1 Executive Summary

This Stage 2 Detailed Water Cycle Study (WCS) has been commissioned by Uttlesford District Council (UDC) to provide evidence that the development proposed within the emerging Local Plan can be accommodated by the water and wastewater infrastructure, and wider 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 development on water resources, the current water and wastewater infrastructure, and the water environment, has been analysed.

1.1 Water Resources and Supply Infrastructure

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

Veolia Water Central (VWC) supply the District with water from a combination of groundwater and surface water abstractions, some of which are outside the District, allowing additional water to be transferred into the District to accommodate the supplied growth. However, the scale of growth proposed throughout the East of England, and increasing pressure on VWC from environmental constraints, means that **high levels of water efficiency** are still required. This is particularly important in existing dwellings, where reductions in consumption have the potential to offset the increased demand from new dwellings.

VWC are confident that the potential development sites **can be supplied** without the need for major infrastructure upgrades.

However, UDC need to consider including a development control policy, requiring developers to show how, through the installation of certain components and fittings, water use per person per day will be limited to a lower rate than the current statutory requirements. A policy such as this would:

- Achieve the nationwide aspirations of Defra and the EA regarding average domestic water consumption;
- Reduce the carbon intensity/ operational and environmental costs that water companies experience in moving the required additional water around the Region – allowing additional investment in resilience;
- Help provide a buffer against climate change, interruptions to supply and any future reductions required on existing abstractions to protect the sensitive water environment in the Region;
- Assist with reducing the volumes of wastewater generated by the District, which will help to mitigate the risks described below.

1.2 Flood Risk Management

Flood risk within the District can be exacerbated by development, unless the run-off of surface water is managed appropriately. The existing National Planning Policy Framework and Technical Guidance note provides the framework for managing and mitigating flood risk from new development.

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

This WCS has identified, at a high level, the types of Sustainable Drainage Systems (SuDS) appropriate at the proposed site locations, and reiterated the importance that these features have with regards to attenuating and disposing of surface water runoff.

Basins, ponds and wetlands are considered the most sustainable SuDS techniques because of their greater flood risk reduction, water quality and wildlife benefits but the land needed and potential safety considerations limit their use on some sites – infiltration techniques and underground storage may be suitable alternatives though source control measures should still be integrated within the SUDS management train.

There is a risk of flooding from Surface Water at 11 of the Uttlesford Local Policy Areas as identified by the EA Flood Map for Surface Water. In most cases this flooding relates to flood risk from ordinary watercourses that run through the allocated sites. Whilst the EA Surface Water flood map gives an indication of risk it will be important to fully understand the risk from these ordinary watercourses in order to inform site layouts, and ensure that a sequential approach to site layouts can be taken. The EA surface water flood map highlights opportunities for the development to reduce flood risk elsewhere, by placing SuDS elements in overland flow paths.

1.3 Wastewater Treatment and Sewer Network

Wastewater in the District is collected and treated by Thames Water Utilities (TWU) in the southwest and Anglian Water Services (AWS) in the northeast. The waste water capacity of each Waste Water Treatment Works (WwTW) and discharge consent constraints are summarised below along with sewer network capacity issues.

WwTW	Potential Capacity, Discharge Consent and Sewer Network Issues
Saffron Waldon	The development trajectory proposes that 880 new dwellings are constructed. The existing sewerage network is at capacity and it is understood extensive upgrades are required. The predicted total Dry Weather Flow (DWF) (following the proposed development) received by the Saffron Walden WwTW will not exceed its volumetric discharge consent. However, there is no process capacity available at the WwTW.
Great Dunmow	The development trajectory proposes that 1150 new dwellings are constructed. AWS predict that the completion of the existing allocations alone will exceed the current process capacity, and also require a new volumetric discharge consent to be negotiated with the EA. A new discharge consent could be difficult to achieve and may challenge the deliverability of the proposed quantum of development in the timeframes set out. At present there is no capacity at the WwTW for the connection of additional flows from the potential extension sites, however the

WwTW	Potential Capacity, Discharge Consent and Sewer Network Issues
	required process capacity should be in place by 2016. A portion of the current wastewater from Great Dunmow is currently treated at Felsted WwTW. If necessary AWS will continue this relationship and flows will only be passed forward that can be accommodated within the existing consent for Felsted WwTW. AWS will not apply for an increased discharge consent for Felsted to accommodate any additional flows from the Great Dunmow catchment. There is no capacity in the storm water network and upgrades are required for the foul system.
Takeley	TWU estimate that the pumping station can accommodate flows from an additional 1,000 dwellings in addition to the 574 existing dwellings, and that the gravity sewer from the Airport to Bishops Stortford WwTW has adequate capacity for such growth. However, the rising main (with an approximate length of 2.5 km), will require upsizing to accommodate future development. The development trajectory proposes that 203 new dwellings are constructed. Calculations indicate that the proposed growth will not result in the existing process capacity or volumetric consent being exceeded. .
Great Easton	There are known network capacity issues at Great Easton WwTW, which are a potential issue and will need further discussion with AWS. The development trajectory for Thaxted (the main settlement served by Great Easton WwTW) proposes that 60 new dwellings are constructed. Calculations indicate that the predicted total DWF received by the Great Easton WwTW will not exceed its volumetric discharge consent. However, at present AWS have identified there are issues verifying the measured flows at the WwTW and as such there is considered to be no headroom at the works until such time as verification is obtained. However, there is process capacity available at the WwTW.
Newport	The development trajectory proposes that 370 new dwellings are constructed. Calculations indicate that the proposed development in the catchment will result in the existing DWF consent limit almost being reached. AWS have indicated that, due to seasonal variations in existing DWF received at Newport WwTW, there is no capacity within the existing (or proposed higher) DWF consent, or in the process capacity of the WwTW, to accommodate the flows from any new dwellings. Any increase in dwellings at Newport will require the negotiation of a new increased DWF consent with the EA, and this potentially will lead to tightening of the quality levels required in this discharge. It is understood where development is proposed to the south of the village significant network upgrades are required.
Stansted Mountfitchet	Stansted Mountfitchet WwTW serves both Elsenham and Stansted Mountfitchet. The development trajectory proposed that 400 new dwellings are constructed at Elsenham and 60 at Stansted Mountfitchet. TWU estimate that the outfall sewer from Elsenham currently has the capacity to accept flows from a maximum of 500 new dwellings , although it is understood the existing local network capacity here is less than this (around 20–30 dwellings max.). Calculations indicate that the proposed growth will not result in the existing volumetric consent being exceeded at Stansted Mountfitchet WwTW. TWU are concerned that the process capacity at Stansted Mountfitchet WwTW requires substantial upgrading to accommodate the additional loading from the increased population.
Great Chesterford	The development trajectory proposes that 100 new dwellings are constructed. The proposed development will require significant upgrades to the network or direct

