission;
- Sites with existing planning permission which are in a WRC catchment not impacted by the proposed draft trajectory;
- Windfall allocations;
- Sites located in ‘Type A’ villages.

6.2 Catchment Overview

The majority of WRC catchments will be impacted by development in the Towns and Key Villages, whereas some WRC catchments could be impacted in addition by the new Garden Community settlement sites.

The Braintree, Rayne and Bocking WRCs are located outside of UDC, within the Braintree District covered by the AWS operational area. These WRCs could be potentially impacted by the new West of Braintree

Garden Community only due to UDC's Local Plan proposals. On a more strategic scale, the WRCs will be further impacted by wider development within the Braintree District, this additional impact, located outside of the WCS area, has also been assessed in this Detailed WCS.

Table 10: Overview of communities and development that could be potentially served by existing WRCs

Sewerage Company	Water Recycling Centre	Potential Communities Served	Proposed Development Type/Details
Anglian Water	Saffron Walden	Saffron Walden	Development in Towns and Key Villages
	Newport	Newport	Development in Towns and Key Villages
	Great Dunmow	Great Dunmow	Development in Towns and Key Villages
		Easton Park Garden Community	Potential location for new settlement site (1800 dwellings up to 2033)
	Great Easton	Thaxted	Development in Towns and Key Villages
		Easton Park Garden Community	Potential location for new settlement site (1800 dwellings up to 2033)
	Great Chesterford	Great Chesterford	Development in Towns and Key Villages
		North Uttlesford Garden Community	Potential location for new settlement site (1900 dwellings up to 2033)
	Felsted	Stebbing	Development in Towns and Key Villages
	Braintree	West of Braintree Garden Community	Potential location for new settlement site (970 dwellings up to 2033)
	Rayne		
	Bocking		
Thames Water	Stansted Mountfitchet	Stansted Mountfitchet and Elsenham	Development in Towns and Key Villages
	Bishop's Stortford	Easton Park Garden Community	Potential location for new settlement site (1800 dwellings up to 2033)
	Takeley	Takeley	Development in Towns and Key Villages
		Easton Park Garden Community	Potential location for new settlement site (1800 dwellings up to 2033)

The impacts on the individual WRCs from development in Towns and Key Villages and from the potential new Garden Community sites are discussed in Section 6.3 and 6.4 respectively.

6.3 Towns and Key Villages Impacts

Results from the initial wastewater DWF calculations have been outlined below and they provide a general indication of the impacts of the proposed development on existing WRCs due to the existing planning commitments and new dwellings within the towns and Key Villages shown in Table 11.

Table 11: DWF Impacts from new development in Towns and Key Villages only

WRC	Existing DWF Consent (m^3/day)	Existing DWF (m^3/day) Baseline *	Increase in Dwellings (2018-2033)	2033 DWF (m^3/day)	Comments
Saffron Walden	3700	2823 (M)	799	3130	WRC not at risk of exceeding available DWF headroom within existing permit. Further investment by AWS not anticipated to be required.
Great Dunmow	1509	1126 (M) *(1497 – ignoring the current transfer flows to Felsted based on calculated baseline DWF)*	2921	2250 *(2621 - calculated ignoring all the current transfer flows to Felsted)*	Calculations indicate headroom is only a key issue with the current WRC configuration. A new WRC is due to open in the summer of 2018, which is designed to serve a 11,000 population equivalent. Capacity for further growth will have to be reviewed by AWS following completion of the scheme planned as part of AMP6 (Great Dunmow and Felsted (AWS) catchments are currently interrelated).
Great Easton	720	690 (M)	103	730	Available headroom at AMP7. Insufficient biological capacity in AMP7. Review as part of price review in 2024 for potential investment in AMP8 (2025 to 2030).
Newport	650	631 (M)	267	733	Flow compliance scheme anticipated to be required as part of AMP7, subject to business planning process.
Great Chesterford	1284	931 (M)	82	963	WRC not at risk of exceeding available DWF headroom within existing permit. Further investment by AWS not anticipated to be required
Felsted	1630	2950 (M) *(955 –ignoring all the current transfer flows from Great Dunmow based on calculated baseline DWF)*	129	3000 *(1005 – calculated ignoring all the current transfer flows from Great Dunmow)*	Calculations indicate headroom is only a key issue with the current WRC configuration, where flows from Great Dunmow are transferred to Felsted. A new WRC at Great Dunmow is due to open in the summer of 2018 and flow transfer will end. Capacity at WRC for further growth and upgrade requirements will be reviewed as part of AMP6 (catchment interrelated with Great Dunmow WRC).
Takeley	667	475 (M)	47	493	WRC not at risk of exceeding available DWF headroom within existing permit. Further investment by TW not anticipated to be required.
Stansted Mountfitchet	2650	2135 (M)	752	2424	

** (M) indicates measured 2016 DWF used as the baseline*

For all above WRCs the existing calculated DWF values are generally lower than the measured values provided by AWS and TW. To provide a conservative estimate, the higher measured flows have been used as the baseline DWF for the WCS calculations.

The preliminary assessment indicates that development can be accommodated, with some WRC upgrades and investment, at Saffron Walden, Great Easton, Newport, Great Chesterford, Takeley and Stansted.

The significant difference between the consented and measured baseline DWF at Felsted WRC is a result of flows from Great Dunmow catchment being diverted to Felsted WRC as an interim measure. AWS have confirmed the link pipeline between Great Dunmow and Felsted was built in 1960 and has been in constant use since construction. At present AWS are diverting ~50% of the flows received at Great Dunmow to Felsted, at approximately 15 – 20 l/s. AWS are in the process (construction is on-going) of building a WRC at Great Dunmow with commissioning due towards the end of June 2018. Once operational it is intended that the new plant will treat all flows and the practice of diverting a proportion of the flow to Felsted will be discontinued.

Based on measured DWF figures and due to the present interrelated WRC catchments at Great Dunmow and Felsted, these WRCs have been initially highlighted as high risk. A further sensitivity test has been undertaken, where the baseline figures have been taken from calculated figures, based on the actual population served rather than measured DWF. Under this assessment development can be accommodated at Felsted without the existing DWF consent being exceeded. At Great Dunmow, with the WRC in its current configuration, the sensitivity test still results in the allocated development in the catchment still exceeding the existing DWF consent, highlighting the need to negotiate a new flow consent with the EA. However, when the new works are operational AWS have confirmed the WRC has been designed to serve a population equivalent of 11,000. The existing WRC at Great Dunmow currently serves a population equivalent of ~9,000 and this will increase to ~16,000 by the new Local Plan growth in Towns and Key villages alone within this specific WRC catchment, therefore highlighting the need to undertake further upgrades in the future.

The capacity of both WRCs to accommodate the proposed development will be reviewed by AWS as part of AMP6. When the new WRC at Great Dunmow is operational in the Summer of 2018, the baseline will alter, with the overall risk score anticipated to reduce to medium risk at both Great Dunmow and Felsted WRCs.

6.4 Garden Community plus Towns and Key Villages Impacts

This section assesses the potential cumulative impact of the allocated development in the Towns and Key Villages as well as the Garden Communities. As per the assessment for the Towns and Key Villages this cumulative assessment has used the most recent measured DWFs made available for the impacted WRCs as the current baseline. This method should provide a more accurate assessment of the actual impact of the development over a calculated baseline.

The following section provides an overview of each WRC in the study area along with high-level calculations for the options assessed, commentary and recommendations in terms of wastewater treatment and conveyance.

The EA have advised that, in line with legislation and policies, new discharges should connect to the public foul sewer where it is reasonable to do so. New WRCs will only be acceptable if it is confirmed it is technically unfeasible to connect new developments to existing works. Therefore, an initial assessment was carried out for the three Garden Community settlement locations (Easton Park, North Uttlesford and West of Braintree) connecting to existing WRCs. Due to the differing levels of information and analysis available for each water and sewerage company the assessments have been completed separately for the AWS and TW operational areas.

6.4.1 Garden Community Wastewater Cumulative Assessment in AWS Operational Area

Due to the geographical location of the Garden Communities, there are potential several options to serve all sites in the AWS operational area. As mentioned in Section 6.2, the Braintree, Rayne and Bocking WRCs are located outside of UDC, within the Braintree District covered by the AWS operational area. To ensure a strategic view is taken, the Braintree District's relevant development allocations to 2033 have also been included in the assessment of the WRCs, in addition to the West of Braintree Garden Community allocation.

To provide a range of potential options for disposing of the additional wastewater arising from the development within each WRC catchment, the assessment for the AWS area has assumed that each Garden Community is served by one individual WRC. No allowance for development phasing or providing treatment for each community at multiple works has been undertaken in this assessment.

Table 12: Additional Dry Weather Flow Impacts with potential new settlements discharging to existing AWS WRC

New Garden Community	Increase in Dwellings (2018-2033)	Option to Discharge to Existing WRC	Existing DWF Consent (m^3/day)	Existing DWF (m^3/day) Baseline *	2033 DWF (m3/day)
Easton Park	1800	Great Easton	720	690 (M)	1423
		Great Dunmow	1509	1126 (M) *(1497 – calculated ignoring all the current transfer flows to Felsted)*	2943 *(3314 – calculated ignoring all the current transfer flows to Felsted)*
North Uttlesford	1900	Great Chesterford	1284	931 (M)	1694
West of Braintree	970	Rayne	650	520 (M)	893
		Bocking	3900	2899 (M)	5311
		Braintree	6859	6120 (M)	7909

** (M) indicates measured 2016 DWF used as baseline*

The preliminary assessment and recent consultations with the water companies indicates that the Garden Community developments can be accommodated at the most suitable location following detailed investigations and any new renegotiated discharge consents along with suitable WRC upgrades and investment factored into future AWS planning periods. Comments received from AWS relating to the above DWF calculations have been provided below. However, it should be noted that Easton Park Garden Community mostly falls within TW operational area and the initial phases of Easton Park are likely to actually fall within TW area, which means it may be more appropriate to serve this development in TW catchment as detailed in Section 6.4.2 below.

