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**Ashford Borough Council**

# **WATER CYCLE STUDY**

**SEPTEMBER 2016**



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# 1 Introduction

1.1 The Council's Core Strategy (2008) which sets out the vision for development within the Ashford Borough between 2006 and 2021 is now being formally reviewed. It will be replaced by the Local Plan, which will set out the quantum and distribution of housing and jobs to 2030. This water cycle topic paper provides a high-level review of existing water cycle processes and supporting infrastructure to ensure the level of proposed development envisaged within the emerging Local Plan does not have a detrimental effect on the water environment within the Ashford Borough.

## *The Challenge*

1.2 The relationship between the water environment and human activities cannot be overstated. Droughts and floods are not just purely natural hazards: human activities play a role. We must recognise that changes to the way people use water and the landscape contribute to extreme water situations. Water shortages and floods can be caused or made worse by human activity. It is essential that planning policy recognises that water and society are closely intertwined and that people are not passive victims of drought or flooding. Managing extreme weather effectively means we must acknowledge that human influence is as integral to the process as natural climate variability.

1.3 The traditional approach to studying the water environment – focusing on natural phenomena – lead to poor prediction and management when the world is strongly altered and managed by people. It is particularly important to take into account human activity, such as groundwater abstraction and change in land-use, when considering the water environment.

1.4 Direct effects of people on the water cycle include water use, irrigation, wastewater treatment. Indirect effects are changes to the land surface that can affect the hydrological processes. These can include evaporation from land to air (evapo-transpiration) and the rate at which water penetrates the soil (infiltration), as well as surface runoff and storage of water.

1.5 Whilst human activity can contribute to worsening floods and droughts, society can also play its part in tackling flooding and water shortages.

1.6 Water is a finite resource and it is essential for human health and wellbeing as well as the natural environment and needs to be managed. The UK has experienced more extreme weather events recently and this brings unique challenges in terms of managing excess water within the hydrological system to prevent flooding and pollution or conversely ensuring enough water supplies and flow during spells of drought. Development brings increased urbanisation which if not mitigated could have significant adverse impacts on the water environment.

1.7 The water cycle considers all the processes and systems that collect, store, transport water in the environment. The cycle includes rainfall falling to the ground, where

it either transfers to streams, rivers, wetlands, floodplains or estuaries and eventually the sea, or is absorbed into the soil, ending in groundwater storage aquifers<sup>1</sup>. We intervene with these natural processes by taking water from rivers and reservoirs, treating it to use for water supplies, and then collect the wastewater, treating it again before discharging back into the environment.

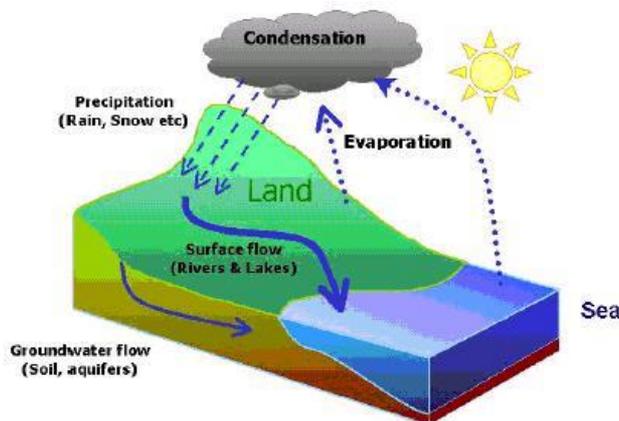


Figure 1: The Hydrological Cycle

## 2 Natural Hydrological Cycle

1.8 It is useful to look at the different elements that make up the water cycle when considering potential pressures on Ashford's water environment from increased urbanisation:

Water quality - Is a key indicator about the health of the water environment. Good quality water can support and enhance an abundance of biodiversity and has a higher value for recreation and amenity use.

Water supply – demand management measures are essential for the long-term resilience of water supplies in the South East which is identified as an area of serious water stress<sup>3</sup>.

Wastewater - Rivers and streams around Ashford have an environmental carrying capacity and wastewater is therefore treated in accordance with environmental permits set by the Environment Agency before it can be safely returned to the water system without having a detrimental impact on water quality objectives.

Abstraction – There is a limit to the amount of water that can be abstracted from groundwater or surface water sources before harm to the environment.

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<sup>1</sup> Environment Agency – Water Cycle Study Guidance

<sup>2</sup> Ashford Integrated Water Strategy 2006-2031 (2005) Produced by EA on behalf of Ashford's Future

<sup>3</sup> Environment Agency – Areas of water stress: final classification (2007)

## *The purpose of this paper*

Provide an update to the Ashford Integrated Water Strategy 2006-2031 (2005) which identified water supply, flood risk, wastewater and environmental water quality as all having critical constraints to future growth;

Reconcile future levels of development in the Ashford Borough against latest management plans and in liaison with the water industry to 2030;

To Identify current issues and constraints within the water cycle and provide robust evidence to support local planning policy intervention where needed.

## **2 Policy Background**

2.1 The National Planning Policy Framework (NPPF)<sup>4</sup> expects LPAs to *'take account of climate change over the longer term, including factors such as flood risk, coastal change, water supply and changes to biodiversity and landscape. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change'*.

2.2 Paragraph 109 states *'the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution'*.

2.3 It identifies Local Plans as a key to delivering sustainable development and sees a need for Councils to *'work with other authorities and providers to assess the quality and capacity of infrastructure for transport, water supply, wastewater and its treatment... flood risk and coastal change management'* and for Councils to *'adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations'*.

2.4 Policies relating to water within the current adopted Development Plan for the Ashford Borough includes policy CS10 Sustainable Design and Construction, policy CS19 Development and Flood Risk, policy CS20 Sustainable Drainage and policy CS21 Water Supply and Treatment.

## **3 About Ashford and its Water Environment**

3.1 The Borough of Ashford is the largest of 12 districts in Kent. Ashford is the principal settlement surrounded by rural villages and the small town of Tenterden. As well as significant historic heritage, the borough contains attractive countryside with extensive

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<sup>4</sup> National Planning Policy Framework (DCLG) March 2012

areas designated as Areas of Outstanding Natural Beauty (AONB). Both the Kent Downs AONB and High Weald AONB lie within the Borough.

3.2 The mid-year population estimate 2014 for the borough is 123,300, with over half the population, 78,010 (63.3%) living in the Ashford urban area, 7,100 (6%) living in Tenterden, and 45,270 (36.7%) living in the villages, hamlets and in the countryside<sup>5</sup>.

3.3 Ashford Borough comprises land that drains into the Kentish Stour, the River Medway (including the Buelts) and River Rother and Romney Marsh catchments. The catchments are predominantly rural and characterised by productive agricultural land.

3.4 Ashford town lies near the headwaters of the Great Stour. The two largest tributaries that meet in Ashford are the Upper Great Stour, from Lenham and the East Stour, from near to Folkestone. The physical geology of the catchment determines the river flow. The catchment is dominated by chalk of the North Downs, together with outcrops of Lower Greensand which have water bearing properties. Other areas of Gault Clay and Weald Clay are less permeable and more responsive leading to low flows during summer months and rapid runoff and flooding in winter.

3.5 Significant channelisation has taken place within the urban area, notably Aylesford Stream, and below the Channel Tunnel Rail Link where the Great and East Stour flows. Flood attenuation reservoirs are in place at Hothfield and Aldington to protect the town from extreme flood events.

## **4 Levels of Growth and the AIWMS 2006-2031**

4.1 In 2003, Ashford was identified as a Growth Area under John Prescott's Sustainable Communities Plan. Following scenario and capacity studies completed in 2002 it was established that Ashford had the capacity to accommodate an addition of 31,000 homes and 28,000 jobs between 2001 and 2031. These figures were based on accelerated population growth and were well above existing natural growth levels but provided the context for the Core Strategy. The growth area status only applied to Ashford town and not the surrounding countryside or Tenterden.

4.2 When Ashford was identified as a Growth Area concern was raised over the ability of the water infrastructure and environment to accommodate this level of growth. The then Deputy Prime Minister funded the commissioning of the Ashford Integrated Water Management Study (AIWMS). The study assessed the constraints to growth that might arise in relation to meeting the demand for potable water; the provision of wastewater services and the impact of treated effluent on the receiving waters; and the management

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<sup>5</sup> ONS Mid Year Population Estimates 2014

of flood risk. The study identified significant concerns with the capacity of the water infrastructure to support the level of growth proposed.

#### 4.3 Key findings from the study are set out below:

Chalk and Lower Greensand aquifers being over abstracted and over licensed leading to reduced base flows and problems in associated water features. In dry years, there may not be enough water to supply public demand and the ecological needs of the river Stour. This issue would be exacerbated by an increasing population using more water year on year, making water efficiency measures increasingly important;

Downstream of Ashford, the Great Stour becomes an important lowland chalk river which is a scarce habitat. In recent years, the water quality of the Great Stour has failed the targets set by the Environment Agency. The health of the River Stour will be one of the main indicators of the success or failure of Ashford's 'sustainable development'.