WwTW	Potential Capacity, Discharge Consent and Sewer Network Issues
	connection to WwTW. Calculations indicate the predicted total DWF received by the Great Chesterford WwTW will not exceed its volumetric discharge consent. It is understood the existing WwTW will be able to accommodate the increased flows from the new developments, in line with their phasing and actual build rates, and providing that the flows remain within the current discharge consent limit.
Felsted	Felsted serves the village of Stebbing. There are 43 allocated dwellings within the catchment. AWS have identified that there are no significant process capacity issues at the WwTW. A portion of the flow from Great Dunmow is currently being transferred to Felsted. The volume of flow that is being transferred is not currently fully known. AWS have confirmed that the flows to Felsted combined with the transferred flows from Great Dunmow will not exceed the existing discharge consent for Felsted WwTW. It is understood that there is limited available capacity in the sewer network.

Table 1-1 Summary WwTW Process, Sewerage Infrastructure and Discharge Consent Capacity

Villages

The relatively low levels of growth proposed in Clavering, Henham, Radwinter and Stebbing will not require extensive upgrades to the WwTW processes. Hence, development is not considered to be completely constrained by WwTW capacity (both process capacity and sewerage network).

Summary

A summary of the WwTW capacity issues as reported by TWU and AWS for the key market towns is summarised in Table 1-2 below.

WwTW	Can the proposed development be accommodated within		
	Process Capacity	Consent	Sewerage Network
Saffron Waldon	No	Yes[1]	No[4]
Great Dunmow	No	No	No[4]
Takeley	Yes	Yes	No
Great Easton	Yes	No[2]	No[4]
Newport	No	No	No[4]
Stansted Mountfitchet	No	Yes	No
Great Chesterford	Yes	Yes	No
Felsted	No	Yes[3]	No

Table 1-2 WwTW Capacity Summary

[1] A new consent is not required to accommodate development; however upgrades are required at the WwTW to improve the capacity.

[2] It is currently unable to verify the existing measured DWF at Great Easton and it should be assumed that no new development can be accommodated until flows can be verified sufficiently.

[3] An increase in consent is not required with the current allocated development within Stebbing. AWS services have confirmed that the future flow transferred from Great Dunmow will not exceed the existing discharge consent for Felsted WwTW.

[4] Network upgrades to the sewage network required to accommodate future development within the WwTW catchment.

1.4 WwTW Capacity Assessment

The connection of new sites to the existing sewerage network and WwTW can increase the risk of flooding in two ways:

- New developments connected to the existing sewerage network may exceed the capacity of certain parts of the existing network; and
- DWF leaving the WwTW, and hence discharges to local watercourses, will be increased following the connection of new dwellings to the network.

To assess the existing and future capacities of the WwTW and define a combined flood risk index, a high level assessment was used to investigate:

- Increase in peak flow;
- Sensitivity of the watercourse to changes in flood levels; and
- Potential impact of flooding.

The combined risk value for all eight WwTW sites (listed in Section 1.3) has been assessed as low, therefore the increased flow from each WwTW site is classified as having a low flood risk.

1.5 Water Quality Impacts and Options

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 WwTW that serve the sites. The dilutive capacity of the watercourses to receive increased discharges from WwTW is therefore limited. Where discharges from WwTW increase, 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. Uttlesford District is located at the headwaters of four river catchments.

The results highlight the importance of AWS and TWU working to improve the concentrations of phosphate (SRP) in the effluent discharges of upstream WwTW in all of the catchments. The SRP concentration reductions that would be required to bring the downstream quality up to ‘good status’ is beyond what is currently generally considered to be reliably and economically achievable using conventional technology at Saffron Walden, Great Dunmow, Takeley and Stansted Mountfitchet.

With the exception of Great Dunmow, given the small difference between the current DWF consent, and the worst case DWF predicted by 2028; the River Quality Planning

(RQP) modelling for the increased DWF at all WwTW produces results similar to the current consented condition. It can therefore be concluded that the increase in DWF from the proposed growth in the study area will not make achieving the requirements of the Water Framework Directive (WFD) any more difficult than the current consented position. At Great Dunmow WwTW, discharging the treated DWF is more constrained by WFD water quality requirements than is currently the case. The level of constraint depends on whether future upgrades take place and the volume of any future flow transfers to Felsted WwTW.

The capacity of the WwTW is a key constraint in Great Dunmow. AWS predict that development could exceed the current process capacity, and require a new volumetric discharge consent to be negotiated with the EA, to avoid negative impacts on water quality. A new discharge consent is also required at Newport and potentially at Great Easton subject on-going discussion between AWS and the EA.

High level water quality modelling calculations have been undertaken to determine the indicative WwTW discharge consent standards required to protect the water environment. The results highlight the importance of AWS working to improve the concentrations of SRP in the effluent discharges upstream WwTW in all eight WwTW catchments.

The SRP concentration required to bring the downstream quality 'up to good status' is within the levels that could be currently achieved by enhanced operation of conventional processes at Great Easton, Newport and Great Chesterford.

1.6 Water Efficiency Options

In order to achieve the Code for Sustainable Homes (CSH) Level 5/6 target (80 litres/per/day) in the study area; it is necessary to consider the use of Rainwater Harvesting (RWH) or Grey Water Recycling (GWR) to augment the incoming potable water supply, in addition to water efficiency measures.