Table 13: AWS comments on additional Dry Weather Flow Impacts with potential new settlements discharging to existing WRC

New Garden Community	Existing WRC	Comments
Easton Park	Great Easton	There would be insufficient headroom at the WRC by the end of AMP7 (by 2025). Insufficient biological capacity in AMP7. A review is required as part of price review in 2024 for potential investment in AMP8 (2025 to 2030)
	Great Dunmow	Capacity for further growth will have to be reviewed by AWS following completion of the scheme planned as part of AMP6 (Great Dunmow and Felsted (AWS) catchments are currently interrelated).
North Uttlesford	Great Chesterford	Assuming foul flows from garden community are directed to Great Chesterford WRC, there would be insufficient headroom and biological capacity during AMP7.
West of Braintree	Great Dunmow	Capacity for further growth will have to be reviewed following scheme planned as part of AMP6 (Great Dunmow and Felsted catchments are currently interrelated).
	Rayne	Existing DWF consent exceeded. WRC had relatively lower capacity when compared to other WRCs. Is available at other WRCs in the catchment.
	Bocking	Sufficient headroom within existing permit to accommodate initial phases of residential growth. There would a need for further investment to be reviewed as part of price review in 2024 for potential further investment relating to biological capacity in AMP8 (2025 to 2030).
	Braintree	

If a new onsite WRC is commissioned for the West of Braintree site, the estimated DWF as a result of the development located in UDC is 373 m^3/day. If the entire Garden Community is served by a new WRC, including the development located in the Braintree District, the estimated DWF increases to 1335 m^3/day.

Section 6.5 and Section 7 provide more information on water quality and flood risk assessment findings related to extra WRC flows from the proposed growth. No showstoppers to the proposed Garden Communities have been identified in terms of wastewater infrastructure provision as there are at least one or more technically feasible WRC upgrade options.

6.4.2 Garden Community Waste Water Assessment In TW Operational Area

Only Easton Park Garden Community falls within the TW operational area. In line with existing policies, the EA have confirmed a new WRC to serve the site is unlikely to be acceptable, due to the location in the headwaters of the catchment. Therefore, the options above utilise existing WRCs. To serve this development TW have derived four potential options, where flows are split between three WRCs. The options are outlined below:

- **Option 1-** Easton Park is served by Takeley WRC and the works are upgraded to accommodate increased flows. The existing link between Takeley Village and the Bishops Stortford WRC catchment is broken. Domestic flows from Stansted Airport served by Bishops Stortford WRC. Commercial flows from Stansted Airport and Bishops Stortford northern catchment are served by Stansted Mountfitchet WRC.
- **Option 2-** Easton Park is served by Bishops Stortford WRC. Takeley WRC is decommissioned. The existing link between Takeley Village and the Bishops Stortford WRC catchment is broken. Domestic and commercial flows from Stansted Airport served by Bishops Stortford WRC.
- **Option 3-** Easton Park is served by Takeley WRC and the works are upgraded to accommodate increased flows. The existing link between Takeley Village and the Bishops Stortford WRC catchment is broken. Domestic and commercial flows from Stansted Airport served by Bishops Stortford WRC.
- **Option 4-** Easton Park is served by Bishops Stortford WRC. Takeley WRC is decommissioned. The existing link between Takeley Village and the Bishops Stortford WRC catchment is broken. Domestic

flows from Stansted Airport served by Bishops Stortford WRC. Commercial flows from Stansted Airport and Bishops Stortford northern catchment are served by Stansted Mountfitchet WRC.

The DWF for each of the three WRCs as a result of the options listed above described in Table 14 below.

Table 14: Additional Dry Weather Flow Impacts with Easton Park (to 2033) discharging to existing WRC

TW Option	Existing WRC	Existing DWF Consent (m3/day)	Existing DWF (m3/day) Baseline	2033 DWF (m3/day)	Notes
Option 1	Takeley	667	475	2978	Option is currently less favourable from TW perspective, as Takeley would require significant upgrades to accommodate increased flow.
	Stansted	2650	1730	3630	
	Bishops Stortford	17349	15741	17533	
Option 2	Stansted	2650	1730	2002	TW favourable option, as utilising the available capacity at Bishops Storford. The EA have expressed concerns about low flows in receiving watercourse if Takeley is decommissioned, which may lead to provision of some compensation flows to avoid negative ecological impacts on Pincey Brook.
	Bishops Stortford	17349	15749	21851	
Option 3	Takeley	667	475	2904	See notes listed under Option 1.
	Stansted	2650	1730	2002	
	Bishops Stortford	17349	15741	19359	
Option 4	Stansted	2650	1730	3630	See notes listed under Option 2.
	Bishops Stortford	17349	15749	20089	

TW have indicated that Options 2 and 4 are the currently preferred options from a treatment perspective but further technical and economic feasibility assessment is required to confirm and develop the best solution. These two options utilise the available capacity at the large Bishops Stortford WRC but the EA are concerned that under these options, if Takeley is decommissioned lower flows in the Pincey Brook could result in environmental degradation, as flows from the WRC supplement baseflows in the receiving watercourse. The current Q95 flow in the brook is estimated to be 810m^3/day and the estimated DWF input from the WRC to the brook is 475m^3/day. Therefore, to overcome potential local ecological concerns in the Pincey Brook some flow compensation at Takeley (e.g. pumping back flows from another WRC to supplement flows) or phased decommissioning of Takeley WRC may be needed following detailed discussions with the EA.

Section 6.5 and Section 7 provide more information on water quality and flood risk assessment findings and no showstoppers to the proposed Easton Park Garden Community have been identified in terms of wastewater infrastructure provision as there are at least one or more technically feasible WRC upgrade options.

Therefore, this initial assessment has indicated the Easton Park development can be accommodated, with WRC upgrades and investment factored into future TW planning periods. Discussions regarding the shortlisted options to take forward to full assessment are ongoing with TW and the EA.

6.4.3 Cumulative Wastewater Disposal Summary

Based on the current consultations with AWS, TW and the EA the following conclusions can be drawn for the total proposed development within UDC.

- **Towns and Villages** - The WCS assessment indicates that development allocated in the towns and villages can be accommodated, with some WRC upgrades and investment, at Saffron Walden, Great Easton, Newport, Great Chesterford, Takeley and Stansted.
- **Easton Park Garden Community**- In line with existing policies, the EA have confirmed a new WRC to serve the site is unlikely to be acceptable, due to the location in the headwaters of the catchment. The WCS assessment indicates that wastewater flows from the development land within AWS operational area could be potentially accommodated in the AWS owned Great Easton and Great Dunmow WRCs, with the planned investment reviewed during the next AMP cycle although new discharge consents will be stringent to achieve (see Section 6.5.1). The site could also be served by TW (i.e. the portion within TW operational area or the entire site), in particular TW's more favoured options to utilise Bishops Stortford WRC under Options 2 and 4 (Section 6.4.2 and Section 6.5.1). Further discussions between UDC, the site promoters, AWS, TW and the EA are required to select a preferred option for wastewater disposal and phasing requirements but this WCS assessment has shown that there is a technically viable solution.
- **North Uttlesford Garden Community** - In line with existing policies, the EA have confirmed a new WRC to serve the site is unlikely to be acceptable, as the site could be served by the existing Great Chesterford WRC. AWS have identified there would be insufficient headroom and biological capacity during AMP7 and upgrades to accommodate the development would be required. Further discussions between UDC, the site promotors, AWS and the EA are required to determine how development phasing is linked to any planned upgrades but this WCS assessment has shown that there is a technically viable solution.
- **West of Braintree Garden Community** - Discussions with AWS indicate the site could be served by Bocking or Braintree WRCs. There is also the potential for the site to be served by a new onsite WRC, however this is not the preferred solution as there are feasible options to connect to an existing WRC. Further discussions between UDC, Braintree District Council, the site promotors, AWS and the EA are required to select a preferred option for wastewater disposal and the phasing requirements.

6.5 Water Quality

The major impact of the potential development sites on the water environment will be the variations in water quality and quantity discharged to receiving watercourses from the WRC that serve the sites. Where discharges from WRC will exceed the existing DWF consent, it is likely that the chemical constraints included within these consents will be tightened by the EA, to ensure that the water quality of the receiving watercourses does not deteriorate due to the increased discharges. When assessing possible consent changes the EA will take account of any sensitive sites and species downstream of the discharge, as well as the current dilution available from the river flow, and the possible benefits of increased flows.

The majority of receiving watercourses already exhibit high levels of phosphate, which cause them to be classed as not achieving good ecological status (or GES) under the WFD. This is a key concern throughout the majority of the East of England, and will require ongoing cooperation between water companies, the EA and other parties such as Defra to overcome this issue. It should be noted that development should not be permitted if it will lead to deterioration in water status or will prevent Good Status from being achieved.

WRCs treat the sewage by a variety of methods to a standard that allows the water to be discharged to a watercourse without harm to the environment. The EA provides the regulatory framework in terms of rate of discharge and acceptable water quality that AWS and TWU must achieve to allow the effluent to be discharged.

For WRCs which receive effluent from combined sewerage systems, the EA regulate flow volume discharged by limiting the DWF of the discharge to a maximum value. This is important, because the impact of a discharge on the receiving water is directly linked to the volume discharged. The effluent quality limits are determined on the basis of the consented DWF. In general, as the DWF increases, the quality limits become tighter.

Discharge volumes from the WRC are calculated by the operator and a new permit issued by the EA which states a maximum DWF and corresponding limits for various parameters, principally BOD, ammonia and phosphate. It should be noted that the permit limits required for the new discharge may be beyond the limit of conventional treatment technology and thus could constrain development within a WRC catchment.

Section 6.5.2 shows water quality summary and likely WRC discharges impact due to proposed development trajectory at Towns and Key Villages whereas Section 6.5.3 shows the additional cumulative impacts including the Garden Communities.