Post-development runoff rates would need to be over-attenuated, to reduce rates to below pre-development rates. The study suggested physical measures to manage flood risk resulting from development in Ashford; identifying the large-scale incorporation of SuDS throughout new development areas as the most efficient flood risk management option;

Projected peak demands for water would not meet projected growth. Insufficient conveyance capacity within the existing Ashford sewer system to accommodate flows from new development. Insufficient treatment capacity at Bybrook WTW.

4.4 Detailed recommendations from the AIWMS formed the bases of the Ashford Water Cycle Strategy (2007) which set out what needed to be achieved to improve the water environment and reasons. This was accompanied by the Ashford Water Action Plan (AWAP) which covered a five-year period from (2006-2011) identifying early priorities. Both the AIWMS and action plan pre-date the requirements of the Water Framework Directive (WFD). The second AWAP was subsumed into the WFD Waterbody Improvement Plans (WIPs).

**4.5 The AIWMS covers the period between 2006 and 2031 and is still relevant and will form part of the Local Plan 2030 evidence base alongside this Water Cycle Topic Paper which should be read alongside other parts of the evidence base, notably the Ashford Strategic Flood Risk Assessment (2014).**

4.6 The Local Plan will determine the future development of the Borough over the period 2015 to 2030. Inline with the requirements of the NPPF the Council is currently considering its objectively assessed development needs across the Borough within the context of East Kent. This is being developed alongside the sustainability appraisal of

potential sites to determine those most suitable in terms of economic, social and environmental benefits. The anticipated pattern of growth is likely to be similar to that of the Core Strategy, with most of the development being focused within Ashford Town Centre and the urban fringes with a lesser amount of development being allocated within the rural areas. It is clear from emerging evidence into the borough's objectively assessed needs that the overall quantum of development will be revised down to much more modest levels to those when Ashford Town had growth area status.

## 5 Partnership working

5.1 The AIWMS advocates an integrated approach to water management. The **Ashford Water Group** (AWG) meets quarterly and brings together key partners for the benefit of the natural water environment. The group was originally set up to oversee the delivery of actions within the AIWMS Action Plan but now the emphasis is on WFD requirements and key elements of the water cycle. Key representatives include Ashford Borough Council, Environment Agency, Kent County Council, South East Water and Southern Water Services. The mission statement for the group is: *'To ensure that the future development and expansion of Ashford leads to the protection and enhancement of the water environment both locally and throughout the Stour catchment, for the benefit of people, wildlife, and our cultural heritage and landscape'*<sup>6</sup>. The group is quite unique in Kent and has been established for some time now with full commitment from its members.

5.2 The **East Kent Catchment Improvement Partnership** (CIP) was formed in 2011 and also meets quarterly. The group operates at a management catchment scale and takes an integrated catchment based approach in co-ordinating funding and in exercising their functions. The group works together to help rivers achieve good ecological status under the Water Framework Directive. The East Kent CIP has developed a catchment plan to address measures identified within the South East River Basin Management Plan.

## 6 Abstraction

6.1 The overall average rainfall in Kent is approximately 700mm per year, with the highest totals exceeding 900mm much of which falls on the North Downs<sup>7</sup>. The average rainfall in Ashford is approximately 750mm per year<sup>8</sup>. Large quantities of this rainfall are either lost to evaporation, plant growth or flows into rivers or unproductive aquifers.

6.2 Climate change predications anticipate wetter warmer winters and drier hotter summers with greater variability of weather in future, which is likely to increase evapotranspiration further, resulting in a greater reliance on winter rainfall to sustain water supplies. Whilst rainfall is important, it is the actual amount that recharges the aquifers that is critical to the availability of groundwater sources.

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<sup>6</sup> Ashford Water Group, Terms of Reference (2015)

<sup>7</sup> Environment Agency – The State of Water in Kent (June 2012).

<sup>8</sup> Sourced from the Environment Agency

6.3 Water Companies relevant to the Ashford Borough are Southern Water, South East Water and, to a certain extent, Affinity Water. Southern Water provides wastewater services to the whole Borough whilst South East Water provides the total potable water. The majority of South East Water's supplies (73%) come from groundwater, predominantly 250 boreholes and wells, with the remainder from six river intakes and surface water reservoirs<sup>9</sup>. Water Resource Zone 8 supplies the Ashford Borough and is completely supplied by 16 groundwater sources that need regular replenishment to be sustained.

6.4 As well as being an important source of drinking water, groundwater provides rivers with their base-flow. If this base-flow is not maintained it can be detrimental to river water quality and harm the natural ecology. Availability of water within rivers is important for maintaining sufficient dilution of wastewater discharges during spells of dry weather. Adequate base flow is also required to support many species and habitats and to prevent the build up of potential contaminants.

6.5 Geology is the main influencing factor for river flow regimes. The Stour catchment is dominated by the chalk of the North Downs<sup>10</sup>. Ashford town sits in the Gault Valley between ridges of permeable Lower Greensand which receives large amounts of flows from chalk springs at the foot of the North Downs. The headwaters to the Great Stour are located on sand and clay and tend to have highly responsive flows which increase rapidly after high rain and fall quickly in drier spells giving Ashford a 'flashy' characteristic.<sup>11</sup> The Rother / Romney catchment includes the rivers in Hamstreet, Romney and Walland Marshes which are low lying and flat. The geology of this catchment is predominantly clay<sup>12</sup>. The River Beult, to the west of the Borough, drains into the Medway catchment.

6.6 The Environment Agency is responsible for abstraction management. It is their role to manage flows to prevent flow variability. The EA operates a permitting system for the amount of water taken from the environment which is regulated through a licencing regime. The Catchment Abstraction Management Strategy (CAMS) determines how much water is available for abstraction at a catchment level, taking account of the amount already licensed and how much the environment needs. The Stour CAM and Rother CAM are most relevant to the Ashford Borough.

6.7 The EA now publicise more concise Abstraction Licensing Strategies which set out how the EA is going to manage abstraction licensing in a particular area. The Stour Abstraction Licensing Strategy (2013) states that 65% of water abstracted from the Stour catchment each year is drawn from groundwater sources. 51% of water abstracted from the environment is for the public water supply with 25% of surface water being used for

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<sup>9</sup> South East Water – Water Resource Management Plan 2015-2040

<sup>10</sup> Ashford Strategic Flood Risk Assessment (2014) JBA

<sup>11</sup> Water and Wastewater, particularly in Ashford, KCC (2005).

<sup>12</sup> Ashford Strategic Flood Risk Assessment, JBA (2014).

agriculture<sup>13</sup>. Defra recently consulted on proposed changes to the water abstraction licensing exemptions in England (January to April 2016), which aims to introduce “New Authorisations” into the licensing system in 2016 to better manage water at a catchment level<sup>14</sup>.

6.8 River flow statistics are expressed as the percentage of time that river flows are exceeded. Availability is calculated at four different flows ranging from Q95 (very low flow), Q70, Q50 (average flow) and Q30 (highest flow).

Red – ‘no water available for licensing’

Yellow – ‘restricted water availability’

Green – ‘water available’

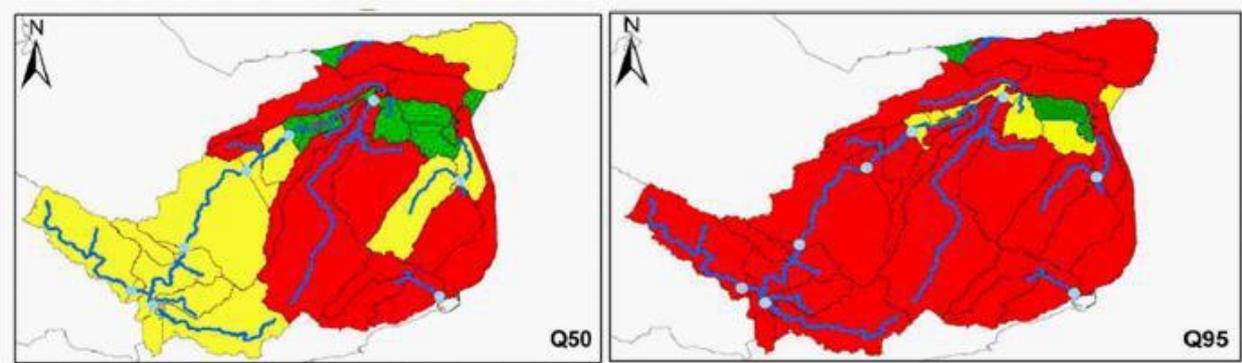


Figure 2: Stour - CAMS resource availability status<sup>15</sup>

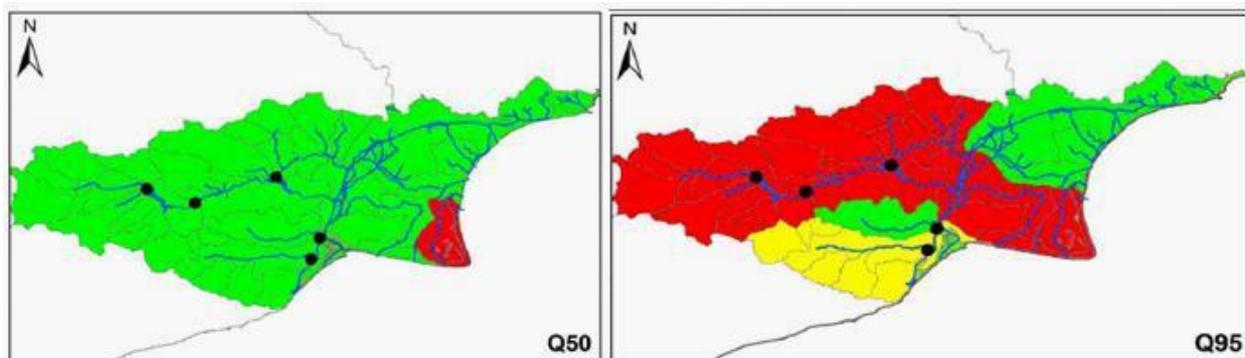


Figure 3: Rother - CAMS resource availability status<sup>16</sup>

6.9 It can be seen that there is little or no further water resources available from the aquifers serving Ashford (Chalk and Lower Greensand aquifers) even at average flows. This is linked to issues associated with low flows in the River Stour. It can be seen that the problem is less acute in the Rother catchment.