It has been calculated that a typical three bedroom house would be able to capture an average of 89 l per day of rainwater from its roof, equating to a supply of 31 l/p/d for non-potable use (with an assumed occupancy of 3, or 36 l/p/d with an assumed occupancy of 2.43). This suggests that under average conditions, a domestic level RWH system (with a storage capacity of 3,000 l) would be capable of meeting the non-potable demand for a house, allowing CSH Level 5/6 efficiency (80 litres/per/day) to be met, despite the predicted decreases in summer rainfall due to climate change.

The Building Research Establishment (BRE) tool calculates that a typical house built to CSH Level 3/4 water efficiency (105 litres/per/day) would provide approximately 67 l/p/d of greywater. Allowing for a 50% collection and recycling rate, this would still provide more than the 30 l/p/d non-potable requirement.

It must therefore be considered that some degree of RWH or GWR will be required in order for the proposed development to comply with the standards set by the CSH. This could potentially be at either a domestic, neighbourhood or District level.

12 Constraints, Solutions and Opportunities summary

The following summary tables illustrate the likely water infrastructure and water environment issues and solutions to the UDC's preferred allocation sites based on the WCS consultations undertaken (Section 2) and evidence base. As an indicative guide the issues are displayed and discussed using the following convention:

1	Major constraint to development, requiring extensive infrastructure improvements to allow development (possible showstopper at this stage but may be reclassified following further investigation by water company and developer).
2a	Major constraint to development, requiring extensive infrastructure improvements to allow development (Not considered as a showstopper at this stage but requires further investigation by water company and developer to confirm).
2b	Major or possible constraint to development, although infrastructure solutions and mitigation techniques are identified and/ or judged feasible to allow development.
3	No constraint to development, or minor localised improvements required to allow development

Table 12-1 Key for constrains summary tables

12.1 Potable Water Supply

Regarding the supply of potable water, as the allocation sites are centred on the existing market towns and key service centres, VWC are confident that adequate supply can be provided through the existing network and local boreholes. There is however a risk that future sustainability reductions imposed by the EA on VWC abstractions may require VWC to alter the strategy they adopt in their Northern WRZ, which have the potential to pass on higher costs to their customers. This issue is not entirely attributable to the proposed growth.

For the majority of locations, the connection of a site to the potable network will probably require the reinforcement of certain areas of the localised network. It is assumed that this need will be addressed by VWC through the normal developer requisition process. Whilst it is likely that all the proposed sites could be supplied with water, investment will be required to varying degrees; the extent of this investment will be understood once detailed plans for the sites are in place.

12.2 Wider Environmental Constraints

Each preferred site identified by the allocation process will impact on the wider water environment to different extents. Some impact on European sites and SSSIs whilst others will present a much lower risk. The sites will also provide opportunity for biodiversity enhancements such as habitat restoration and creation, and in all cases, but particularly where there is a high quantum of development proposed, the developer should strive to provide multi-functional

greenspace (which include areas to manage surface water) to deliver positive benefits for wildlife and people at each location.

12.3 Flood Risk Constraints

It should be noted that flood risk constraints associated with individual development sites are not included in the tables in Section 7 unless the modelled flood outlines indicate high risk areas. It is assumed that the Sequential Tests undertaken as part of the UDC's Local Plan preparation process and developer Flood Risk Assessments and Drainage Strategies produced as part of the normal planning process would have dealt with such issues. It is also assumed that suitable Sustainable Drainage Systems (SuDS) would be incorporated at these sites and runoff from the proposed development will be managed and limited to the appropriate runoff rates based on predevelopment land use and flood risk constraints associated with the receiving system, in accordance with UDC policy and the emerging requirements of the FWMA.

To assess the future impact of the WwTW discharges on fluvial flood risk, a multi-criteria approach was used to investigate the increase in peak flow, the sensitivity of the watercourse to changes in flood levels, and the potential impact of flooding, to define a combined flood risk index. As described in Section 9.4 the combined risk value for all eight WwTW sites has been assessed as low, therefore the increased flow from the WwTW site is classified as presenting a low increase in overall fluvial flood risk.

12.4 Wastewater Constraints

The extent to which wastewater capacity constrains the preferred sites is related to

- The likelihood of the new development requiring capacity upgrades at the WwTW and within the sewerage network;
- The availability of land for such upgrades as well as the possibility that treated wastewater from the new development would trigger new discharge consents;
- The ability to overcome water quality and flood risk constraints that are associated with receiving watercourses;
- In some market towns the ability to upgrade the network may also be restricted by narrow streets and existing utilities

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Saffron Walden Policy Area 2	See comments above in Section 12.1 **3**	See comments above in Section 12.3.	Saffron Walden WwTW DWF discharge consent will not be exceeded by the increase in flow but the headroom will be limited. AWS may wish to apply for a new consent at some point, as the flows from the growth is likely to compromise the 10% headroom between actual and consented DWF by 2020 onwards. Available process capacity will need confirmation by AWS. **2a**	These allocation sites are located at the opposite side of the town to the WwTW. The existing sewerage network is at capacity. Extensive upgrades may be required. Linear distance is approximately 2 km but actual sewer lengths will depend on the route for any new sewers or specific sections that need upgrading. For allocation sites where construction is proposed to start in 2013 or 2014 (e.g. SAF03) AWS would expect to already be in consultation with developers regarding Developer Impact Assessments (DIAs). Developers have not yet discussed this site with AWS and therefore recommend that they consult with AWS soon to determine network upgrades through suitable DIAs. **2a**	AWS have identified that there is unlikely to be capacity for receiving extra Surface Water flows from these sites in the AWS surface water sewerage network. Developers must ensure that a suitable drainage design is devised in conformity with the Building Regulations, FWMA, NPPF, and UDC/ECC policies.	River Cam is a UKBAP Priority habitat, with important habitats and species identified downstream, and is currently failing to comply with WFD due to phosphate and dissolved oxygen levels. The River Cam is classified as heavily modified and the current ecological quality is Poor Potential. The current chemical is classified as Good. The overall Physio Chemical is Moderate, with Ammonia classified as High and Phosphate as Poor. It is estimated that the future treated DWF from Saffron Walden WwTW to the River Cam, not make achieving the requirements of the WFD any more difficult than the current consented position. It should be noted that increasing development can lead to a risk that new/ tighter consents may be required in future cycles of the
Saffron Walden Policy Area 1	See comments above in Section 12.1. However, it is foreseen that a larger volume of infrastructure upgrade will be needed for this particular site. **2b**					