6.5.1 River Quality Planning Tool Modelling

WRCs treat the sewage by a variety of methods to a standard that allows the water to be discharged to a watercourse without harm to the environment. The EA provides the regulatory framework in terms of rate of discharge and acceptable water quality that AWS and TW must achieve to allow the effluent to be discharged.

The EA River Quality Planning (RQP) tool (version 2.5) was made available for use in this WCS. The RQP tool uses mass balance Monte Carlo simulations to understand the future indicative consent standards that would need to be applied to a new discharge or increased existing flow consents, and the change in downstream concentrations of physio chemical elements following a discharge.

Therefore, the RQP tool was used to calculate the effect of the WRC discharges on downstream water quality in the receiving watercourse and highlight any potential constraints to accommodate the Local Plan Growth whilst ensuring that the increased effluent discharges do not cause deterioration in the existing water quality.

Calculations were undertaken for the following two situations:

- Indicative discharge water quality limits to achieve WFD No Deterioration targets pre- and post-growth.
- Indicative discharge water quality limits required to achieve Good status. It should be noted that this only applies to phosphate, as all other elements are already at Good or better.

This enables that water companies and their customers are not unduly penalised for existing upstream conditions and highlights the importance of improving agricultural and surface water drainage practices which must be considered as part of a catchment wide approach to water quality improvements.

For the purposes of comparing RQP results against future consent requirements, the following physio-chemical standards have been assumed to represent current and future best practice. These should not be considered definitive, and will be subject to individual site conditions, existing processes employed, and strategic investment decisions undertaken by AWS/ TW based on current and future Ofwat/ EA priorities. The Red Amber Green (RAG) colour convention in Table 15 is used throughout the following Sections to identify where the modelled water quality values fit in to the above categories.

Table 15: Current and future effluent quality standards assumed to be economically achievable using conventional treatment technology

Notes	BOD mg/l (95%ile)	Amm. N mg/l (95%ile)	SRP mg/l (Annual Average)
Limits typically considered as reliably economically achievable using conventional technologies.	8	3	1
Limits that may be currently achieved by enhanced operation of conventional and emerging processes. Although not as reliable as the above, it is assumed that consents such as these will become more common over the study period if water quality constraints are to be met.	5	0.5	0.25
Limits more stringent than the above, where it is assumed unlikely a sewerage company or process supplier would be able to guarantee such performance in the foreseeable future at a large scale without resorting to energy intensive processes normally reserved for potable water treatment. *	<5	<0.5	<0.25

** If such standards were required in the short term, it is likely the sewerage company and the EA would have to agree to set lower targets for the waterbody under the provision of the WFD, allowing the failure to meet good status for reasons of technical feasibility or disproportionate cost. This would be reviewed every six years under the WFD.*

For WRCs which receive effluent from combined sewer systems or separate foul sewer systems, the EA regulate flow volume discharged by limiting the DWF of the discharge to a maximum value. This is important, because the impact of a discharge on the receiving water is directly linked to the volume discharged. The effluent quality limits are determined on the basis of the consented DWF. In general, as the DWF increases, the quality limits become tighter.

Discharges from the WRC are calculated by the operator and a new consent is issued by the EA which states a maximum DWF and corresponding limits for various parameters, principally BOD, phosphate and Ammonia. It should be noted that the consent limits set by the EA for the new discharge consent may not be within the limit of conventional technology and thus could constrain development within a WRC catchment.

The EA normally takes the applied-for DWF limit at face value, although details of the calculation form part of the consent application. However, it is in the operator's own interests to apply for the correct limit, as a too-low limit may lead to consent non-compliance and a too-high limit can result in tighter quality standards than would otherwise be the case.

Where the existing DWF discharge consent limit is not exceeded the RQP calculations have not been undertaken in this WCS. The indicative calculations suggest that new discharge consents will be required at the majority of WRCs to accommodate the proposed development within each catchment. The EA, AWS and TW have been consulted regarding these results during the preparation of this WCS.

The results presented in the tables below provide an initial high-level indication of the potential constraints relating to the WRC discharges based on RQP analysis to accommodate the Local Plan Growth to 2033 for both AWS and TW operational areas. It is recommended that as the allocated sites are developed that UDC maintain a dialogue with key stakeholders to determine the permit limits associated with the increased DWF. It should be noted that for Great Dunmow and Felsted that a conservative approach has been taken, using the highest flows from the measured and calculated values.

Table 16: RQP Results Summary for the AWS Operational Area

WRC DETAILS							GROWTH SCENARIO 1				GROWTH SCENARIO 2			
WRC	Current consented DWF (m3/day)	Towns and Villages 2033 DWF Only (m^3/day)	All Development Total 2033 DWF (m^3/day)	*Existing Flow Consent Quality Parameters*			*To Accommodate Future DWF From Key Towns and Villages Growth Only*				*To Accommodate Future DWF From All Development (Including Garden Communities) discharging to existing WRC*			
							To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)	To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)
				BOD	Ammonia	Phosphate	BOD	Ammonia	Phosphate	Phosphate	BOD	Ammonia	Phosphate	Phosphate
Saffron Walden	3,700	3,130	3,130	11	3	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Great Dunmow	1,509	2,621	3,314	13	5	-								
Great Easton	720	730	1,423	20	6	-								
Newport	650	733	733	20	10	-					N/A	N/A	N/A	N/A
Great Chesterford	1,284	963	1694	9	5	-	N/A	N/A	N/A	N/A				
Felsted	1,630	3,000	3,000	20	6	-								
Rayne	650	893	893	10	3	-	N/A	N/A	N/A	N/A				
Bocking	3,900	3272	3272	20	10	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Braintree	6,859	6493	6493	8	3	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Including All Additional Housing Allocation Development from the Braintree District and the West of Braintree Garden Community														
Bocking	3,900	5311	5311	20	10	2	N/A	N/A	N/A	N/A				
Braintree	6,859	7909	7909	8	3	2	N/A	N/A	N/A	N/A				

The above preliminary assessment details the potential water quality implications if the allocated development is connected to the existing WRCs. In overall, the increased DWF results in more stringent requirements for all determinants, however this is still largely within the limits of conventional treatment technology. The issues identified at Felsted will become irrelevant once the existing flow transfer from Great Dunmow is discontinued in 2018. A non-parametric RQP assessment for BOD is recommended at Great Easton WRC as the preliminary RQP analysis shows BOD limit is unlikely to be achieved with the conventional treatment technology. The also results confirm that where Phosphate 'Good Status' cannot be achieved in the waterbodies now, that the proposed growth will not prevent this status being achieved.

Table 17: RQP Results Summary for the AWS Operational Area- Options for new onsite WRC to serve West of Braintree Garden Community

West of Braintree WRC Option	Discharge Point	UDC Only Total calculated 2033 DWF (m3/day)	UDC and Braintree District Total calculated 2033 DWF (m3/day)	To Accommodate Future DWF From UDC Garden Community Growth Only At Onsite WRC				To Accommodate Future DWF From UDC and Braintree District Garden Community Growth At Onsite WRC				Notes
				To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)	To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)	
				BOD	Ammonia	Phosphate	Phosphate	BOD	Ammonia	Phosphate	Phosphate	
Discharge Option 1	Tributary (TL69902370)	373	1335				-				-	Phosphate No Deterioration target already set at 'Good Status'.
Discharge Option 2	River Ter (TL7034222770)	373	1335				-				-	
Discharge Option 3	River Ter at Pyes Bridge (TL7129420560)	373	1335				-				-	

The locations in Table 17 are for potential discharge points associated with a new WRC to serve the West of Braintree Garden Community. The options for discharge locations were selected in consultation with the EA, with the above locations having adequate flow in the receiving watercourse to provide sufficient dilution. The most suitable option for a new discharge location is Discharge Option 3, as the upstream flows are the highest at this location, providing greater levels of dilution and subsequently less stringent targets for all determinants.

The EA expect new discharges to connect to the public foul sewer where it is reasonable to do so, and options for connecting into existing infrastructure should be considered first and foremost. As all the West of Braintree Garden Community is within close proximity to existing foul infrastructure, the first preference is for new discharges to connect to existing works ahead of building new WRCs. In addition, the stringent targets for phosphates could make treatment processes at a new works technically unfeasible.

Table 18: RQP Results Summary for the TW Operational Area

WRC	Existing Flow Consent Quality Parameters			Future DWF – TW Option 1			
				To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)
	BOD	Ammonia	Phosphate	BOD	Ammonia	Phosphate	Phosphate
Takeley	15	5	0.5				
Stansted Mountfitchet	10	3	2				
Bishops Stortford	9	1.5	2				

WRC	Existing Flow Consent Quality Parameters			Future DWF – TW Option 2			
				To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)
	BOD	Ammonia	Phosphate	BOD	Ammonia	Phosphate	Phosphate
Stansted Mountfitchet	10	3	2				
Bishops Stortford	9	1.5	2				

WRC	Existing Flow Consent Quality Parameters			Future DWF – TW Option 3			
				To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)
	BOD	Ammonia	Phosphate	BOD	Ammonia	Phosphate	Phosphate
Takeley	15	5	0.5				
Stansted Mountfitchet	10	3	2				
Bishops Stortford	9	1.5	2				

WRC	Existing Flow Consent Quality Parameters			Future DWF - Option 4			
				To Achieve WFD No Deterioration Targets (mg/l)			To Achieve Good Status (mg/l)
	BOD	Ammonia	Phosphate	BOD	Ammonia	Phosphate	Phosphate
Stansted Mountfitchet	10	3	2				
Bishops Stortford	9	1.5	2				

The above preliminary assessment details the indicative consent requirements if the allocated development is connected to existing WRCs, as per the options listed in Section 6.4.2. In overall, the increased DWF results in more stringent requirements for all determinants. A non-parametric assessment for ammonia shows that the permit required to avoid deterioration is technically feasible. Therefore, it is not considered to be a barrier to delivering the Local Plan. The results show that where 'Good Status' cannot be achieved in the waterbodies now for Phosphate, that the proposed growth will not prevent the status being achieved.