<sup>13</sup>Stour Abstraction Licensing Strategy (2013) Environment Agency

<sup>14</sup><https://consult.defra.gov.uk/water/water-abstraction-licensing-exemptions>

<sup>15</sup>Rother Abstraction Licensing Strategy (2013) Environment Agency

<sup>16</sup>Rother Abstraction Licensing Strategy (2013) Environment Agency

6.10 The Stour CAMS uses three Assessment Points (APs) located within the Ashford Borough for monitoring purposes. Chart Leacon assessment point (AP1), represents the Upper River Stour as it gains spring flows from the Chalk and Lower Greensand aquifers near to Ashford. Base flow for the river is under pressure from existing groundwater abstractions, and this area is assessed as ‘no water available for licensing’ with the aim of protecting the ecological status of the river. The South Willesborough assessment point (AP2), representing the East Stour has a flashy flow regime due to its less permeable Weald Clay and reports that regular flows cannot be relied upon and as such consumptive abstraction applications are unlikely to be successful. The third assessment point (AP3), is located along the River Stour at Wye which reports that, despite total flow increases due to the Upper and East Stour Rivers combining, this area is carefully controlled to protect the ecological status of the river. Overall there is a ‘presumption against’ further consumptive abstraction from the Chalk and Lower Greensand aquifers within the Stour catchment.<sup>17</sup>

### Groundwater

6.11 Nearly all Ashford’s water supply comes from groundwater so it is important that it is protected from pollutants. The Environment Agency has defined Groundwater Source Protection Zones to help monitor the risk of contamination from activities that have the potential to cause pollution.

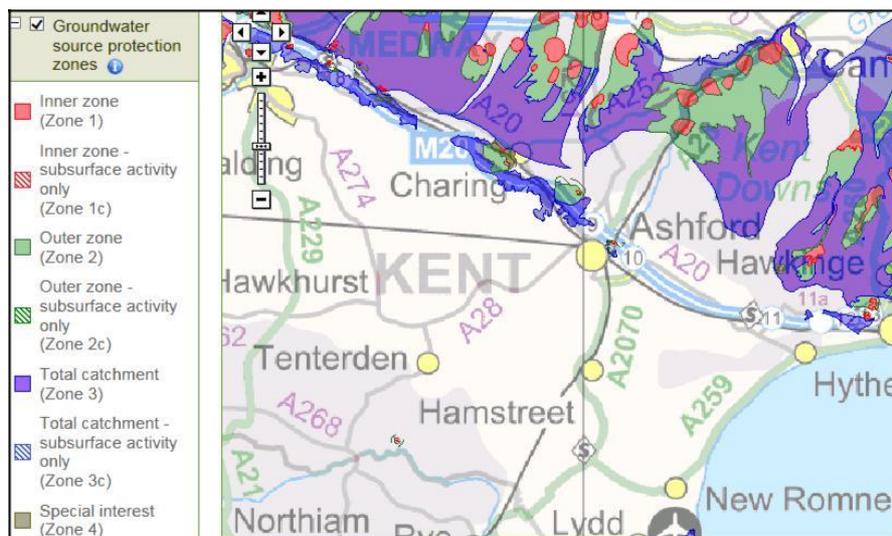


Figure 4: Map showing groundwater source protection zones in the Ashford area<sup>18</sup>

6.12 The map above shows three main zones (inner, outer and total catchment) these zones are used alongside Groundwater Protection Policy to establish pollution prevention measures. It can be seen that large areas of the Borough to the north of Ashford town fall within source protection zones. This shows where the majority of groundwater is

<sup>17</sup> Stour Abstraction Licensing Strategy (2013) Environment Agency

<sup>18</sup> Environment Agency (What's in my backyard mapping), Ground Source Protection Zone, Jan 2016.

abstracted defined by higher yields attained from the Kent Chalk located there. These areas have the greatest pressure from groundwater abstraction and have to be carefully monitored and managed by the Environment Agency.

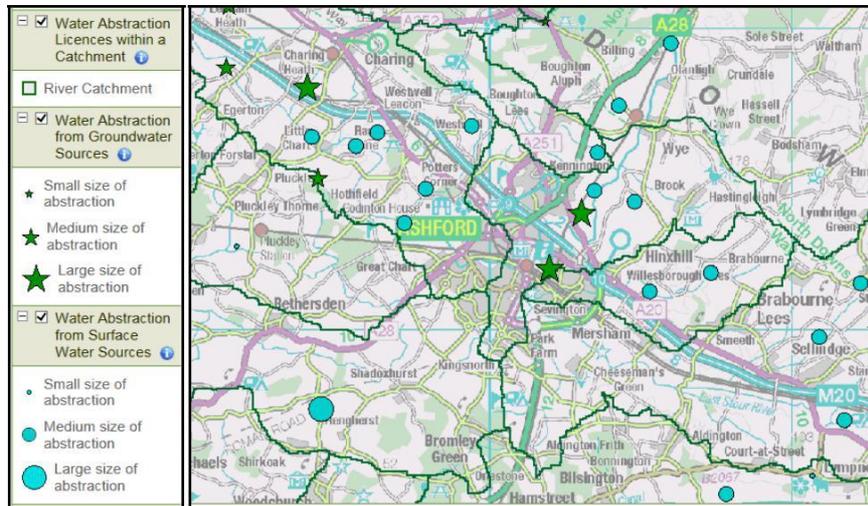


Figure 5: Map showing locations of water abstraction licences in the Ashford area<sup>19</sup>

## 7 Water Quality

7.1 It is easy to take water quality for granted but it is important for both human health and the natural environment. Many rivers within Kent are currently failing to meet standards set by the Water Framework Directive. Not only is poor water quality detrimental to the natural environment it is more expensive to treat to make it suitable for human consumption. River systems are vulnerable as contaminants can cause pollution to long lengths of river as they progress downstream. And groundwater is vulnerable as pollutants can affect large volumes over a long period of time and can be especially difficult to remedy.

7.2 The AIWMS (2005) identified water quality as one of the critical constraints to growth in the Ashford Borough. It was considered that without appropriate mitigation measures, significant urbanisation would impact on the groundwater having greater risk of pollution as well as reduced recharge from surface water.

7.3 The Water Framework Directive (WFD) is the legal framework for managing the water environment in Europe. The WFD (article 1) aims to:

- prevent further deterioration and protect and enhance the status of aquatic ecosystems and associated wetlands;
- promote the sustainable consumption of water;

<sup>19</sup>Environment Agency (What's in my backyard mapping), Ground Source Protection Zone, Jan 2016.

- reduce pollution of waters from priority substances;
- prevent the deterioration in status and to progressively reduce pollution of groundwater;
- contribute to mitigating the effects of floods and droughts;

7.4 There are a number of WFD objectives applicable to Ashford in respect of water quality, the general protection of the aquatic ecology, specific protection of unique and valuable habitats and the protection of drinking water resources.

7.5 A key target of the WFD is to aim for a 'good' status for all water bodies by 2015, where this is not possible the aim is to achieve 'good' status by 2021 or 2027. The aim is also to achieve 'good' ecological potential and 'good' surface water chemical status for heavily modified water bodies and artificial water bodies.

7.6 The current status of water bodies for both surface water and groundwater bodies within the Ashford Borough are set out in Appendix 1.

7.7 It is important to note that the WFD uses the 'lowest common denominator' rule when determining a status. Therefore, water quality may show improvement in all indicators, but if even one of those elements is classed as 'poor' for example, the whole waterbody returns an overall 'poor' classification.

7.8 River Basin Management Plans (RBMPs) are prepared by the Environment Agency and identify the pressures that the river basin districts face and the current state of the water environment. RBMPs set out how the WFD objectives for the river basin (ecological status, quantitative status, chemical status and protected area objectives) will be reached within the timescales required. RBMPs identify river flow levels, pollution, physical modification to water bodies and the effects of invasive species as all having impacts on water quality.