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Saffron Walden Policy Area 3	See comments above in Section 12.1 **3**	**2b**	It is considered that this smaller development would pose few problems due to small additional flows. **2b**	No Comments on Sewerage Network Capacity Received. **3**	**3**	RBMP (post 2015). **2b**

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Great Dunmow **Policy Area 1**	See comments above in Section 12.1 **3**	See comments above in Section 12.3 **3**	A portion of current wastewater from Great Dunmow is treated at Felsted WwTW – extra flows from the new development may require treatment at Felsted WwTW but a new DWF discharge consent will not be required at Felsted. Increase in projected numbers from Outline WCS may be an issue. If all existing and new flows are treated at Great Dunmow a new DWF consent is required. There are constraints posed by an increase in the flow permit of 46% at Great Dunmow	Localised upgrades, or bypass, of existing village network will be required. Significant off-site sewerage requirements to connect the FOUL WATER to the Network.	AWS state that there is unlikely to be sufficient capacity within the SW network. Developers must ensure that a suitable drainage design is devised in conformity with the Building Regulations, FWMA, NPPF, and UDC/ECC policies.	The proposed development site lies directly adjacent to High Wood Great Dunmow Site of Special Scientific Interest (SSSI) it will be important that full and timely ecological assessment is made of the potential impacts arising (both during construction and operational phases), particularly with regards to surface water management. Great Dunmow WwTW discharges to the River Chelmer, which is classified as heavily modified and the current ecological quality as

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Great Dunmow Policy Area 2	See comments above in Section 12.1 3	See comments above in Section 12.3. 3	WwTW. It is likely that the quality limits that will need to be achieved will be beyond what is currently regarded as the limit of conventional treatment technology and is likely to present difficulties in terms of achieving the full quantum of growth. Phasing of GtDUN13 & 2 after GtDUN14 will give the water company time to explore and implement appropriate technology and also secure suitable funding to help mitigate the issue. 2a	2a	2a	Moderate Potential. The current chemical quality does not require assessment. The overall Physio Chemical is Moderate, with Ammonia classified as High and Phosphate as Poor. Discharging the increased DWF from Great Dunmow WwTW to the River Chelmer, will be more constrained by WFD water quality requirements than the current consented discharge. The level of constraint will depends upon future upgrades and the volume of flows that are transferred to Felsted in the future. 2b

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Elsenham Local Policy Area 2	See comments above in Section 12.1 **3**	Part of site within the Stansted Brook 20yr Flood Outline, Masterplan checked against modelled flood outline, currently proposed building footprints appear to be outside the 20yr Flood Outline. See comments above in Section 12.3 **2b**	This drains to a Pumping Station at Stansted Mountfitchet and then on to Stansted Mountfitchet WwTW. There are negligible capacity or treatment issues downstream however virtually all available spare capacity may be used by this and the 2 other ELS sites suggested (ELS1 and 6) leaving no capacity for any other sites in Elsenham. Sufficient headroom available within discharge consent. **2b**	The main outfall sewer from the eastern side of Elsenham runs through this site and developers may have to avoid construction directly over this. However, the development could connect directly to this sewer, subject to confirmation of capacity by TWU Any upgrades required may be problematic, due to the crossing under the railway and the limited space available as the sewer passes between “Wood View” and “The Crossings”. **2b**	No specific comments on Storm Water Network Received. **3**	River Stort are UKBAP priority habitats, with a number of important habitats and species identified downstream and are currently failing to comply with WFD due to phosphate and dissolved oxygen levels. Stansted WwTW discharges to the Stansted Brook. The current ecological quality of the Stansted Brook is classified as Poor Status. The current chemical quality is Good. The overall Physio Chemical is Good, with Ammonia classified as High and Phosphate as Good. Increased discharge consents from either

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Elsenham Local Policy Area 3	See comments above in Section 12.1 **3**	Part of site within the Stansted Brook 20yr Flood Outline. It is possible that a sequential approach to this site can removed properties from flood risk and only small parcels of land are covered by the 20yr outline See comments above in Section 12.3. **2b**	There are negligible capacity or treatment issues downstream however virtually all available spare capacity may be used by this and the 2 other sites suggested (ELS6 and 9) leaving no capacity for any other sites in Elsenham. Sufficient headroom available within discharge consent. **2b**	There are negligible treatment issues. Any outfall sewer constructed to serve this site would need to be designed to a line and level to also serve the adjacent ELS6 site. **2b**	No specific comments on Storm Water Network Received. **3**	Stansted Mountfitchet wTW may require tighter chemical consents although the current DWF consents would not be exceeded due to the preferred allocation sites. Discharging the increased DWF from Stansted Mountfitchet WwTW to the Stansted Brook, will not be any more constrained by WFD water quality

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Elsenham Local Policy Area 1	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**	This sewer drains to a Pumping Station at Stansted Mountfitchet and then on to Stansted Mountfitchet WwTW. There are negligible capacity or treatment issues downstream however virtually all available spare capacity may be used by this and the 2 other sites suggested (ELS1 and 9) leaving no capacity for any other sites in Elsenham. Sufficient headroom available within discharge consent. **2b**	This site is not well served by sewers in both capacity and ground level. However, if the developer can be required to construct a new gravity outfall sewer from the site that will connect to the existing outfall sewer near Mill House then there will be no capacity issues. The design of this sewer should acknowledge the potential development of site ELS1 as well. **2b**	No specific comments on Storm Water Network Received. **3**	requirements than the current consented discharge. **2b**