TW have indicated the preferred options from a treatment perspective, are to connect the Easton Park to Bishops Stortford WRC under Options 2 and 4, as it may not be feasible to provide the updates required at Takeley WRC under Options 1 and 3.

6.5.2 Towns and Key Villages Summary

The results in Section 6.3 show that the calculated future DWF due to the development trajectory at Towns and Key Villages alone (i.e. excluding Garden Communities) are lower than the existing consented DWF at all WRC apart from Great Easton and Newport. Table 19 below further illustrates this scenario along with any water quality implications.

Table 19: Water Quality Summary – excluding New Settlement Impacts

WRC Catchment	River Discharge Point	Overall RMBP status	Is DWF Headroom Capacity Available?	Discharge Permit Implications
Saffron Walden / AWS	Madgate Slade/ Kings Slade (Assume direct discharge to River Cam)	Poor	Yes	Indicates that the proposed development can be accommodated within the existing consent and that the existing permit will remain in place with DWF and limits intact.
Great Chesterford / AWS	River Cam (Audley End to Stapleford)	Poor		
Stansted Mountfitchet / TW	Stansted Brook	Bad		
Takeley /TW	Pincey Brook	Moderate		
Newport / AWS	River Cam	Moderate	No	The discharge permit at the WRCs is currently marginally exceeded.
Great Easton / AWS	Tributary of River Chelmer	Moderate		
Felsted / AWS	Stebbing Brook	Good	No*	The discharge permit at the WRC is currently exceeded due to the flow transfer from Great Dunmow.
Great Dunmow / AWS	Tributary of River Chelmer, Ash Grove	Moderate	No*	The discharge permit at the WRC is currently exceeded.

** When the new WRC is open at Great Dunmow (summer 2018) DWF headroom capacity will be available for some new growth. Capacity for further growth will have to be reviewed by AWS following completion of the scheme planned as part of AMP6 (Great Dunmow and Felsted (AWS) catchments are currently interrelated).*

It is recommended that development within the Great Dunmow, Great Easton, Newport and Felsted catchments are phased, to allow necessary improvements in the respective WRC to be made and new flow permits to be agreed before the planned development stage is constructed. Phasing the quantum of growth would limit the impact on the receiving watercourses, ensure no deterioration in existing water quality or ecological standards, and make achieving the targets of the WFD more achievable.

6.5.3 New Garden Community Settlements Summary

Given the scale of the Garden Communities, providing between ~1000-2000 dwellings each within the plan period and the multiple options for their WRC siting, for the purpose of the water quality assessment they have been assessed separately to the main trajectory above to determine the cumulative impacts for the impacted WRCs. In situations where a WRC is already impacted from the development trajectory for Towns and Key Villages these have been considered together in order to assess the full impact by the New Settlements as shown in Table 20.

Table 20: Water Quality Summary – Including New Settlements Impacts

New Garden Community	Existing WRC	River Discharge Point	Overall RMBP status	Is DWF Headroom Capacity Available?	Discharge Permit Implications
Easton Park	Great Easton / AWS	Tributary of River Chelmer	Moderate	No	In general, as the DWF increases, the quality limits become tighter. It is likely that the new consent will require tighter limits for all water quality determinants.
	Great Dunmow / AWS	Tributary of River Chelmer, Ash Grove	Moderate		
	Takeley / TW	Pincey Brook	Moderate		
	Bishop's Stortford / TW	River Stort (Great Hallingbury Brook)	Moderate		
North Uttlesford	Great Chesterford / AWS	River Cam (Audley End to Stapleford)	Poor		
West of Braintree	Rayne / AWS	Pods Brook	Moderate		
	Bocking / AWS	River Blackwater	Moderate		
	Braintree / AWS	River Brain	Moderate		

For the West of Braintree Garden Community, it is recommended that consultation is undertaken early in the development process with the EA and Anglian Water to confirm if a new WRC would likely be required.

Engagement with the EA and Water and Sewerage Companies should continue, to discuss the water quality parameters required for increased growth in the catchments and upgrades to the existing WRCs. Indicative calculations indicate the permit limits are likely to become tighter to ensure no deterioration in water body classification.

It is recommended that development at the all the Garden Community sites are phased, to allow necessary improvements in the respective WRC to be made and new flow permits to be agreed before the planned development stage is constructed. The currently proposed housing trajectories generally allow for this infrastructure improvement to take place without any significant phasing restriction to be necessary (i.e. subject to timely engagement of the site promoters with the impacted sewerage companies and planning approvals) although this need further review as the development proposals and negotiations are progressed. Phasing the quantum of growth would limit the impact on the receiving watercourses, ensure no deterioration in existing water quality or ecological standards, and make achieving the targets of the WFD more achievable.

7 Flood Risk Management

7.1 Flood Risk Constraints

Following a review of the SFRA and the latest Environment Agency Flood Map, the following key constraints to the allocated development sites have been identified in Table 21. The sites not located in an area of fluvial or surface water flooding have been omitted from the table.

Table 21: Flood Risk Constraints to the development sites

Settlement	Site Ref	Type	Flood Risk Constraint
Braintree	West of Braintree	Garden Community	The western boundary of the site is located in the floodplain of the River Ter. There are limited areas of surface water flooding along the corridors of existing watercourses (River Ter) through the western portion of the site and the Pods Brook within the Eastern portion of the site.
Great Chesterford	North Uttlesford	Garden Community	A tributary of the River Cam forms the southern boundary and the southern boundary of the site is located in Flood Zone 2. Areas of surface water flooding are located along the river corridor. There is a localised area of surface water flood risk in the vicinity of Field Farm access road.
Great Dunmow	Easton Park	Garden Community	The River Roding forms the western boundary of the site and floodplain is largely confined to the corridors of existing watercourse.
	West of Woodside Way	Towns and Key Village	The site is not located in an area at extensive risk of surface or fluvial risk of flooding. There are limited areas of surface water flooding along the corridors of existing watercourses (tributary of River Chelmer) through the southern portion of the site.
	Oaklands, Ongar Road	Towns and Key Village	The site is not located in an area at extensive risk of surface or fluvial risk of flooding. The areas of surface water flooding are located along the corridors of an existing watercourse (tributary of River Chelmer) through the southern boundary of the site.
Stansted	Land West of 8 Water Lane	Towns and Key Village	The site is located in Flood Zone 2 of the Stansted Brook.
	Land west of Hall Road		The Stansted Brook forms the southern boundary of the site. The floodplain is largely confined to the corridors of existing watercourse.

The SFRA (JBA, 2016) concluded that the extent of Flood Zone 3 is not likely to increase significantly with climate change due to the confined floodplain topography of existing watercourses in the District. However, climate change is predicted to result in more frequent and extreme rainfall events, increasing the frequency and severity (depth/hazard) of flooding from fluvial and surface water sources.

In relation to groundwater, the effect of climate change is less certain. Milder wetter winters may increase the frequency of groundwater flooding incidents, but warmer drier summers may counteract this effect.

7.1.1 Implications for development

Early consultation with the EA and LLFA is essential. Any development must pass the Sequential Test as per NPPF.

Sequential design of a new settlement at the master planning stage should ensure that built development and access routes are entirely within Flood Zone 1 and should avoid impacting on surface water flow routes or ordinary watercourses.

Opportunities should be exploited at the master planning stage for multiple benefits in terms of integrated sustainable drainage, green infrastructure, amenity, biodiversity and WFD status.

A drainage strategy must be submitted at an early stage to show how the impact of the development will be reduced through the use of SuDS. All major developments must carry out an FRA including and assessment of flood risk from all sources, and hydraulic modelling of the watercourses to better define the Flood Zones, water levels and the impact of climate change.

Garden Communities should aim to reduce downstream flood risk through site specific SuDS and provide additional flood storage where feasible. The SuDS techniques, should be developed according to Essex County Council's SuDS Guidance local design standards as well as CIRIA SuDS Manual.

Policy examples suggested by the EA (see Appendix B) should also be considered by UDC.

7.2 Flood Risk from WRC Discharges

Increased discharge volumes from WRCs to watercourses have the potential to increase fluvial flood risk and a multi-criteria scoring system has been applied to assess the risk. The assessment uses a multi-criteria approach to assess the increase in peak flow, the sensitivity of the watercourse to changes in flood levels, and the potential impact of flooding in order to determine a combined flood risk index. The following three elements of the system are principal:

- Quantification of the increase in peak river flows, resulting from the predicted increase in treated effluent discharges;
- Evaluation of the likely sensitivity of flood levels to increases in flood flows; and
- Evaluation of the impact of increases in flood levels.

For each principal element listed above, the impact at each discharge site has been classified as high, medium or low; and the multi-criteria analysis applied to combine these elements.

7.2.1 Methodology

The analysis has been conducted using the 1 in 2 year flood, also known as the 50% AEP (Annual Exceedance Probability) event. This has a probability of occurrence in any one year of 50%. It is also referred to as QMED. According to the AWS methodology, this flood severity was selected because:

- Increases in WRC discharge would contribute a relatively greater proportion of flood flows than if a more extreme flood event had been used, and hence results are likely to be conservative;
- The 1 in 2 year event is, very crudely, considered to approximate bankfull conditions. Any increase in the 1 in 2 year event would therefore be expected to result in out of bank flooding;
- The 1 in 2 year event is the smallest event which can practically be estimated using standard techniques; and
- It aligns with the 2012 Detailed WCS enabling direct comparison.

The increase in the 1 in 2 year peak flow in the receiving watercourse has been calculated using the same methodology descried in the 2011 Detailed WCS and is in line with best practise techniques as stated in the Flood Estimation Handbook (FEH). The increase in discharge from the WRC used in these calculations are to be found in Section 6.