7.9 The Environment Agency use cycles as a timeframe to monitor water quality status, with Cycle 1 classification being the basis for the first River Basin Management Plans, and Cycle 2 linking to the updated RBMPs which gained ministerial approval in early 2016. Monitoring has greatly improved since cycle 1 (2009), with cycle 2 (2015) classifications considered to be a lot more stable.

7.10 Ashford Borough is covered (in part) by the Stour, Rother and Medway Catchments. A brief outline of issues identified for water bodies at management and operational level within the Ashford Borough is set out below.

## Stour Catchment



**Figure 6: Map showing Stour Management Catchment and the Operational Catchments within it<sup>20</sup>**

7.11 Many of the elements that make up the water quality status for the Stour have improved since cycle 1 (2009) however there are still one or two elements that have got worse to poor status under the Water Framework Directive. Whilst there has been much investment in recent projects to improve water quality within this catchment, it may take several years (between 5 to 10 years) for positive changes to be reported.

7.12 There are four groundwater bodies within the Stour Catchment all are drinking water protected areas. Kent Greensand Eastern and East Kent Chalk are located in part within the Ashford Borough. The Environment Agency reports that the chalk and greensand aquifers in Kent are suffering from diffuse pollution from nitrate. Although pollution from agricultural activity is significant, the EA are working with stakeholders to secure remediation of land contamination including potential impacts from both public and private sewage systems and pesticides used in both urban and rural areas. The Environment Agency has developed 11 safeguard zones to focus efforts where groundwater is abstracted for public water supply in a bid to improve water quality.

7.13 The Upper Stour operational catchment contains the following water bodies Upper Great Stour, Great Stour between Ashford and Wye, East Stour and Aylesford Steam all within the Ashford Borough. The Lower Stour operational catchment is also relevant to Ashford and contains the Great Stour waterbody between Wye and the A2. Wastewater has been a contributing factor to rivers in this area not achieving 'good' WFD ecological status, although measures have been taken to address this issue. Physical modifications and urban pollution are also contributors but to a lesser extent. The Aylesford Stream was previously the only waterbody within East Kent achieving 'good' WFD but this has recently deteriorated. Investigations are underway by the Environment Agency and the issue was

<sup>20</sup>The Stour Management Catchment Summary Information RBMP, Environment Agency (2014)

believed to stem from misconnections rather than wastewater treatment infrastructure as there are no discharges from WTWs into the stream. Runoff from agricultural land is now suspected to be the primary cause of water pollution in the Stour catchment, and the Environment Agency is working on a programme of landowner engagement and education.

7.14 The geology around Ashford can be problematic in terms of water management. The River Stour can be significantly affected by treated effluent discharges at times of low flow when the largest proportion of water can be treated effluent. The same geology means that large areas of Ashford are also prone to flooding. In this situation combined sewer overflows can discharge untreated wastewater into the rivers. This requires careful wastewater management to moderate foul water discharges to the watercourses.

7.15 The East Kent Catchment Improvement Partnership identifies the following priority issues in the Stour catchment (*South East RBMP, Updated 2015*):

low fish populations due to structures obstructing fish migration, and siltation of gravel spawning grounds due to poor hydromorphological conditions, high phosphate levels resulting mainly from point-source discharges from wastewater treatment works, diffuse run-off from urban areas and agriculture, and low flows due to abstraction for public supply, commerce and agriculture.

7.16 The East Kent Catchment Improvement Partnership also identifies measures within their catchment plan to improve the water environment that will be implemented by 2021, as follows:

in-channel improvements on the Great Stour at Godmersham, Olanitigh, Chartham and through Canterbury city centre, River Dour fish passage and habitat improvement schemes, including fish passage improvements at Morrisons Weir and Minnis Lane, in-channel habitat improvement in Dover town centre, and re-naturalising the channel at Kearsney. Installing Buxford fish passage to enable fish to move freely between the urban area of Ashford and the upstream spawning grounds on the Great Stour.

## Beult Operational Catchment

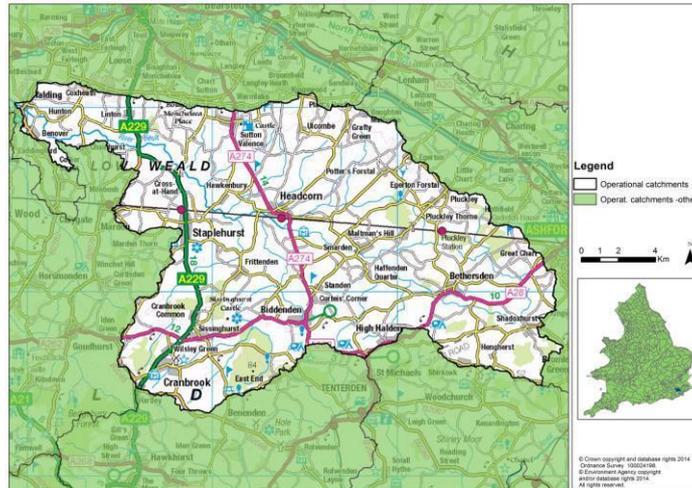


Figure 7: Map showing the Beult Operational Catchment<sup>21</sup>

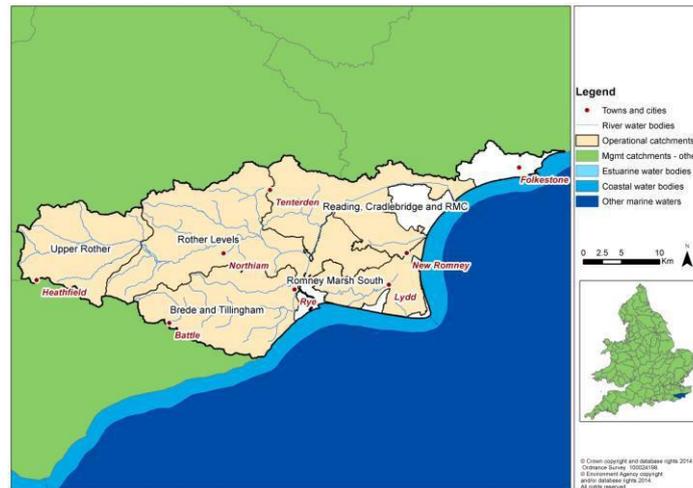
7.17 Part of the Ashford Borough lies within the Beult Operational Catchment. The overall status (health) of the water environment was assessed in 2009 as being moderate, and this has seen some deterioration within the 2014 assessment. Treated wastewater is a contributor to point source pollution and the Beult's failure to meet WFD standards. Agriculture within this rural catchment plays a significant role in shaping the landscape and all the water bodies within this operational catchment are heavily modified. Diffuse pollution from fields and roads is another significant contributor to pollution<sup>22</sup>. Low water levels are an issue in dry periods which is made worse by the demands from abstraction used for irrigation by the horticultural industry. It is considered that cleaner water can cope better with low flow levels, for example oxygen levels can fall in dry hot weather<sup>23</sup>.

<sup>21</sup>The Medway Management Catchment Summary Information RBMP, Environment Agency (2014)

<sup>22</sup>The Medway Management Catchment Summary Information RBMP, Environment Agency (2014)

<sup>23</sup>The state of water in Kent, (Environment Agency) 2012.

## Rother Catchment



**Figure 8: Map showing Rother Management Catchment and the Operational Catchments within<sup>24</sup>**

7.18 There are three groundwater bodies within the Rother Catchment all are Drinking Water Protection Areas. The groundwater bodies are Kent Weald Eastern Rother, the Kent Romney Marsh and the Kent Greensand Eastern all are classified as having poor status.<sup>25</sup> The groundwater from the Kent Greensand Eastern feeds into the Great Stour and East Stour before flowing towards the sea. Half the land area within this catchment has been designated a nitrate vulnerability zone based on the impact this chemical is having in terms of water quality. As well as poor chemical status, this groundwater body has a poor quantitative status. Abstraction is believed to play a part in the failure of water quality.

7.19 The Reading, Cradlebridge and Royal Military Canal Operational Catchment include the Crablebridge Sewer and Reading Sewer both heavily modified. These areas are very rural and much of the area is used for agricultural purposes. The Rother Levels Operational Catchment includes the Newmill Channel downstream of A28 which is heavily modified and the Upper Newmill Channel. Both these operational catchments were assessed as 'moderate' condition in 2009 and the status of the water environment has since dropped (as of 2014). Whilst this deterioration mainly relates to wastewater releases, other contributors include artificial changes to the levels and flow, physical modifications such as weirs and flood defences, as well as pollution from agriculture and land management activities<sup>26</sup>.

7.20 The Environment Agency has a programme of measures to address these issues by 2027, as required by the Water Framework Directive. The measures can only be delivered by working with stakeholders such as farmers, developers and local authorities.