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Thaxted Local Policy Area 1	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**	Known capacity issues at Great Easton WwTW, which serves Thaxted, is a potential issue and will need further discussion with AWS. Upgrades to the WwTW will require additional land. It has been indicated by the EA and AWS that it is likely that the quality limits that will need to be achieved to overcome the existing issues and new discharge consent requirements will be beyond what is currently regarded as the limit of conventional treatment technology and is likely to present difficulties in terms of achieving growth. **2a**	AWS has already completed a DIA for 60 properties in Thaxted. This would be an additional 60 properties. The initial DIA was approved despite reservations within AWS as a result of flood risk from combined Sewer Network (previously the Town Drain/Culvert). Additional development would exacerbate this problem. Sewer network will require significant upgrades. **2a**	Flood risk issues linked to combined surface water/foul network capacity. **2a**	The River Chelmer is currently impacted by poor phosphate and dissolved oxygen levels. The River Chelmer is classified as heavily modified and the current ecological quality is Moderate Potential. The current chemical quality does not require assessment. The overall Physio Chemical is Moderate, with Ammonia classified as High and Phosphate as Poor. Discharging the increased DWF from Great Easton WwTW to the River Chelmer, will not be any more constrained by WFD water quality requirements than the current consented discharge. **2b**

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Newport Local Policy Area 1	See comments above in Section 12.1 **3**	Small part of site within Flood Zone 3. See comments above in Section 12.3. **2b**	Previous concerns on DWF headroom and process capacity still remain. A reduction in the number of proposed properties from outline study could have	Will require significant off-site sewerage with possible attenuation to connect Foul Water to network.	There is unlikely to be any capacity for SW drainage within all sites. Developers must ensure that a suitable drainage design is devised in conformity	River Cam is a UKBAP priority habitat with important habitats and species identified downstream and is currently failing to comply with WFD due to

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Newport Local Policy Area 2	See comments above in Section 12.1 **3**	See comments above in Section 12.3 **3**	potentially reduced this issue but even higher numbers are proposed now. A new DWF consent is expected as there is a requirement to maintain headroom here. **2a**	**2a**	with the Building Regulations, FWMA, NPPF, and UDC/ECC policies. **2a**	phosphate levels. The River Cam is classified as heavily modified and the current ecological quality is Poor Potential. The current chemical quality does not require assessment. The overall Physio Chemical is Moderate, with Ammonia classified as High and Phosphate as Bad. AWS revised DWF discharge consent will not be breached by proposed growth, but headroom is unlikely to be sufficient. Further discussion with AWS and EA is required. It may be beneficial to water quality to limit the development in this area. There is a risk that tighter consents may be required in future cycles of the RBMP (post 2015). **2a**

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Great Chesterford Local Policy Area 1	See comments above in Section 12.1 3	See comments above in Section 12.3. 3	AWS estimate that the WwTW currently has capacity to accommodate the flows from up to 800 dwellings.	No DIA seen by AWS as yet for either of the Great Chesterford development sites. No spare network capacity exists; the sites will	No spare capacity in the Surface Water Network. . Developers must ensure that a suitable drainage design is devised in	River Cam is a UKBAP priority habitat with important habitats and species identified downstream and is currently failing to

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Great Chesterford Local Policy Area 2	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**	**3**	require significant upgrades or direct connection to WwTW. **2a**	conformity with the Building Regulations, FWMA, NPPF, and UDC/ECC policies. **2b**	comply with WFD due to phosphate levels. The current ecological quality of the River Cam is classified as Poor Potential. The current chemical quality is Good. The overall Physio Chemical is Moderate, with Ammonia classified as High and Phosphate as Poor. Discharging the increased DWF from Great Chesterford WwTW to the River Cam, will not be any more constrained by WFD water quality requirements than the current discharge AWS proposed discharge consent will not be breached but it may be beneficial to water quality that tighter consents are imposed in future cycles of the RBMP (post 2015). **2b**

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Stansted Local Policy Area 1	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**	Treatment capacity at Stansted Mountfitchet WwTW would not be an issue for this site. The predicted DWF following growth is less than the existing discharge consent.	The frontage of this development could drain by gravity to the gravity sewer in Cambridge Road however; the fall of the land could limit drainage without resorting to pumping. An alternative would be to drain the site through to Clarence Road/St Johns Lane if a route through adjacent properties can be agreed. Either outfall route would have no significant capacity issues and would drain by gravity through to the WwTW. **2b**	No specific comments on Storm Water Network Received. **3**	The current ecological quality of the Stansted Brook is classified as Poor Status. The current chemical quality is Good. The overall Physio Chemical is Good, with Ammonia classified as High and Phosphate as Good. Discharging the increased DWF from Stansted Mountfitchet WwTW to the Stansted Brook, will not be any more constrained by WFD water quality requirements than the current consented discharge. **3**
Stansted Local Policy Area 2	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**		A development that could drain by gravity to one of two gravity sewers in Cambridge Road. Neither will have any real issues and would drain by gravity through to the WwTW. **2b**	No specific comments on Storm Water Network Received. **3**	

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Stansted Local Policy Area 3	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**	**3**	The presumption for this site is that it would utilise the outfall that previously served the school. This would drain to a Pumping Station but there would be negligible, potentially nil, net increase in flow. As such there are no concerns regarding network capacity. **2b**	No specific comments on Storm Water Network Received. **3**	
Takeley Local Policy Area 2	See comments above in Section 12.1 **3**	See comments above in Section 12.3. **3**	Foul water pumped to Bishops Stortford WwTW via Stansted airport pumping station. No issues with capacity at the Pumping Station or Bishops Stortford WwTW. Sufficient headroom available within discharge consent. **3**	Single option is to connect to the sewer that passes through the site. No issues with capacity in the sewers. The sewer on the site may need diverting to avoid being built over by the new houses or the layout of the houses could be arranged to avoid the sewer being built over. **3**	No specific comments on Storm Water Network Received. **3**	River Stort is a UKBAP priority habitat with a number of important habitats and species identified downstream, and is currently failing to comply with WFD due to phosphate and dissolved oxygen levels. Discharging the treated DWF from Bishop Stortford WWtW, will not be any more constrained by WFD