DWF received at the WRCs will increase following the connection of new dwellings to the sewerage network. Whilst some of this increase may be stored on the WRC sites during peak flows, an increase to the volumetric flow rate of the discharge is likely. However, WRCs s typically discharge up to three times their DWF (referred to as Flow To Full Treatment – FTFT) at peak. An increase in FTFT, due to growth in the catchment, may increase the flood risk to properties and environmental sites on the watercourse downstream of the discharge point.

Multi-criteria analysis (as described above) has been utilised to provide a risk score for each of the six impacted discharge points. Flood Risk scores were assigned to each discharge by determining the

contribution that the increased FTFT (due to the proposed growth to 2032) makes to the flow levels in the watercourse during a 1 in 2 year flood. This was then weighted to account for the sensitivity of the watercourse to flow increases, and the potential local impacts of any flooding (this aligns directly with the 2012 Detailed WCS methodology).

7.2.2 Results

It must be highlighted that the above methodology compares the total 2033 FTFT from the WRCs (flows from both existing and proposed dwellings) against the 1 in 2 year flood events for the watercourses, hence providing a risk score for the total predicted flows by 2033.

If FTFT from the existing properties is considered to be an integral part of the current river flows, it can be shown that the actual increase in peak flows by rivers by 2033, which is solely attributable to proposed growth, makes up a considerably smaller proportion.

In accordance with NPPF Technical Guidance, an additional 25% was added to the 1 in 2 year flood flows. The new FTFT values have been projected to 2033 at each site; therefore, considering river flow values, including an +25% allowance for climate change.

As identified in Table 22 below, aside from Great Easton, the proposed increases in WRC discharges do not appreciably change the flow risk score when compared against the current situation with development in Towns and Villages only. The potential to increase in flows in a tributary of the River Chelmer, as a result of increased flows at Great Easton WRC should be taken into account when considering options for serving the Easton Park Garden Community. The risk value for all eight WRC sites has been assessed as low or medium, therefore **the increased flow from each WRC site is classified overall as having a low flood risk.**

A further sensitivity test has been undertaken to assess the impact of the entire Easton Park Garden Community, post 2033, including all 10,000 anticipated dwellings. Although the total FTFT increases when the whole Garden Community is assessed, the climate change allowance in the receiving watercourse also increases to +65% for the 2080's. This results in the flood flow risk value increasing to 4 (based on increase in 1 in 2 year flood flow of 13%). The overall risk assessment remains at medium despite the increase in flow.

It has for some time been acknowledged that climate change will impact flood risk in the future. This is a risk defined as "the frequency and intensity of future rainfall events may increase due to climate change, leading to higher run-off rates into surrounding rivers, altering the hydraulic response of the river to the rainfall event". It is now academically accepted that climate change has had such an effect on UK flooding.

It follows therefore that the flow rates associated with 1 in 2 year events (as described in the analysis above) have been predicted to occur more frequently in the future. Whilst the significance of the WRC discharges, and downstream impacts and sensitivity are likely to remain the same for any given river flow; the frequency of flooding is likely therefore to increase. UDC should therefore continue to ensure that flood resilience and mitigation remain key in the decision-making process of their Planning and Development Control Functions.

Table 22: Summary of flood risk multi-criteria analysis results.

WRC Discharge	Impact of FTFT from Developments only in Towns and Villages (2018- 2033) on river flows			Impact of FTFT from All Development (2018 - 2033) on river flows		
	Increase in 1 in 2 year river flow	Flood Flow Risk Value	Risk Assessment	Increase in 1 in 2 year river flow	Flood Flow Risk Value	Risk Assessment
Saffron Walden (AWS)	0.46%	1	Medium	0.46%	1	Medium
Great Dunmow (AWS)	0.39%	1	Low	0.60%	1	Low
Bishop's Stortford (AWS)	1.16%	2	Medium	1.44%	2	Medium
Great Easton (AWS)	0.19%	1	Low	3.14%	3	Medium
Newport (AWS)	0.05%	1	Medium	0.05%	1	Medium
Great Chesterford (AWS)	0.01%	1	Medium	0.22%	1	Medium
Felsted (AWS)	0.04%	1	Medium	0.04%	1	Medium
Bocking (AWS)	0.30%	1	Medium	0.30%	1	Medium
Braintree (AWS)	0.22%	1	Medium	0.22%	1	Medium
Stansted Mountfitchet (TW)	0.13%	1	Low	0.13%	1	Low
Takeley (TW)	0.02%	1	Low	0.76%	1	Low

Flood Flow Risk Value:

- Flow increase between 0 and 1%: 1 (Low)
- Flow increase between 1 and 3%: 2 (Low)
- Flow increase between 3 and 10%: 3 (Medium)
- Flow increase between 10 and 20%: 4 (Medium)
- Flow increase greater than 20%: 5 (High)

7.3 Suitability of Sustainable Drainage Systems

Sustainable Drainage Systems (SuDS) are methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques.

Development could have a significant impact on flood risk downstream if SuDS principles and strict controls on runoff are not enforced. Opportunity should be taken by UDC and developers to incorporate techniques such as these at the potential development sites, in order to comply with the Building Regulations, NPPF and local policies implemented by both UDC and Essex County Council.

A drainage strategy must be submitted for all sites at an early stage to show how the impact of the development will be reduced through SuDS techniques, with surface water run-off rates attenuated according to Essex County Council's SuDS Guidance local design standards as well as CIRIA SuDS Manual[1]. The drainage strategy should be developed in accordance with the guidelines and demonstrate that existing surface water flow paths will be preserved.

The low permeability of the Boulder Clay, which overlies the majority of the District, may preclude the use of shallow infiltration SuDS techniques. However, if localised tests suggest that there is suitable permeability for a given technique, developers and UDC should consult the EA to ensure that any SuDS design takes account of any Source Protection Zone and other areas where the aquifers may be vulnerable and ensure that the risk of pollution is adequately controlled.

[1] Essex County Council Guidance available at https://www.essex.gov.uk/Environment%20Planning/Environment/local-environment/flooding/View-It/Documents/suds_design_guide.pdf and Ciria Manual at https://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx

8 Conclusions

The conclusions of the First Stage of the Detailed WCS assessment are presented in the section below. This is an update to the 2017 Outline WCS and it should be treated as a 'living document' with the conclusions and analysis being subject to change following further investigation and consultation. The Second Stage of Detailed WCS update will focus on TW operational area to serve the proposed Easton Park Garden Community.

It is considered that the capacity of the WRCs and the associated impact on water quality are the greatest potential issues in relation to meeting the development aspirations of the proposed Garden Communities within the Uttlesford District.

8.1 Water Resources and Supply

Affinity Water have undertaken a strategic modelling exercise of Water Resource Zone 5 (Stort), which has assessed the combined hydraulic impact on the network of the proposed Uttlesford Local Plan site allocations, along with all other known Local Plan housing allocations and known large new developments in the surrounding boroughs. On a strategic level, the modelling has shown that to meet the demand of the new developments within Uttlesford, water will need to be continued to be brought into this catchment from the west. This is already the case, with water moved around the network to ensure demand is met resiliently.

Substantial new water supply infrastructure will be required for the new Garden Community sites (i.e. in addition to water efficiency measures beyond the current statutory standards). It is recommended that site specific assessments are undertaken as part of the development planning process to cover the detailed requirements of these sites.

8.2 Wastewater and Sewerage

The initial assessment results provide a general indication of the impacts of the proposed trajectory on existing wastewater assets. Overall, there are limited constraints associated with the allocated development in the Towns and Key Villages, with the existing WRCs having the capacity to accommodate increased flows, with future investment and planning by the operating water and sewerage company.

Overall following consultation with Anglian and Thames Water no significant sewerage capacity issues with any of the Garden Community sites to warrant as potential "show stoppers", however some existing WRCs would likely require major upgrades and new tighter discharge consents where necessary in order to accommodate the increased flow. Developers should contact Anglian and Thames Water in order to assess what upgrades are required following the Site Allocation process as part of pre-development enquiries as the individual sites enter the normal planning application process.

8.3 Water Quality

The major impact of the potential development sites on the water environment will be the variations in water quality and quantity discharged to receiving watercourses from the site itself (surface water runoff) and the WRC that serve the sites. Water discharged from the sites will require careful management to ensure the development does not have a detrimental impact on the water environment.

The results of the qualitative water quality analysis indicate that the proposed development will not lead to a Deterioration of WFD status or will compromise the achievement of WFD Good status in the receiving watercourses although tightened water quality parameters will be required where WRC flow consents have been exceeded. The distribution of Garden Communities around the district helps address water quality issues by utilising locations with the largest rivers (i.e. Cam in case of North Uttlesford Garden Community) as well as locations with smaller rivers/watercourses. Nevertheless, developers should engage with the EA and water and sewerage companies as soon as possible in the planning process to facilitate timely site-specific assessments are negotiations are undertaken to address the identified constraints.

8.4 Flood Risk Management

Following a review of the Uttlesford Strategic Flood Risk Assessment and the latest Environment Agency Flood Map, small areas of the following sites are at high risk of flooding:

- Braintree- West of Braintree
- Great Chesterford- North Uttlesford
- Great Dunmow- Easton Park, West of Woodside Way and Oaklands, Ongar Road
- Stansted- Land West of 8 Water Lane and Land west of Hall Road

Early consultation with the EA and LLFA is essential. Any development must pass the Sequential Test as per NPPF. Opportunities should be exploited at the master planning stage for multiple benefits in terms of integrated sustainable drainage, green infrastructure, amenity, biodiversity and WFD status.

A high-level assessment indicates that none of the proposed increases in WRC discharges appreciably increase flow risk when compared against the current baseline situation and the increased flow from each WRC site is classified overall as having a low flood risk.