<sup>24</sup>The Rother Management Catchment Summary Information RBMP, Environment Agency (2014)

<sup>25</sup>The Rother Management Catchment Summary Information RBMP, Environment Agency (2014)

<sup>26</sup>The Rother Management Catchment Summary Information RBMP, Environment Agency (2014)

In recent years, water quality along stretches of the Great Stour and smaller tributaries around Ashford has deteriorated and fails to meet standards set by the WFD. Whilst wastewater has a significant impact on water quality, other factors have a cumulative impact. These include road runoff, rural discharge from farming, low rainfall combined with widespread water abstraction, and subsequent changes to the regular river flows and patterns.

7.21 There is enough evidence presented within the River Basin Management Plans to require all future development to give consideration to the impact of proposals on water quality and quantity to ensure mitigation measures are in place where there are likely to be any adverse impacts. Without such measures there will be a significant risk to water quality.

## 8 Ashford's Green Corridor

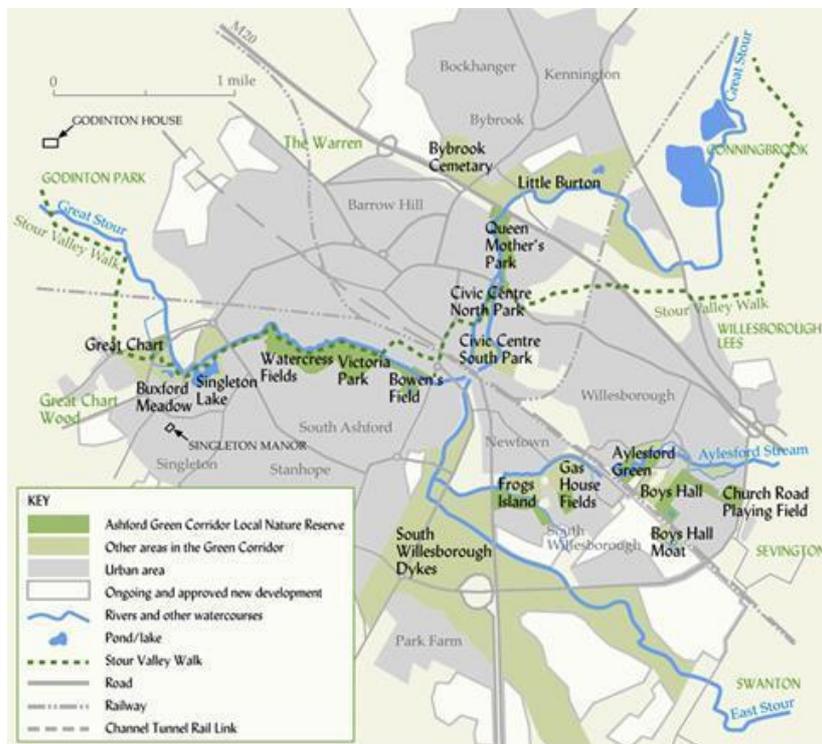


Figure 9: Map showing the extent of Ashford Green Corridor<sup>27</sup>

8.1 Ashford's Green Corridor is a network of designated formal and informal green space that primarily runs alongside the Great Stour and East Stour Rivers and the Aylesford Stream. These corridors remain largely undeveloped due to their location within the floodplain and susceptibility to flooding.

8.2 The Ashford Green Corridor provides a multitude of functions from providing active space for sports and recreation; acting as a valuable ecological habitat as well as wildlife

<sup>27</sup>Kentish Stour Countryside Partnership, Ashford Green Corridor Map

corridor linking dense urban environments to the countryside beyond, and provides an important network for cycle and footpaths. The green corridor is an essential element to the overall planning strategy of the town and has been protected by local planning policy from development in the past. The new Local Plan will seek to continue to protect the Ashford Green Corridor.

### *Internationally designated wildlife sites*

8.3 European wildlife sites (otherwise known as Natura 2000 sites) and Ramsar sites are collectively known as internationally designated wildlife sites and are offered the highest level of habitat protection under European legislation. Some of these are listed in the table below.

**Table 1: Natura 2000 sites located within 20km of the borough boundary**

<b>Special Areas of Conservation (SAC)</b>	<b>Special Protection Areas (SPA)</b>	<b>Ramsar Sites:</b>
Blean Complex SAC	Dungeness to Pett Level SPA	The Swale Wetland
Stodmarsh SAC	Stodmarsh SPA	Stodmarsh
Parkgate Down SAC	The Swale Wetland SPA	Dungeness, Romney Marsh and Rye Bay
Folkestone to Etchinghill Escarpment SAC	Dungeness, Romney Marsh and Rye Bay SPA	
Wye and Crundale Downs SAC		
Dungeness SAC		

8.4 The Wye and Crudale Downs (SAC) is the only Natura 2000 site within the Ashford Borough and has been designated for its quality of semi-natural dry grassland and scrubland and is not significantly affected by hydrological conditions.

8.5 The Stodmarsh site lies along the flood plain of the Great Stour just to the east of Canterbury. Stodmarsh is a wetland site resulting in part from subsidence under the valley of the Great Stour in Kent and aggregate extraction but lies within the natural floodplain of the river. There are a range of wetland habitats including open water, reedbeds, grazing marsh and alder carr. The site supports a number of uncommon wetland invertebrates and plants, and provides breeding and wintering habitats for important assemblages of wetland bird species, particularly waterfowl. Information obtained from the Joint Nature Conservation Committee (JNCC) states that parts of the site suffer from disturbance. Other significant problems relate to water supply, with the many areas of vulnerability considered to be from over abstraction of water supply in drought years from the River Stour. The Desmoulin's whorl snail is highly dependent upon the maintenance of existing hydrological conditions. Stodmarsh is hydrologically linked to the River Great Stour and

any deterioration in the water quality of the Great River Stour would have a detrimental impact on this SAC / SPA.

8.6 Other nearby Natura 2000 sites that are affected by hydrological issues includes Dungeness SAC which is approximately 18 miles from Ashford and is only one of four outstanding annual vegetation drift lines in the UK. It is vulnerable to high visitor numbers and water quality issues from over abstraction<sup>28</sup>.

8.7 Water abstraction is clearly a significant issue for the health of these international sites and the policy approaches taken forward into the emerging Local Plan will be important in mitigating any effects from future development.

## 9 Water Supply

9.1 Pressure on water resources is increasing. Notable contributors to this pressure include population growth with (historically) a subsequent increase in household demands for water, compounded by the effects of climate change. Water as a commodity is currently undervalued relative to other resources such as energy, and therefore its value as the basis of all life is not reflected in economic or conservation terms.

9.2 Water resources are managed by the Environment Agency in England through a licensing strategy for the abstraction of water. Abstraction is generally for the purposes of public water supplies, industry and agriculture. Once the water has been abstracted from the environment responsibility passes over to the water undertakers who have a statutory duty to supply drinking water.

9.3 South East Water supplies the Ashford Borough with potable water. The whole of their supply area is currently classified as “an area of serious water stress”. This identifies areas where the current household demand for water is a high proportion of the current effective rainfall which is available to meet that demand.<sup>29</sup>

### *South East Water - Water Resource Management Plan (2015-2040)*

9.4 Water companies are required by Section 37(1) of the Water Industry Act 1991 to prepare a Water Resource Management Plan (WRMP) every five years to show how they intend to manage and develop water resources over a 25 year period to ‘*maintain an efficient and economical system of water supply within its area*’.

9.5 In June 2014, DEFRA approved South East Water’s WRMP for 2015-2040. SEW undertook forecasting in 2011 and 2012 to determine customer demand, the distribution across the supply area, and how this position may change during the plan period. SEW consulted Ashford Borough Council on the projected population and housing numbers.

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<sup>28</sup> Joint Nature Conservation Committee ([www.jncc.gov.uk](http://www.jncc.gov.uk)), Natural England.

<sup>29</sup> Environment Agency, Water Stress Classification (July 2013).

ABC provided the last set of agreed projections derived through the Core Strategy (2008) covering the period to 2021. However, these figures were heavily caveated as future projections for the Ashford Borough in relation to the emerging Local Plan were still being explored.

9.6 South East Water has allocated capacity for over 39,000 homes to the Ashford Borough within its WRMP for the period 2015-2040, including headroom to allow for any unplanned growth and uncertainties. This shows that sufficient water supply provision will be in place should the latest housing figures (approximately 14,680 between 2011 and 2030) be taken forward into the Local Plan. SEW have confirmed that following sensitivity testing on housing numbers their WRMP programme will fully satisfy the growth in demands within their supply area proposed in the Ashford Local Plan.

9.7 Key issues for the South East Water supply area is a growing population, a high quality environment and associated constraints, landscape and international nature conservation designations, limited availability of new water and climate change. The WRMP estimates that the population within its supply area will increase by 19% during the plan period with demand for water increasing by approximately 11% largely driven by increases in demand from agriculture and horticulture. Latest KCC figures predict that the Ashford Borough will see a significant increase (43.6%) in population growth during the course of the Local Plan<sup>30</sup>.

9.8 SEW forecast data shows that if the company 'do nothing' there will be insufficient water to meet future demand across their supply area. The WRMP therefore uses a twin-track approach to managing this supply demand deficit through demand management and water resource development as without these measures in place new development may be restricted in future.