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Takeley Local Policy Area 3	See comments above in Section 12.1	See comments above in Section 12.3. **3**	Foul water pumped to Bishops Stortford WwTW via. Canfield End Pumping Station and Stansted Airport Pumping Station. No issues with capacity at the Pumping Stations or Bishops Stortford WwTW. Sufficient headroom available within discharge consent. **3**	Single option is to connect to the sewer in the main road outside the site. No issues with capacity in the sewers, Pumping Stations or Bishops Stortford WwTW. **3**	No specific comments on Storm Water Network Received. **3**	water quality requirements than the current consented discharge to the Pincey Brook.
Takeley Policy Area 1	See comments above in Section 12.1 **3**	Site on tributary of Pincey Brook. Main River watercourse but with no associated Flood Outlines. Unable to quantify the level of fluvial risk to this site. See comments above in Section 12.3. **3**	TWU have proposed 4 options for draining foul water flows from this site. Generally there are no concerns over WwTW capacity for any of the 4 options. Sufficient headroom available within discharge consent. **2b**	TWU have proposed 4 options for draining foul water flows from this site. For some options proposed by TWU the capacity of the receiving sewer and receiving pumping station either at Wayletts Hill or Roseacres may need further investigation. **2b**	No specific comments on Storm Water Network Received. **3**	
Takeley Policy Area 4	See comments above in Section 12.1	See comments above in Section 12.3	Single option is to connect to the sewer in the main road outside	Single option is to connect to the sewer in the main road outside	No specific comments on Storm Water Network Received.	

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Storm Water Network Capacity Issues	Wider Environment
Takeley Policy Area 5	3	3	these sites. This sewer goes to Bishops Stortford WwTW via. Canfield End Pumping Station and Stansted Airport Pumping Station. No issues with capacity in the Pumping Stations or Bishops Stortford WwTW. 2b	these sites. This sewer goes to Bishops Stortford WwTW via. Canfield End Pumping Station and Stansted Airport Pumping Station. No issues with capacity in the sewers. Pumping Stations or Bishops Stortford WwTW. 2b	3	3

Table 12-2 Summary of constraints to Allocated Sites

Village scale growth

The small scale of the potential growth anticipated in the villages results in VWC being confident that **potable water supply will not be a constraint** to development. However, the following constraints, from other aspects of the water cycle, should be considered:

Settlement	Potable Water	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Wider Environment
Clavering	See comments above in Section 12.1. 3	WwTW in Flood Zone 3 – **3**	No issues identified. **3**	Unlikely to be any capacity issues as site is close to Clavering WwTW. A new pumping station is likely to be required to serve the site. **3**	SSSI and UKBAP priority habitats and species located downstream of WwTW discharge. **2b**
Henham HEN1	See comments above in Section 12.1. 3	See comments above in Section 12.3 **3**	There are negligible capacity or treatment issues downstream, as for the outfall sewer this represents a very small increase in flow. **3**	These sewers drain through further pumping stations before draining back into Thames Water's sewers, Water Lane Pumping Station at Stansted Mountfitchet and then on to Stansted Mountfitchet WwTW. No signficant issues expected but AWS to confirm local sewer capacity. **3**	See above comments regarding water quality at Stansted Mountfitchet. Note that the flows from this site will have a negligible impact on the overall discharge here. **3**
Henham HEN2	See comments above in Section 12.1. 3	See comments above in Section 12.3	From Henham, these sewers drain to a series of pumping stations before draining to Water Lane Pumping Station at Stansted Mountfitchet and then on to Stansted Mountfitchet WwTW. There are negligible capacity or treatment issues downstream as for the outfall sewer this represents a very small increase in capacity.**3**	The site is within Thames Water area and would drain to sewers controlled by TWU. Locally the capacity of the pumping station at Woodend Green would need to be checked. It is possible that this may require upgrading despite there being a small number of houses proposed.	See above comments regarding water quality at Stansted Mountfitchet. Note that the flows from this site will have a negligible impact on the overall discharge here. **3**
Radwinter		Part of the site in the 20 year fluvial flood outline. See comments above in Section 12.3. **2a**	No significant capacity constraints identified by AWS. **3**	No significant capacity constraints identified by AWS. **3**	UKBAP Priority species previously identified downstream of WwTW. Poor phosphate levels in watercourse, although additional discharge would aid known low flow issues in headwaters. **2b**

Settlement	Potable Water	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Wider Environment
Stebbing	WwTW in FZ3 upgrades must be avoided in this area.	See comments above in Section 12.3. **3**	No significant capacity constraints identified by AWS. The proposed growth within Stebbing can be accommodated within the existing WwTW discharge consent, However, a portion of current wastewater from Great Dunmow is treated at Felsted WwTW. AWS have indicated that closing Great Dunmow and transferring all flows to Felsted is unfeasible. Therefore, the transfer of all flows to Felsted has not been assessed within the WCS. **3**	No significant capacity constraints identified by AWS. **3**	Poor phosphate levels in watercourse. **2b**

Table 12-5 Summary of constraints to village scale growth

Employment Sites

The small scale of the potential growth anticipated in the villages results in VWC being confident that **potable water supply will not be a constraint** to development. However, the following constraints, from other aspects of the water cycle, should be considered