APPENDIX A

Development Trajectory

Site	UTT reference	Date of Permission	Capacity (Gross)		11/12	12/13	13/14	14/15	15/16	Re 16/17	Yr1 17/18	Yr2 18/19	Yr3 19/20	Yr4 20/21	Yr 5 21/22	6 22/23	7 23/24	8 24/25	9 25/26	10 26/27	11 27/28	12 28/29	13 29/30	14 30/31	15 31/32	16 32/33	Status	PDL/G
Small sites(< 6 Units) with PP					99	62	68	70	114	122																		
Windfall Allowance											70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70		
Aythorpe Roding: Windmill Works	UTT/14/0779	Nov-14	11						11																		Built	PDL
Birchanger 300 Birchanger Lane	UTT/1527/09/DFO	built	9	300 Birchanger Lane	9																						Built	PDL
Clavering: Jubilee works	UTT/13/3357/DFO	26-Sep-14	23	Jubilee Works Stickling Green Clavering Essex CB11 4WA				2	21																		Built	PDL
Clavering: Land south of Oxleys Close	UTT/15/2606/DFO	13-Jan-14	13	Land South Oxleys Close Stortford Road Clavering (CB11 4PB?)									13														3	G
Clavering: Land to the rear of the shop and Oxleys Close	UTT/2251/11/FUL	07-Aug-12	14	Land Rear Of Oxley Close Clavering CB11 4PB					14																		Built	G
Elsenham: Hailes Wood	UTT/13/2917/FUL UTT/15/1121/FUL	01/07/2014 8 Dec 2015	32 3	Land Adj Hailes Wood Elsenham CM22 6DQ					9	25																	Built	G
Elsenham: Land at Alsa Leys	UTT/13/2836/FUL	12-Mar-14	6	Land At Alsa Leys Alsa Leys Elsenham CM22 6JS						6																	Built	G
Elsenham: The Orchard	UTT/1500/09/OP UTT/2166/11/DFO	25/11/2010 10 August 2012	51	The Orchard Station Road Elsenham CM22 6LG			44	7																			Built	G
Elsenham: Former Goods Yard, Old Mead Lane	UTT/12/6116/FUL	07-Feb-14	10	The Old Goods Yard Old Mead Lane Elsenham CM22 6JL							10																1	PDL
Elsenham: Land north Stansted Road	UTT/14/3279/DFO	01-May-15	155	Land north of Stansted Road Elsenham (CM22 6DL??)					-1	34	40	40	41														1	G
Elsenham: Land south Stansted Road	UTT/13/1790/OP	23-Dec-13	165	Land South Of Stansted Road Elsenham						49	40	40	36														1	G
Elsenham: Land north of Leigh Drive	UTT/15/3090/OP	14-Nov-16	20	Land North Of Leigh Drive Elsenham									20														3	G
Elsenham: Elsenham Nurseries, Stansted Road	UTT/14/2991/OP (UTT/17/0335/DFO)	02/12/2015 (July 2017)	40	Elsenham Nurseries Stansted Road Elsenham CM22 6LJ							5	20	15														3	G
Felsted: Land East of Braintree Road	UTT/14/2591/DFO	01-Dec-14	25	Land East Of Braintree Road Braintree Road Felsted (CM6 2EF??)						25																	Built	G
Felsted: Lyndfields Bannister Green	UTT/0799/08	Built		(Built)		6																					Built	PDL
Felsted: Former Ridleys Brewery, Hartford End	UTT/16/2149/FUL	13-Jan-17	22	Former Ridleys Brewery Mill Lane Hartford End Essex CM3 1JZ						1	21																1	PDL
Flitch Green: Land at Webb Road, Hallett Road	UTT/13/1123/FUL	Jul-13	9	Flitch Green					9																		Built	PDL
Flitch Green: Land off Tanton Road	UTT/15/2089/DFO	Dec-15	98	Land Off Tanton Road Flitch Green Dunmow Essex						51	47																1	G
Flitch Green: Village Centre, Land at Webb Road and Hallett Road	UTT/14/3357/FUL	15-Oct-15	25	Land At Webb Road And Hallett Road Flitch Green Essex							25																1	PDL
Great Canfield: Canfield Nursery, Bullocks Lane	UTT/15/1732/FUL	20-Oct-15	7	Canfield Nursery Bullocks Lane Takeley CM22 6TA									7														2	G
Great Chesterford: Land south of Stanley Road	UTT/12/5513/OP UTT/13/3444/DFO	12 July 2013; 13 February 2014	50	Land South Of Stanley Road And Four Acres Great Chesterford				41	9																		Built	G
Great Chesterford: New World Timber and Great Chesterford Nursery, London Road	UTT/14/0174/FUL	Dec-14	42	New World Timber Frame/Graveldene Nurseries London Road							2	20	20														1	G/PDL
Great Chesterford: Land at Thorpe Lea, Walden Road	UTT/15/2310/OP	13-Jun-16	31	Land At Thorpe Lea Walden Road Great Chesterford Essex CB10 1PS									29														3	G
Great Chesterford: land north of Bartholomew Close	UTT/14/0425/OP	Oct-14	14 (up to)	Ld North of Bartholomew Close Gt Chesterford, Saffron Walden									11														3	G
Great Dunmow: Melville House, High Street	UTT/15/0293/P3JPA	Mar-15	7	Melville House, High Street, Dunmow CM6 1AF						7																	Built	PDL
Great Dunmow: Springfields	UTT/1412/09	Built		(Built)		25																					Built	G
Great Dunmow: Former Council Offices, 46 High Street	UTT/2116/10	Built	10	(Built)		8	2																				Built	PDL
Great Dunmow: Barnetston Court	UTT/1519/12/FUL	19-Apr-13	10	Barnetson Court Braintree Road Great Dunmow CM6 1HS				5	5																		Built	PDL
Great Dunmow: Land Adj Harmans Yard	utt/0912/10/ful	12-Jul-13	6	Land At Harmans Yard Great Dunmow Essex CM6 1AS			6																				Built	PDL
Great Dunmow: Brick Kiln Farm	UTT/13/0847/OP UTT/14/0265/DFO	11 July 2013 4 June 2014	68	Brick Kiln Farm St. Edmunds Lane Dunmow Essex CM6 3BB					-2	28	40																1	G
Great Dunmow: North of Ongar Road	UTT/16/1435/FUL	13-Jan-17	60	Land North Of Ongar Road Great Dunmow CM6 1EX							3	19	19	19													1	G
Great Dunmow: South of Ongar Road	UTT/14/0127/FUL	03-Dec-15	99	Land South of Ongar Road, Great Dunmow							9	30	30	30													1	G

Great Dunmow: Woodlands Park Sectors 1 - 3	UTT/1006/04; UTT/1809/02; UTT/0395/05; UTT/0496/05; UTT/0386/05; UTT/0392/05; UTT/0246/07; UTT/13/1600	ranges between 26 November 1992 - July 2013	1633	Woodlands Park, Great Dunmow	24	23	22	43	42	62	40	40	40	40	50	50	50	50	50	50	50	50	50	28			1	G
Great Dunmow: Land west of Chelmsford Road	UTT/13/1684/OP	04-Nov-14	370	Land At Smiths Farm Chelmsford Road Great Dunmow Essex (West of								20	50	50	50	50	50	50	50								1	G
Great Dunmow: 2-2A Twyford Court, High Street	UTT/16/2605/PAP3O	07-Nov-16	9	2 - 2A Twyford Court High Street Dunmow CM6 1AE							9																1	PDL
Great Dunmow: Land adjacent Tower House, St Edmunds Lane	UTT/15/2425/FUL	Oct-15	7	Land Adj To Tower House St Edmunds Lane Great Dunmow CM6 3BA						6	1																1	G
Great Dunmow: Kings Head, North Street	UTT/15/1544/FUL	Jul-15	6	Kings Head North Street Dunmow CM6 1BA									6														2	PDL
Great Dunmow: Land East of St Edmunds Lane	UTT/14/0472/OP	May-15	22	Land east of St Edmunds Lane, Great Dunmow								2	5	5	5	5											3	G
Great Dunmow: Canada Cottages	UTT/14/0787/OP	Sep-14	7	Ld R/o Canada Cottages, Stortford Rd, Gt Dunmow, CM6 1DA									7														3	PDL
Great Dunmow: west of Woodside way	UTT/13/2107/OP	22-Oct-15	790	Land West Of Woodside Way Woodside Way Great Dunmow Essex								50	50	50	60	60	60	60	60	60	60	60	60	60	40		3	G
Great Easton: The Moat House Dunmow Road Care home	UTT/0874/11	29/07/2011	26	Moat House Dunmow Road Great Easton CM6 2DL				26																			Built	PDL
Great Easton: The Moat House Dunmow Road Care home	UTT/16/2233/FUL	16-Dec-16	9	The Moat House Dunmow Road Great Easton Dunmow							9																1	G
Hatfield Heath: Broomfield	UTT/12/5349/FUL	Oct-13	14					14																			Built	G
Hatfield Heath: The Stag Inn,	UTT/13/2499/FUL	Nov-13	6	The Stag Inn, The Heath, Hatfield Heath				6																			Built	PDL
Henham: land north of Chickney Road and west of Lodge Cottages	UTT/14/0065/FUL	15-May-14	16	Land At Chickney Road Chickney Road Henham (CM22 6BG)				10	6																		Built	G
Henham: Land south of Chickney Road	UTT/14/2655/FUL	Jan-15	21	Ld South of Chickney Rd, Henham					21																		Built	G
Henham: Elsenham Goods Yard (north)	UTT/15/0362/FUL	30-Jul-15		Elsenham Goods Yard (North) Old Mead Lane Elsenham CM22 6JL							6																1	PDL
Henham: Land north of Chickney Road	UTT/16/1988/FUL	22-Sep-16	9	Land North Of Chickney Road Chickney Road Henham Hertfordshire							9																1	G
High Roding: Meadow House Nursery	UTT/13/1767/FUL UTT/15/3663/FUL	07/01/2014 17 May 2016	31 9	Land At Meadow House Nursery The Street High Roding CM6 1NP						-1	20	20															1	PDL
Leaden Roding: Holloway Crescent	UTT/1357/11	Built	8	21-33 & 23A-33A & 35-43 Holloway Crescent Leaden Roding Dunmow CM6 1QD		-18	8																				Built	PDL
Little Canfield (Takeley): Ersamine, Dunmow Road, Little Canfield	UTT/14/0122/FUL	Sep-14	15	Ersamine, Dunmow Rd, Little Canfield, Dunmow, CM6 1TA					14																		Built	PDL
Little Canfield (Takeley): North View and 3 The Warren	UTT/13/1779/FUL	03-Oct-13	46	Land At Northview And 3 The Warren Dunmow Road Little Canfield Great Dunmow Essex CM6 1TA				-1	21	25																	Built	PDL
Little Canfiled (Takeley): Priors Green Stansted Motel & 2 Hamilton Rd	UTT/0240/12/OP UTT/14/1819/FUL	03/09/2012 29/10/14	13	Stansted Motel & 2 Hamilton Road Dunmow Road Little Canfield CM6 1SS					12																		Built	PDL
Little Canfield: Land at Dunmow Road	UTT/16/0270/FUL	08-Jul-16	12	Land At Dunmow Road Little Canfield Essex							12																1	G
Little Canfield: Tree Tops, Dunmow Road	UTT/16/2328/FUL	03-Oct-16	5	Tree Tops Dunmow Road Little Canfield Dunmow Essex CM6 1TA							5																2	G
Little Dunmow: Dunmow Skips Site	UTT/13/2340/OP UTT/15/1615/DFO	27/10/2014 30 July 2015	40	Former Dunmow Skips Site, Station Road Felsted CM6 3HG				-2		34	6																1	PDL
Little Easton (Gt Dunmow): Woodlands Park Sector 4	UTT/2507/11/OP. UTT/13/1663/DFO	2 August 2012; 31 October 2013	125	Woodlands Park, Great Dunmow									10	28	28	29	29										1	G
Little Hallingbury: Land at Dell Lane	UTT/15/1046/FUL	03-Aug-15	16	Land At Dell Lane Little Hallingbury							16																1	G
Littlebury: Peggys Walk	UTT/1984/10	Built	14	Land at Peggys Walk, Littlebury	2	12																					Built	PDL
Manuden: Site off the Street	UTT/0692/12/FUL	12-Feb-13	14	Land At The Street The Street Manuden			9	5																			Built	G