9.9 The WRMP states that, overall, 75% of South East Water's supplies come from groundwater, 17% from rivers and reservoirs and 8% from transfers from other water companies. SEW have tested the performance of their WRMP against drought conditions and potential loss of bulk supplies with the aim of moving towards a more sustainable plan. Most of Ashford's water supply comes from large underground chalk and greensand aquifers that need regular replenishment over sustained periods. The WRMP aims to provide a better mix of supply sources which will take pressure off the reliance on groundwater sources. The SEW supply area is only ever 18 months away from a potential drought as only a fixed amount of rainfall can ever be stored before being discharged into streams, rivers and finally the sea.

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<sup>30</sup>KCC Research and Evaluation, (43.6% between 2011 and 2031) July 2015

9.10 South East Water’s operating region is divided into eight planning areas called Water Resource Zones. These are self-contained units in terms of supply and demand for water. Water Resource Zones 8 covers the Ashford Borough where a deficit can be seen from 2030 for an average dry year (1 in 10), and from 2025 for ‘peak’ summer demand in a dry year.



**Figure 10: Map showing South East Water's operating regions with a focus on Ashford**

**Table 2: Baseline supply demand balance WRZs 6-8 (MI/d)**

	2015	2020	2025	2030	2035	2040
Average	17.1	11.8	0.1	-7.8	-17.2	-26.0
Peak	13.2	6.5	-8.9	-20.6	-33.7	-47.2

Source: South East Water WRMP (2015-2040), Adopted 2014

9.11 The WRMP acknowledges that most of the WRZ deficits can be satisfied through the use of existing transfers between zones, but this is not the case for all zones within their supply area and as such there is a need for new water resource infrastructure alongside the demand management measures.

9.12 The South East Water WRMP (2015-2040) sets out the following measures to increase supply and reduce demand:

**Increase supply:**

- Enhance two existing water treatment works in WRZ2 (East Sussex) and WRZ4 (Berkshire) during 2015 to 2020;
- Develop five new groundwater sources, one at Maytham Farm (within the Ashford Borough) in 2020;
- Develop two water re-use schemes at Aylesford in Kent (in 2023), and Peacehaven, East Sussex (in 2027);
- Develop six new pipelines with neighbouring companies between 2025 and 2040;
- Building a new reservoir at Broad Oak, Kent, in 2033;

Building an extension to the existing Arlington Reservoir, East Sussex by 2036;  
Three additional internal water transfers within SE Water supply area.

9.13 Some of this new water resource infrastructure is located within the Ashford Borough or adjoining local authority area. This includes the Maytham Farm groundwater scheme at Rolvenden with plans to replace non-operational works with a new treatment works, and a new reservoir at Broad Oak near Canterbury.

9.14 South East Water anticipates the new Broad Oak Reservoir could hold 2,800 million litres of water and supply around 13.5 million litres of extra water per day to Canterbury and the surrounding area. South East Water will be carrying out feasibility studies and environmental assessments on their proposals between 2015 and 2018. The outcomes from these studies will feed into the next submission of the WRMP to Defra in 2018/19. It is anticipated to cost in the region of £80 million. Such a strategic piece of infrastructure will have a long lead in time and should it be found that the Broad Oak Reservoir is needed, to be delivered by 2033 Ashford Borough Council is broadly supportive and would want to be involved in early discussions.

9.15 Actions identified for the first five years within the WRMP (2015-2020) have been included within the companies 'Business Plan' assumptions. South East Water has confirmed that there will also be a strategic review of East Kent Water Resource options with Southern Water and Affinity Water before 2018.

9.16 In terms of local infrastructure SEW have confirmed that work is needed to reinforce their existing service network to accommodate the levels of growth envisaged in the Ashford Borough. This will include a new service reservoir at Aldington to provide additional storage and associated connections in the east of Ashford as well as works on the mains network in the north eastern side of Ashford back towards Canterbury.

9.17 Where the water supply network needs reinforcement due to specific development the Water Act enables SEW to charge developers to ensure levels of service are maintained across the new and existing network. SEW has identified a number of settlements where reinforcement may be needed should development take place across the Plan period, including in Egerton, Pluckley, Rolvenden, Smarden, Smeeth, Tenterden and Woodchurch.

### **Reduce demand**

9.18 Reducing demand for water is an integrate part of the long-term strategy to achieve a sustained supply-demand balance within South East Water (SEW) supply area.

9.19 The WRMP includes a long-term strategy to reduce water use focused on changing customer behaviour. SEW set an aspirational target to reduce per capita consumption of water across their supply area of 149 litres per person per day (l/p/d) by 2040, which is a reduction against the current baseline of 166 l/p/d. However, the average per capita

consumption in the Ashford Borough is already below this at 142 l/p/d<sup>31</sup>. The WRMP highlights the need for sustained water efficiency improvements, which is supported by recent changes in the Building Regulations which now seek even stricter controls on individual water consumption in new development.

9.20 Part of SEW strategy includes water education and awareness to try and change customers behaviour with regards to water use. Alongside the educational measures, SEW provide free or subsidised water efficiency devices to customers. They also have a programme to have 90% of all domestic customers metered by 2020. Water metring is scheduled to be rolled out in Ashford from mid-2017, with broad coverage by early 2018. This has been brought forward from the original plan date of 2019 in line with requests by the Borough Council.

9.21 Leakage control targets (10% by 2020) and water efficiency of SEW own sites also forms part of their long-term strategy. Partnership working also forms part of their wider approach to water efficiency and highlights the ability of third parties to regulate and enforce water efficiency into new homes on a large scale.

9.22 A national standard for water efficiency was introduced into Building Regulations Part G in 2010 requiring a designed standard of 125 litres per person per day (l/p/day) equivalent to Code level 1. In October 2015, following consultation on the Housing Standards Review the Government introduced a new 'optional' higher tier for water efficiency into Building Regulations. This enables local authorities to require buildings to be designed to facilitate 110 l/p/d equivalent to Code level 3 of the Code for Sustainable Homes.

9.23 Importantly, the Government will not allow any other standards for water efficiency to be set by local planning authorities through policy as any higher standards are considered to impose significant costs. The higher tier standard carries with it a 'Needs Test' and local planning authorities will only be able to use the standard subject to viability and where it can be demonstrated that they are strictly necessary and justifiable. The Housing Standards Review consultation paper (August 2013) states that *'for inclusion in a local plan a local planning authority must be able to demonstrate at examination of the plan that the standard is required to address a clear need and as part of an approach to water efficiency that is consistent with a wider approach to water efficiency as set out in the local water undertaker's water resources management plan'*. The Government have confirmed that the optional higher standard can only be applied in areas with specific local needs (such as water stress).

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<sup>31</sup> Kent Environment Strategy (2015) Kent State of the Environment

9.24 Ashford has required more stringent water efficiency within development since the adoption of the Core Strategy (2008) through policy CS10 and the use of the Code for Sustainable Homes. For residential developments in the rural areas of the Borough policy CS10 required  $\leq 120$  l/p/day (Code level 2 equivalent), for sites elsewhere where the policy required compliance with Code level 3 and 4  $\leq 105$  l/p/day is required. Unlike the Code, building regulations includes a 5 l/p/day allowance for external use which makes the new 'optional' higher tier requirement equivalent to Code level 3 and 4.

9.25 The Government through the Housing Standards Review has now wound down the Code for Sustainable Homes. Whilst the Part G (125 l/p/day) still remains within Building Regulations, Ashford Borough Council considers it important for the Local Plan to include a new water efficiency policy requiring compliance with the 'optional' higher tier requirement within Building Regulations.

9.26 ABC considers the wider strategy set out within South East Water's WRMP presents clear evidence of a local need to apply more stringent water efficiency targets. There is a need for local authorities, developers and water companies to work closely together to deliver the efficiencies necessary to meet the identified water supply targets.

9.27 Although the new 'optional' higher tier requirement goes beyond that currently required by policy CS10 for rural sites, the Council considers implementing the new standard should not affect the viability of development in rural areas. Meeting the new requirement should be achievable without incurring significant costs and by changing the standard fittings applied to new dwellings. The additional cost of meeting a tighter local standard is estimated at £68 for an average three-bedroom house and can deliver an additional 15 l/p/d saving over existing building regulations<sup>32</sup>. However it should be noted that people use water and not the homes. Residents can remove or change water efficient products or not use them in the appropriate way. The standards will help but they do not guarantee water savings in isolation and it comes back to changing people's behaviour.

9.28 Existing homes and the non-domestic sector impacts overall demand for water and as such the ability for local planning policy to influence water efficiency in these areas should be considered.

9.29 There are about 47,787 existing dwellings within the Ashford Borough (Census 2011). Although this presents the greatest potential for water savings the Housing Standards Review indicated that local policies for water efficiency would be restricted to those standards set out within the 'National Described Standards Set'. This potentially removes the opportunity to account for water savings through existing housing stock. However there is a lot that the Council can do to promote water efficiency within existing

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<sup>32</sup>DCLG Housing Standards Review Consultation (2013)

homes, such as support SEW on their retro-fit programmes, promote water efficiency alongside green deal work, promote the water label, assist in technology improvements when people upgrade their homes. However these are activities that will have to be implemented outside of the planning policy framework.