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Wider Environment
Chesterford Park Draft local plan policy SAE7 - allocated employment site	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3	No significant capacity constraints identified by AWS 3	No spare capacity in the Foul Water network or storm water network capacity. Network upgrades for the two Great Chesterford residential sites should also accommodate increase in trade flow. 2a	River Cam is a UKBAP priority habitat with important habitats and species identified downstream and is currently failing to comply with WFD due to phosphate levels. AWS proposed discharge consent will not be breached but it may be beneficial to water quality to limit the development in this area. There is a risk that tighter consents may be required in future cycles of the RBMP (post 2015). 2b
Wendens Ambo Draft local plan policy SAE3 - allocated employment site	See comments above in Section 12.1. 3	See comments above in Section 12.3. . 3	No significant capacity constraints identified by AWS 3	No significant capacity constraints identified by AWS. 3	No signficant issues identified. 3
Wendens Ambo Protected employment	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3	No significant capacity constraints identified by AWS. 3	No significant capacity constraints identified by AWS. 3	No signficant issues identified. 3
Wendens Ambo Protected employment	See comments above in Section 12.1 3	See comments above in Section 12.3. 3	No significant capacity constraints identified by AWS. 3	No significant capacity constraints identified by AWS. 3	No signficant issues identified 3
Elsenham Gaunts End Draft Local Plan policy Elsenham policy 4	See comments above in Section 12.1. 3	See comments above in Section 12.3.	The available capacity in the Elsenham to Stansted Mountfitchet outfall sewer, and the WwTW, will be taken up by the dwellings of	Not served by public sewer. However, no issues currently identified 3	Rivers Cam and Stort are UKBAP priority habitats, with a number of important habitats and species identified downstream

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Wider Environment
Elsenham Gaunts End Draft local plan policy Elsenham policy 4	See comments above in Section 12.1 3	3	all 3 Elsenham Residential Local Policy Areas leaving no further capacity for other development in the catchment. Additional capacity will need to be provided to accommodate additional trade flow. 2a	Not served by public sewer. However, no issues currently identified 3	and are currently failing to comply with WFD due to phosphate and dissolved oxygen levels. Increased discharge consents from either Stansted Mountfitchet WwTW would require tight chemical consents although it is unlikely that the current DWF consents would be exceeded due to the preferred allocation sites.
Elsenham Gaunts End Safeguarded employment site	See comments above in Section 12.1. 3	Elsenham Guants End Safegaurd employment site shown to be at risk from Deep SW flooding (30yr) event. See comments above in Section 12.1 2a		Not served by public sewer. However, no issues currently identified 3	
Stansted Airport Stansted Policy 2 - non airport related employment	See comments above in Section 12.1. 3	Site shown to be at risk from Deep SW flooding (30yr) event. See comments above in Section 12.1 2a	Treatment capacity at Stansted Mountfitchet WwTW would not be an issue for these sites. Sufficient headroom available for additional trade flow within discharge consent.	No significant issues identified by TWU. 3	No significant issues identified. 3
Stansted Airport Stansted Airport policy 1 - airport employment	See comments above in Section 12.1 3	Site shown to be at risk from Deep SW flooding (30yr) event. See comments above in Section 12.1 2a		No significant issues identified by TWU. 3	No significant issues identified. 3
Stansted Airport Stansted airport policy 1	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3		No significant issues identified by TWU. 3	No significant issues identified. 3
Stansted Airport Stansted	See comments above in	Site shown to be at risk from Deep SW flooding (30yr)		No noticeable issues identified by TWU.	No significant issues identified.

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Wider Environment
airport policy 1	Section 12.1. 3	event. 2a		3	3
Stansted Airport Stansted airport policy 1	See comments above in Section 12.1 3	Site shown to be at risk from Deep SW flooding (30yr) event. 2a		No significant issues identified by TWU. 3	No significant issues identified. 3
Start Hill Gt Hallingbury Gt Hallingbury policy 1	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3	No issues flagged for Bishops Stortford WwTW capacity. It should be possible to accommodate additional trade flow.	Not served by public sewer. However, no issues currently identified 3	River Stort is a UKBAP priority habitat with a number of important habitats and species identified downstream, and is currently improving its performance to comply with WFD due to phosphate and dissolved oxygen levels.
Start Hill Employment area	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3		Not served by public sewer. However, no issues currently identified 3	
Takeley Protected employment site 1	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3		No significant issues identified TWU. 3	
Takeley Protected employment site 2	See comments above in Section 12.1. 3	See comments above in Section 12.3. 3		No significant issues identified by TWU. 3	
Gt Dunmow Policy area 3 Waste transfer site (AWS)	See comments above in Section 12.1. 3	Great Dunmow employment site shown to be at risk from Deep SW flooding (30yr) event. 2a	Issues remain around the increase in development in this area from the Outline WCS even though the increase in trade flows is likely to be small due to size of site.	No issues identified by AWS. 3	No significant issues identified. 3
Alsa Street Policy SA E6 (TWU)	See comments above in Section 12.1. 3	Alsa Street employment site shown to be at risk from Deep SW flooding (30yr) event.	No significant issues identified. 3	No significant issues identified. 3	No significant issues identified. 3

UDC Policy Area Reference	Potable Supply	Flood Risk	WwTW Capacity	Sewerage Network Capacity	Wider Environment
		2a			
Clavering Employment land (TWU)	See comments above in Section 12.1. 3	See comments above in Section 12.3 3	Additional trade flow unlikely to result in any issues with WwTW capacity. 3	No significant issues identified by TWU. 3	No significant issues identified. 3

Table 12-6 Summary of constraints to employment sites

13 Detailed Strategy Conclusions and Recommendations

13.1 Major infrastructure requirements

UDC's preferred development sites determined by the SHLAA and subsequent site allocation process present challenges in terms of either their impact on the sewerage network, WwTW capacity, or the wider environment to differing extents. Analysis within the Detailed WCS has indicated that none of the proposed sites have been flagged as possible showstoppers.

Potential major constraints or significant infrastructure improvement related to sewerage capacity or wastewater treatment have been identified to accommodate the proposed development at, Great Dunmow, Newport, Saffron Walden, Great Chesterford and Thaxted, which need further consultation and investigation. AWS's current approach to the sites during consultations undertaken to date has been to agree in principle to these sites with the caveat that further investigation of the constraints at each site be carried out in terms of a timely Developer Impact Assessment at the request of the prospective developers.

Increased DWF discharge consents are likely to be necessary at Great Dunmow WwTWs (i.e. depending on where the extra flows are treated and also continuity of current operation at Felsted WwTW) and also at Newport and Great Easton WwTWs. The viability of achieving the tighter physio-chemical limits associated with these consent increases will depend upon financial and risk assessments undertaken by AWS in consultation with the EA, taking account of the downstream sensitive water environment.