Newport: Carnation Nurseries	UTT/14/3506/DFO	01-Feb-15	21	Carnation Nurseries, Cambridge Rd, Newport Saffron Walden CB11 3TR			20															Built	G/PDL
Newport: The Maltings Station Rd	UTT/1405/09	Built	11	(Built)	11																	Built	PDL
Newport: Bury Water Lane/Whiteditch Lane	UTT/13/1769/OP	29-Nov-13	84	Land At Bury Water Lane Bury Water Lane Newport					4	40	40											1	G
Newport: Land west of Cambridge Road	UTT/15/2364/FUL	15-Mar-16	34	Land West Of Cambridge Road Newport					34													1	G
Newport: Reynolds Court, Gaces Acre	UTT/14/3655/FUL	01-Mar-15	41	Reynolds Court Gaces Acre Newport CB11 3RJ			-12	15	-19	26												1	PDL
Newport : Land at Bury Water Lane (Retirement village (up to 50 bed residential care facility; up to 90 units comprising apartments and cottages). Trajectory excludes residential care faciltiy	UTT/16/0459/OP	01-Nov-16	90 (+ 50)	Land At Bury Water Lane Bury Water Lane Newport Essex				-1			30	30	30									3	G
Newport: Bricketts, London Road	UTT/16/1290/OP	25-Nov-16	11	Bricketts London Road Newport CB11 3PP							10											3	G
Newport: Land at Holmwood, Whiteditch Lane	UTT/15/0879/OP	23-May-16	12	Land At Holmwood Whiteditch Lane Newport Saffron Walden CB11 3UD							12											3	G
Newport: Land opposite Branksome, Whiteditch Lane	UTT/14/1794/OP	23-Jul-15	15	Land Opposite Branksome Whiteditch Lane Newport CB11 3UD							5	10										3	G
Newport: Land south of Wyndhams Croft, Whiteditch Lane	UTT/14/3266/OP	18-Dec-15	15	Land South Of Wyndhams Croft Whiteditch Lane Newport Essex CB11 3UD							5	10										3	G
Quendon: land r/o Foxley House	UTT/14/3662/FUL	16-Jun-15	19	Land At Foxley House Green Road Rickling Green CB11 3YD				19														Built	G
Quendon: Ventnor Lodge, Cambridge Road	UTT/16/0873/FUL	01-Nov-16	12	Ventnor Lodge Cambridge Road Quendon Saffron Walden CB11 3XQ				-1	12													1	G
Radwinter: Land north of Walden Road	UTT/13/3118/OP UTT/15/1467/DFO	28/02/2014 3 August 2015	35	Land Off East View Close And Walden Road East View Close Radwinter CB10 2TZ				13	22													1	G
Saffron.Walden: Lt Walden Road	UTT/1576/12/DFO	15-Nov-12		Land At Little Walden Road Saffron Walden Essex		15																Built	G
S Walden Bell College Peaslands Road	UTT/0503/10	Built	86	Land To The East Of The Former Bell Language School Peaslands Road Saffron Walden CB11 3ED	86																	Built	PDL
S Walden: Bell College South road (retirement flats)	UTT/1981/10	Built	27	(Built)	27																	Built	PDL
Saffron Walden: 8-10 King Street	UTT/0280/12/REN of UTT/1733/08/FUL	21-Jun-12	8	8 King Street Saffron Walden Essex CB10 1ES				8														Built	PDL
Saffron Walden: Ashdon Road	UTT/1572/12/DFO	21-Nov-12	130	Land At Ashdon Road Saffron Walden		22	72	36														Built	G
Saffron Walden: Bell College South Road	UTT/0828/09	Built	62	(Built)	25	37																Built	PDL
Saffron Walden: Former Gas Works Thaxted Rd	UTT/0123/09	24-Mar-09	9	(Built)		4	5															Built	PDL
Saffron Walden: Former Willis and Gambier Site, 119 Radwinter Road	(UTT/14/3182/FUL)	30-Jun-16	73	Site At 119 Radwinter Road (CB11 3HY?)							73											1	PDL
Saffron Walden: Former Willis and Gambier Site, 121 Radwinter Road	UTT/13/3406/FUL	July 204	52	Site At 121 Radwinter Road Saffron Walden Essex (CB11 3HY??)			3	38	11													1	PDL
SAffron Walden: Friends School	UTT/0188/10	31-Mar-11	76	Friends School Mount Pleasant Road Saffron Walden Essex		30 37	7															Built	PDL
Saffron Walden: Garage Site, Catons	UTT/14/2514/FUL	01-Oct-14	6	Garage Site at Catons Lane,				6														Built	PDL
Saffron Walden: Goddards Yard	UTT/13/0669/FUL UTT/13/2395/FUL	21/06/2013 July 2014	14	Goddards Yard Thaxted Road Saffron Walden Essex CB11 3AA			12	2														Built	PDL
Saffron Walden: Goddards Yard (phase II) Thaxted Road	UTT/15/3537/FUL	11-Jul-16	5	Goddards Yard Thaxted Road Saffron Walden Essex CB11 3AA				5														Built	PDL
Saffron Walden: Land to the West of Debden Road (Tudor Works)	UTT/1252/12/OP UTT/14/0356/DFO	21/11/2012 24 July 2014	24	Tudor Works Debden Road Saffron Walden CB11 4AN			24															Built	PDL
Saffron Walden: Lodge Farm, Radwinter Rd (Pt of Jossaumes)	UTT/12/5226/FUL	04-Jan-13	31	Land At Lodge Farm Radwinter Road Saffron Walden Essex (CB11 3JB??)			31															Built	PDL