9.30 Forecasting presented within South East Water’s WRMP anticipates an 11% increase in water consumption over their plan period from the non-domestic sector; however this is mainly from agriculture and horticulture, with nominal increases in other non-domestic sectors. However, the Council considers evidence within the SEW WRMP and the water supply region being in water stress presents enough evidence to enable policy to require higher water efficiency standards for non-residential development.

9.31 The Council currently requires major non-domestic developments to achieve ‘maximum’ water credits in BREEAM accreditation. The water section of BREEAM focuses on reducing potable water consumption in the operation of the building and its site. There are a total of 9 credits available. The developer must currently achieve all credits to be compliant with policy CS10 of the Core Strategy (2008), as follows:

**Table 3: Criteria for BREEAM, reducing potable water consumption**

Issue	Name	Credits	Credit summary
Wat1	Water consumption	5	Reducing the demand for potable water through the provision of efficient sanitary fitting, rainwater collection and water recycling systems
Wat2	Water monitoring	1	Specification of a water meter/s on mains water supply to encourage water consumption management and monitoring to reduce the impacts of inefficiencies and leakage.
Wat3	Water leak detection	2	Recognition of leak detection systems capable of detecting a major water leak on the mains water supply  Flow control devices that regulate the supply of water to each WC area/facility to reduce water wastage.
Wat4	Water efficient equipment	1	Identify a buildings total unregulated water demand and mitigate or reduce consumption through systems and/or processes.

9.32 Wat1 is made up of 5 credits where the water consumption for the assessed building is compared against a baseline performance (litre/person/day). BREEAM credits are awarded on a sliding scale, the more efficient the building operations the greater number of credits gained, as follows:

**Table 4: BREEAM credits in relation to water efficiency**

% Improvement	12.5%	25%	40%	50%	55%	65%
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Credits	1	2	3	4	5	Exemplary
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9.33 BREEAM requires one credit to be achieved as a minimum for ‘good’, ‘very good’ and ‘excellent’ schemes. To achieve 4 or 5 credits it is highly likely that the scheme will need to incorporate grey water and rainwater harvesting into their systems. There is now clear evidence emerging from new non-residential developments around the Borough that achieving ‘maximum’ credits as currently required is proving both technically and financially unviable for a number of developments. The table below presents a sample of projects that, for pragmatic and operational reasons, have not achieved maximum credits:

<b>Scheme</b>	<b>Reasons maximum credits have not been achieved</b>
10/00059/AS, Dobbies Garden Centre	Wat 1 full credits not met as installed showers failed to demonstrate ability to be limited to 9l/min.
10/00230/AS, Ashford School Sports Block	Impracticality of achieving full Wat 1 (water consumption); impracticality and cost of achieving Wat 5 (water recycling)
11/00483/AS, CCL Labels	Grey water harvesting not practical given very little water use in the building, and use in customer-facing environments seen as commercially damaging – impracticability of Wat 1

9.34 It is therefore proposed that the Council retain the more stringent water efficiency requirement for non-residential development in attaining BREEAM but instead of requiring developments to achieve ‘maximum’ water credits they must achieve at least a 40% improvement in water consumption against the baseline performance of the building (Wat1, 3 credits).

## 10 Wastewater

10.1 Southern Water is the statutory sewerage undertaker providing wastewater services to the Ashford Borough. Water and sewerage companies have a statutory obligation to provide capacity for new development, and to comply with environmental permits set by the Environment Agency.

10.2 Additional wastewater treatment capacity is planned and funded through the water industry's price review process. The Ofwat review process defines their investment programme in five-year periods. Southern Water's current business plan covers the investment period 2015-2020 and has the following priorities for wastewater:

## Providing for growth

Operating and maintaining the sewers network and pumping stations

Tackling local problems

Integrated newly-adopted sewers and pumping stations  
Improving the local environment

10.3 Southern Water need to manage additional demand from a growing population and new housing and business development across their service area. They need to ensure the wastewater network is resilient to future growth and changing environmental conditions associated with climate change.

10.4 When planning for new development both local and strategic wastewater infrastructure needs to be considered. Strategic infrastructure relates to trunk sewers, pumping stations and wastewater treatment works and is normally funded by the water company, whereas local sewer infrastructure relates directly to new development and is generally funded by the development.

### *Strategic Wastewater Infrastructure*

10.5 The Ashford Integrated Water Management Study completed in 2005 identified that additional conveyance capacity within the Ashford sewer system and treatment capacity at Ashford WTW (Bybrook) would be required to accommodate all the flows from proposed major development areas in the period to 2031.

10.6 Ashford has recently received substantial investment in wastewater infrastructure with £14 million being spent at Ashford during the last asset management period (2010-2015). Most of this investment (£12.6m) was spent on Ashford WTW (Bybrook) which was completed in March 2014 to upgrade and modify the process units to enable the facility to take additional wastewater and sludge loads from proposed future development and to achieve the tightened discharge environmental permit limits. Southern Water have also recently upgraded and reinforced existing trunk sewers in the centre of Ashford to enable wastewater to be conveyed from the Chilmington Green development to Ashford (Bybrook) WTW for treatment and to accommodate further major new growth in the south of Ashford.

10.7 Improvement works have also been completed at Lenham, Charing, Sellindge, Brook and Wye during the same AMP period. This includes phosphorous removal at Lenham, Charing and Sellindge and works to increase flow capacity and ammonia removal at Wye WTW.

10.8 Ashford Borough Council consulted Southern Water on development scenarios for infrastructure testing on the edge of Ashford as part of the preparation for the Local Plan. Without detailed investigations and confirmed development quanta Southern Water can only provide a high level response at this point in time. However, the initial response is that all the scenarios can be accommodated and the appropriate wastewater provision can be made in parallel with development.

10.9 In estimating wastewater and sewer services the water companies have to consider population forecasts to ensure treatment capacity matches or exceeds current population in the catchment. Funding to find extra capacity in the system is determined through the price review process regulated by Ofwat the water industry economic regulator. The Borough's current suite of adopted development plans together with the Council five-year housing supply position has informed investment decisions for the investment period 2015-2020 (AMP6).

10.10 The latest Strategic Housing Market Assessment (2014) and subsequent revisions is helping to formulate development quanta within the emerging Local Plan. Latest figures show that overall; development will need to deliver approximately 14,680 new dwellings supported by approximately 12,600 additional jobs between 2011 and 2030 to meet future needs of the Borough. The adoption of the emerging Local Plan would ideally provide the certainty needed by Ofwat and support Southern Water's bid to Ofwat for any investment funding identified for the period 2020-2025. The current water industry's funding regime has a shorter planning horizon than Local Plans and is designed to be provide repeated opportunities to plan investment and to accommodate long term planning incrementally. At times, however, this means that these parallel planning and funding systems can be challenging to reconcile.

### **Local Infrastructure**

10.11 Local infrastructure required to serve individual development sites should in principle be delivered by the development. This approach ensures infrastructure is paid for by those who directly benefit from it, and protects existing customers who would otherwise have to pay through increased general charges. Delivery of local sewer infrastructure that serves new development is the responsibility of individual developers in collaboration with the service provider. Southern Water will take future income from new customers into account (in line with the water industry's regulatory framework) so developers only need to fund a proportion of the total cost.

10.12 However, Southern Water has limited powers to prevent connections to the sewer network, even when there is insufficient capacity. Southern Water will not adopt sewers unless they are constructed to adoptable standards and surface water will not be permitted to drain to foul or existing combined sewerage systems except as a last resort when all other options are shown to be not reasonably practicable. To avoid undue pressure on the sewerage system, new development is expected to apply the drainage hierarchy for surface water set out in the Planning Practice Guidance and Part H3 of the Building Regulations, including the implementation of sustainable drainage.

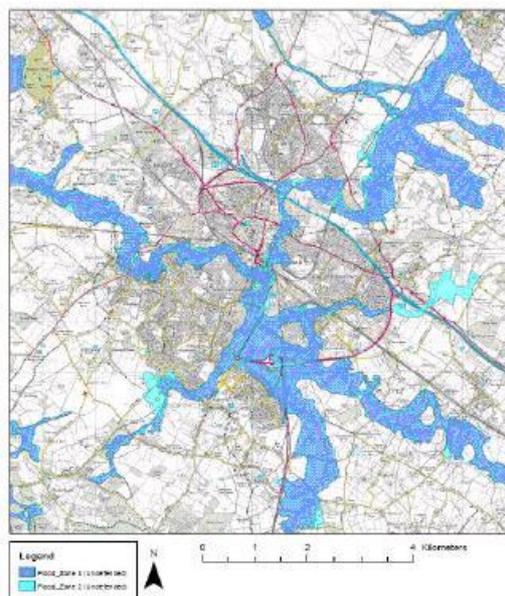
10.13 It is therefore considered important that where there is a need for any new local sewerage infrastructure it is set out within the site-specific allocations to ensure its timely delivery in collaboration with the planning authority and appropriate water company.