Further consideration should be given to those sites that currently fall within the 20 year flood outlines. The 1 in 20 year flood extent is considered to be functional floodplain in the National Planning Policy Framework (Table 1 – Technical Guidance to the National Planning Policy Framework), where possible the Masterplans of the Policy Units that fall within the 20 year flood outline have been checked to ensure that the proposed building footprints do not fall in to the flood zone. Only water-compatible uses and essential infrastructure should be permitted in this zone. Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems. A sequential approach should be possible for these sites due to the small amounts of land in falling within the 20 year flood extent.

It is also strongly recommended that the UDC encourage the prospective developers to approach water companies to discuss Developer Impact Assessments as soon as possible and site development policies include the need for undertaking such assessments prior to planning approvals. This is essential for those development sites that are identified in this report as potential major constraints/ infrastructure upgrades and/or indicates a build start date of 2013 or 2014.

13.2 Implementation - constraints and solutions

It is anticipated that major extensions to the strategic potable water supply or sewerage network will take around five years to plan and complete. Any localised network upgrades can be commenced by water companies once planning permission for the development has been approved, and the developer requisition received. Therefore, development phasing and planned development trajectories to meet Local Plan targets should clearly allow for the lead in time involved in investigating, planning and constructing the required key infrastructure needs.

Indicative guidance from the water companies suggests the following planning and construction timeframes for wastewater infrastructure:

- Network improvements – up to three years;
- Significant new network, and upgraded processes capability at WwTW – up to five years; and
- Major upgrade of WwTW, or construction of new WwTW – up to ten years.

The EA have commented that they would want assurances that adequate funding for any wastewater treatment solutions and network improvements is in place prior to large scale development commencing, this is relevant for all WwTW and is particularly relevant at Stansted Mountfitchet, Takeley and Elsenham. It is therefore vital that developers contact TWU as soon as practicable to provide TWU with the development information they require to allocate the required funding in PR14. This is a very important point and will reduce the risk of the EA objecting to any planning applications coming forward.

The development option currently requires that additional development (in addition to that already allocated) begins at **Great Dunmow** from 2017 to meet Local Plan targets, however there is some flexibility, as the phasing information provided to date is not definitive. As described in previous sections, Great Dunmow WwTW is at capacity and will require upgrades, currently planned for 2014/15.

Whilst TWU predict that the existing sewerage network and WwTW at **Stansted Mountfitchet** can accommodate the flows from the sites within the town itself, any development at Elsenham will require the provision of additional WwTW capacity and significant network upgrades.

Regarding **Takeley**, the additional development to meet Local Plan targets begins here from 2014/15. The necessary upgrade to the rising main and pumps that serve the Canfield End/ Priors Green development is likely to take up to five years; therefore the planning of this infrastructure solution will need to begin as soon as possible.

The development option does not require additional development sites to commence in **Saffron Walden** prior to 2020. It is likely that any required increases in treatment capacity at the WwTW, and network improvements such as new sewers bypassing the existing network, will be provided in this timeframe subject to developer requisitions. The existing discharge consent is unlikely to be exceeded, and AWS have indicated that process capacity is not an issue if

development can be accommodated within the current consent. Therefore, development is unlikely to be significantly constrained.

The **Great Chesterford** development is unlikely to require upgrades to the WwTW, but will require local sewerage upgrades or new sewers direct to the existing WwTW. The economic viability of such upgrades, compared to the scale of development proposed for these options, will constrain such development at these locations to some extent. Further technical and financial assessment will be required by developers and AWS.

The previous sections also highlighted that there are significant sewerage needs associated with other development locations such as **Newport,** causing some doubt over their viability compared to the scale of development proposed. The development trajectory for Newport proposes that construction commences in 2015. AWS have indicated that, due to seasonal variations in existing DWF received at Newport WwTW, there is no capacity within the existing (or proposed higher) DWF consent, or the process capacity of the WwTW, to accommodate the flows from any new dwellings. It is therefore concluded that discharge consent and WwTW capacity could constrain the potential development within the Newport catchment.

At **Great Easton** it is understood that the EA may require the consents to be tightened at the works to improve the water quality in line with the requirements of the WFD. At Great Easton if a new consent is required then this would beyond what generally can reliably economically achievable using conventional technology in terms of BOD.

A high level water quality assessment is contained within Section 10. All of the above statements assume that adequate water quality standards can be achieved in the WwTW discharges, and any new discharge consents, which will be the case for some of the settlement options, can be agreed with the EA and the water companies. However, there is a risk that the EA will require tighter consent standards to be applied in the future in order to comply with the WFD, and protect the interest of downstream environmental sites.

The results highlight the importance of AWS working to improve the concentrations of SRP in the effluent discharges of upstream WwTW in all of the catchments. The SRP concentration required to bring the downstream quality ‘up to good status’ is beyond the levels currently generally considered to be reliably economically achievable using conventional technology at Saffron Walden, Great Dunmow, Takeley and Stansted Mountfitchet.

Given the small difference between the current DWF consent, and the predicted DWF by 2028; it can be concluded that the increase from the proposed growth in the study area will not make achieving the requirements of the WFD significantly more difficult than the current consented position.

13.3 Guidance for UDC and developers

Developers will continue to be required to comply with emerging UDC and ECC policies, in addition to statutory national policies such as NPPF.

UDC should look to include the availability of water and wastewater infrastructure as a planning condition, so that planning permission is not granted until developers have consulted with VWC and TWU/ AWS regarding network capacity and possible strategic solutions. Contributions towards the costs of such infrastructure can be collected through the forthcoming Community Infrastructure Levy, although this will depend on local implementation guidelines.

The following checklist (**Error! Reference source not found.**) should be used to guide policy development by UDC, and is also provided as outline guidance for developers, to enable developments to be planned whilst taking account of best practice, and conforming to the strategy and aspirations discussed throughout this WCS.

Meeting the “actively encouraged” requirements will minimise the negative impacts of any development on the water infrastructure within the study area, and the wider water environment.