Saffron Walden: The Sun Inn Gold Street	utt/0681/12	07-Jul-12	6	The Sun Public House 57/59 Gold Street Saffron Walden CB10 1EJ			6																			Built	PDL
Saffron Walden: Land at Ashdon Road Commercial Centre	UTT/13/2423/OP	26/11/2014	167	Ashdon Road Commercial Centre (Ridgeons) CB10 2NQ						2	50	50	50	15												1	PDL
Saffron Walden: Moores Garage, Thaxted Road	UTT/14/2003/FUL	03-Sep-15	10	Moores Garage Thaxted Road Saffron Walden Essex CB11 3BJ						10																1	PDL
Saffron Walden:Land south of Radwinter Road	UTT/13/3467/OP UTT/16/1856/DFO	26/05/2015 13 Jan 2017	200	Land south of Radwinter Road (CB10 2JP)						10	20	40	40	40	50											1	G
Saffron Walden: Land west of 9 and 10 Everitt Road	UTT/15/1218/FUL	14-Oct-15	7	Land West Of 9 And 10 Everitt Road Saffron Walden Essex CB10 2YY							7															2	G
Saffron Walden:Land south of Radwinter Road for retirement village ("Extra care housing within class C2 provision" - 60 bed care home; 12 extra care bungalows; 30 extra care apartments. Trajectory excludes 60 bed car home)	UTT/13/3467/OP	26-May-15	102	Land south of Radwinter Road (CB10 2JP)											12	30										3	PDL
Saffron Walden: Thaxted Rd (Kiln Court)	UTT/16/1444/OP	15-Nov-16	49	Land Behind The Old Cement Works Thaxted Road Saffron Walden Essex CB10 2UR								23	26													3	PDL
Stansted Mountfitchet: 68-70 Bentfield Road	UTT/2479/11/FUL	07-Feb-12	9	(Built)		3	6																			Built	PDL
Stansted Mountfitchet: Mead Court Redevelopment of 27 units with 29 units therefore net gain of 2	UTT/13/0749/FUL	06-Jun-13	29	Mead Court Cannons Mead Stansted Essex CM24 8EL				-23		25																Built	PDL
Stansted Mountfitchet: Rochford Nurseries	UTT/2265/07/DFO	28-Feb-08	663	Foresthall Park, Stansted Mountfitchet	84	148	64	35																		Built	G
Stansted Mountfitchet: 2 Lower Street	UTT/1522/12/FUL	07-Jan-13	14	2 Lower Street Stansted CM24 8LP						14																Built	PDL
Stansted Mountiftchet: Land at Elms Farm	UTT/13/1959/OP UTT/14/2133/DFO	17/01/2014 18 Dec 2014	53	Elms Farm Church Road Stansted Essex CM24 8PX						3	25	25														1	G
Stansted Mountfitchet: Land at Walpole Farm	UTT/13/1618/OP UTT/15/2746/DFO	1 april 2014 15 Feb 2016	147	Land At Walpole Farm Cambridge Road Stansted CM24 8TA							47	50	50													1	G
Stansted Mountfitchet: 14 Cambridge Road	UTT/16/2632/FUL	13-Feb-17	10	14 Cambridge Road Stansted CM24 8BZ									10													2	PDL
Stansted Mountfitchet: Land north of Water Lane	UTT/16/2865/OP	09-Feb-17	10	Land North Of Water Lane Stansted Essex									10													3	G
Stebbing: land to east of Parkside and rear of Garden Fields	UTT/14/1069/OP	01-Feb-15	30	Ld Nth of Stebbing primary school R/o Gdn Fields & Parkside, Stebbing (CM6 3RA?)							15	15														3	G
Takeley: Brewers End Takeley	UTT/13/1393/OP UTT/14/3295/DFO	23/08/2013 Feb 2015	100	Land South Of Dunmow Road Brewers End Takeley					40	60																Built	G
Takeley: Chadhurst Takeley	UTT/13/1518/FUL	12-Sep-13	13	Chadhurst Dunmow Road Takeley Bishop's Stortford CM22 6SL					-1	13																Built	G
Takeley: Land South of Dunmow Road and east of The Pastures/Orchard Fields	UTT/1335/12/FUL	24-Sep-13	41	Land At Brewers End Dunmow Road Takeley CM22 6QH				15	26																	Built	G
Takeley: Land west of The Chalet, Dunmow Road	UTT/14/2387/FUL	01-Mar-15	10	Land west of The Chalet, Dunmow Road, Takeley					10																	Built	G
Takeley: Priors Green			799		98	162	76	32	16																	Built	G
Takeley: Priors Green,Takeley Nurseries	UTT/0515/10	Built	35	Priors Green Takeley	35																					Built	G
Takeley: Land adj Olivias, Dunmow Rd	UTT/12/5142/FUL	14-Dec-12	6	Land Adjacent To The Olivias Dunmow Road Takeley CM22 6SP				1	2	0	3															1	G
Takeley: Land north of Dunmow Road	UTT/15/2424/FUL	19-Jun-16	7	Land North Of Dunmow Road East Of Church Lane Takeley									7													2	G
Thaxted: 25 Barnards Fields	UTT/15/1959	17-Sep-15	9	25 Barnards Field Thaxted Essex CM6 2LY						9																Built	PDL
Thaxted: Artington, Orange Street	UTT/15/1541/FUL	21-Sep-15	6	Artington Orange Street Thaxted Dunmow Essex CM6 2LH					-1	6																Built	PDL/G
Thaxted: Land East of Barnards Fields Thaxted	UTT/13/0108/OP UTT/14/2426/DFO	07/06/2013 15 October 2014	8	Land East Of Barnard's Field Barnards Field Thaxted (CM6 2LY)					8																	Built	G

Thaxted: Sampford Road	UTT/12/5754/FUL	08-Feb-13	60	Land To South Walden Road Thaxted (CM6 2FE)			23	37																		Built	G
Thaxted: Wedow Road	UTT/1562/11/OP UTT/12/5970/DFO;	9 december 2011; 18 February 2013;	55	Land Off Wedow Road Thaxted (CM6 2JZ / CM6 2JY)			30	25																		Built	G
Thaxted: East of Weaverhead Close	UTT/13/1170/OP UTT/16/1572/DFO	01/05/2014 27 Sept 2016	47	Land Off Wedow Rd, Thaxted					7	20	20															1	G
Thaxted: Former Molecular Products Ltd site, Mill End	UTT/16/0171/FUL	29-Sep-16	29	Molecular Products Ltd. Mill End Thaxted Essex CM6 2LT						9	20															1	PDL
Wendens Ambo: The Mill, Royston Road	UTT/14/3091/P3JPA UTT/14/3788/FUL x 1	01/12/2014 March 2015	17	The Mill, Royston Road, Wendens Ambo CB11 4JX			2	14	1																	Built	PDL
Wimbish: Land at Mill Road	UTT/14/1688/FUL	01-Mar-15	11	Land At Mill Road, Wimbish					11																	Built	G
GARDEN COMMUNITY Easton Park	ALLOCATION													50	75	125	150	175	175	175	175	175	175	175	175	9	G
GARDEN COMMUNITY West of Braintree	ALLOCATION																	50	70	100	150	150	150	150	150	9	G
GARDEN COMMUNITY North Uttlesford	ALLOCATION													75	100	150	175	175	175	175	175	175	175	175	175	9	G
Debden: Land west of Thaxted Road	ALLOCATION		25												10	15										9	G
Elsenham: Land south of Rush Lane	ALLOCATION		40												20	20										9	G
Elsenham: Land west of Hall Road	ALLOCATION		130	Land West Of Hall Road Elsenham											30	30	35	35								9	G
Great Dunmow: Land at Helena Romanes School	ALLOCATION		150																				30	50	70	9	PDL
Great Dunmow: Land south of B1256 (Stortford Road) and west of Buttleys Lane	ALLOCATION		60												30	30										9	G
Great Dunmow: Land west and south of Great Dunmow	ALLOCATION		400															30	50	50	50	50	50	50	70	9	G
Great Dunmow: Oaklands, Ongar Road	ALLOCATION		13												13											9	G
Great Dunmow: Woodfield, Woodside Way	ALLOCATION		120															60	60							9	G
Gt Dunmow: 14 Stortford Road, Perkins Garage	ALLOCATION		12	14 Stortford Road Great Dunmow Essex CM6 1DA											12											9	PDL
Quendon: Land east of Foxley House	ALLOCATION		19																		19					9	G
Saffron Walden: land west of Lime Avenue	UTT/17/0255/FUL Approved subject to S106 June2017		31												31											9 (5)	G
Saffron Walden: Land at Viceroy Coaches	ALLOCATION		10												10											9	PDL
Saffron Walden: Land north and south of Thaxted Road	ALLOCATION		150												50	50	50									9	G
Saffron Walden: 56 High Street	ALLOCATION		10													10										9	PDL
Saffron Walden: Jossaumes	ALLOCATION		12																12							9	PDL
Saffron Walden: Land at De Vigier Avenue	ALLOCATION		14												14											9	G
Saffron Walden: Land south of Tiptofts Lane, Thaxted Road	ALLOCATION																			13						9	PDL
Stansted Mountfitchet: land east of Cambridge Road (B1383) and west of High Lane	ALLOCATION		40														40									9	G
Takeley: Land between 1 Coppice Close and Hillcroft, south of B1256 Takeley Street	ALLOCATION		20												20											9	G
Thaxted: Land east of the Mead	ALLOCATION		25													12	13									9	G
				521	**540**	**390**	**463**	**554**	**722**	**566**	**641**	**857**	**535**	**473**	**741**	**731**	**693**	**755**	**722**	**693**	**749**	**730**	**738**	**710**	**710**		

APPENDIX B

Environment Agency Policy Example

Also, the spatial vision for the Uttlesford Local Plan talks about development being located and designed to reduce the risk of flooding – this is a strong reference to reducing flood risk, so needs to be consistent through the rest of the Local Plan.

With these points in mind (the need for development to deliver overall reduction in flood risk, and the need to consider on site and off site impacts), and the need for consistency within the Local Plan, I've had a look through the policies, and suggested some simple changes to ensure that the policies are in line with national policy, and identify local opportunities to reduce flood risk.

In terms of the strategic policies:

SP12 currently says: Locating development on land identified as being at low risk of flooding, and taking into account any potential increased risk of flooding from new development (my highlights).

This doesn't go far enough, to be in line with national policy, which refers to reducing the causes and impacts of flooding, or with the spatial vision, which refers to development being located and designed to reduce the risk of flooding. It also doesn't take account of the cumulative impact of development on local communities that are susceptible to flooding.

I'd suggest rewording the text to: Locating development on land identified as being at low risk of flooding, and being designed to reduce the overall risk of flooding both to the development site, and any cumulative impacts from the development on local areas susceptible to flooding.

The text on cumulative impacts I've based on the NPPF consultation that's out at the moment, in paragraph 155 which seems worded quite nicely.

D8, 4th paragraph, which currently says: The impact on flood risk from development should be minimised. Again, this should go further to require net flood risk reduction, not just minimisation. I'd suggest rewording this as: Development should result in an overall reduction of flood risk.

In terms of the site specific policies:

SP7 (North Uttlesford Garden Community), bullet point 8 refers to: Provision of Sustainable Urban Drainage Systems to provide water quality, amenity and ecological benefits, as well as flood risk management'. As above, the policy should refer to the opportunity for flood risk reduction, not just management. I'd suggest this is reworded as Provision of Sustainable Urban Drainage Systems to provide water quality, amenity and ecological benefits, as well as flood risk reduction.

SAF2 – the constraints section refers to the site having a substantive surface water flooding risk which any development proposal will need to mitigate against. Similarly, the requirement shouldn't just be mitigating against flood risk, it should be reducing flood risk, so I'd suggest replacing 'mitigate against' with 'reduce'.

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