10.14 Ashford Borough Council consulted Southern Water on a shortlist of potential site allocations. Southern Water responded by providing site-specific information for each site in relation to wastewater. This included information on where existing underground infrastructure crosses the site to ensure appropriate easement. Proximity to existing WTWs to ensure appropriate separation from homes to ensure they are not adversely affected by potential odour pollution and identified where sewer infrastructure may affect or constrain site layout.

10.15 Importantly, Southern Water has not identified any fundamental constraints or local pinch points that would prevent any of the potential site allocations from coming forward. The information provided has fed into the specific site allocations.

## 11 Flooding

11.1 Ashford has been particularly vulnerable to fluvial flooding in the past, as Ashford town sits at the confluence of five main rivers – the Great Stour, East Stour, Aylesford Stream, Whitewater Dyke and Ruckinge Dyke. However, this flood risk has been reduced by the construction and operation of the Hothfield Reservoir in 1991 and the Aldington Reservoir in 1989 which have effectively reduced flood risk to Ashford town. The reservoirs were designed to withstand a 1 in 100 year flooding event, and have proven to withstand 1 in 50 year events. The flood storage reservoirs require ongoing work to maintain a standard of protection and are likely to require further works in the future to take account of climate change. It is likely that the Environment Agency will seek contributions from new development sites that benefit from the reservoirs to help with these costs.



**Figure 11: Map showing extent of Ashford's flood zone, with flood zone 2 (medium probability) in dark blue, and flood zone 3 (high probability) in light blue**

11.2 Other parts of the borough are also at risk from other sources of flooding, including ordinary watercourses, surface water flooding, groundwater and sewer flooding and, in exceptional circumstances, from tidal flooding on the Romney Marsh. Being at the top of

the catchment of the River Stour, Ashford has an important role to play in reducing flood risk to settlements throughout the Stour valley, including Canterbury. Likewise, however, the river rises in the Shepway District, and therefore cooperation in case of any major development over water issues is crucial.

11.3 The National Planning Policy Framework (2012) and accompanying Planning Practice Guidance replaces the PPS25: Development and Flood Risk. The NPPF requires Local Plans to be supported by a Strategic Flood Risk Assessment (SFRA). The Ashford Strategic Flood Risk Assessment (2014) replaces a previous version published in 2006. The updated SFRA covers the whole of the Ashford Borough and assesses the extent and nature of flood risk and the implications for land use planning. The assessment has been used to locate potential development and infrastructure to areas with the lowest probability of flooding using the risk-based sequential test in accordance with latest guidance.

11.4 The Ashford SFRA provides general advice to planners and developers on<sup>33</sup>:

Sources of flood risk mapping and other evidence to inform the Sequential Test; Summarises flood risk from each source of flooding in the Borough;  
Specific requirements for a Flood Risk Assessment;  
Other issues that need to be considered when carrying out development close to watercourses.

## 12 Surface Water

12.1 Ashford was identified as an area potentially at risk of local flooding within Kent County Council's Preliminary Flood Risk Assessment (2011). KCC subsequently commissioned the Ashford Stage 1 Surface Water Management Plan which was completed in October 2013. The study has determined what risks are present and has identified whether any further work or investigations are needed. Local flooding is defined by the Flood and Water Management Act (2010) as flooding from surface water runoff, groundwater and ordinary watercourses.

12.2 The Ashford SWMP puts most of the historical flooding down to heavy rainfall overloading carriageways, drains and gullies. Other reported causes include blockages in the drains and gullies impeding on free discharge from the carriageway or misalignment of road and highways also reported to restrict free surface water drainage. The Ashford Stage 1 SWMP report includes an Action Plan which is updated annually and identifies individual actions to address different flood incidents and those responsible for implementing each action. The Action Plan was agreed between key partners.

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<sup>33</sup> Ashford Strategic Flood Risk Assessment (2014) JBA.

12.3 Both the Ashford Strategic Flood Risk Assessment (2014) and Ashford Stage 1 Surface Water Management Plan (2013) should be used to support the consideration of planning applications.

## 13 Sustainable Drainage

13.1 Sustainable Drainage Systems (SuDS) can be used in both rural and urban settings to manage flood risk by slowing the surface water runoff rate from development. It can improve infiltration by mimicking natural drainage, reduce pollution and can provide green space for biodiversity and residential amenity.

13.2 The provision of SuDS is written into the Flood and Water Management Act 2010 which introduced a regime for the approval and adoption of SuDS through Schedule 3 of the Act. In line with the provisions of the Act the government consulted (December 2011 to March 2012) on proposals to implement the approval and adoption of SuDS through a separate consenting regime to that which determines planning applications. However, following much concern nationally, the Government reassessed their approach and consulted (September to October 2014) on a new proposal which builds on the existing planning application process. A Written Ministerial Statement on 18 December 2014 by the Secretary of State for Communities and Local Government, made changes to the NPPF expecting that *'sustainable drainage systems will be provided in new developments wherever this is appropriate'*. These changes came into effect on the 6<sup>th</sup> April 2015.

13.3 The Government also published 'Non-statutory technical standards for sustainable drainage systems' (March 2015) to sit alongside the Planning Practice Guidance to provide advice to developers on peak flow and volume control, the structural integrity of SuDS, maintenance and construction considerations.

13.4 The Written Ministerial Statement sets out the role for LPAs under these new arrangements. LPAs are expected to consult the relevant Lead Local Flood Authority (KCC in the case of Ashford) on the management of surface water; be satisfied that the proposed minimum standards of operation are appropriate; ensure clear arrangements are in place for ongoing maintenance over the lifetime of the development (through planning condition or planning obligations) and ensure the maintenance and operation requirements are economically proportionate<sup>34</sup>.

13.5 A key finding of the Ashford Integrated Water Management Study (2005) was that post-development run-off rates would need to be over-attenuated. The Core Strategy (2008) took this action forward into local planning policy through the implementation of policy CS20, as set out below:

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<sup>34</sup>Written Ministerial Statement (18 December 2014) DCLG (HCWS161).

## **Policy CS20: Sustainable Drainage**

*All development should include appropriate sustainable drainage systems (SUDS) for the disposal of surface water, in order to avoid any increase in flood risk or adverse impact on water quality.*

*For greenfield developments in that part of the Ashford Growth Area that drains to the River Stour, SUDS features shall be required so as to achieve a reduction in the pre-development runoff rate. On all other sites in the Borough, including those in the south-western part of the Growth Area that drains to the River Beult, developments should aim to achieve a reduction from the existing runoff rate but must at least, result in no net additional increase in runoff rates.*

*SUDS features should normally be provided on-site. In the Ashford Growth Area if this cannot be achieved, then more strategic forms of SUDS may be appropriate. In such circumstances, developers will need to contribute towards the costs of provision via Section 106 Agreements or the strategic tariff. In all cases, applicants will need to demonstrate that acceptable management arrangements are funded and in place so that these areas are well maintained in future.*

*SUDS should be sensitively designed and located to promote improved bio-diversity, an enhanced landscape and good quality spaces that improve public amenities in the area.*

13.6 Policy CS20 goes beyond current national standards and reflects the levels of growth envisaged in the Core Strategy and the objective to reduce flood risk in Ashford through development, not just maintain existing flood risk.

13.7 Policy CS20 is supported by the Sustainable Drainage SPD (2010) which was written to provide advice and guidance to ensure all new developments are designed to reduce the risk of flooding, and maximise environmental gains, such as: water quality, water resources, biodiversity, landscape and recreational open space and to ensure all new developments are designed to mitigate and adapt to the effects of climate change.

13.8 The Water Framework Directive (WFD) identifies surface water quality as a critical component in the overall quality of water within rivers, streams and groundwater sources. It requires the control of 'diffuse pollution' and favours natural processes such as filtration and attenuation to manage runoff. Although the Hothfield and Aldington reservoirs are currently proving effective at reducing flood risk to Ashford town, the Environment Agency have identified little scope for additional strategic flood risk options, such as creating additional flood storage capacity upstream. The implementation of sustainable drainage is therefore considered essential in water quality management and reducing flood risk to Ashford town.

13.9 The Council recently commissioned JBA Consulting to undertake a borough-wide discharge runoff assessment. This report sought to understand the achievability of

reducing discharge rates to greenfield equivalent or 4l/s/ha on smaller sites. It was demonstrated that 4l/s/ha was difficult to achieve on smaller sites, but that some reductions were possible on over 96 percent of sites. Importantly, however, it was demonstrated that over-attenuation was possible on over 86 percent of sites in the borough.

13.10 As a result of this study, it was recommended that individual assessments should be undertaken to establish the specific effective runoff rate for that site prior to development.

## 14 Identifying the issues

The table below sets out the key constraints and issues identified within the AIWMS<sup>35</sup> in relation to proposed growth at that point in time (2005) against an updated position and mitigation measures that could be taken forward into the Local Plan policy.

**Table 5: AIWMS key constraints and issues**

	<b>Issues identified within the AIWMS</b>	<b>Current position</b>	<b>Mitigation measures applicable to local planning policy</b>
Environmental	<p>Chalk aquifer over abstracted<sup>36</sup> leading to reduced baseflow into watercourses;</p> <p>Lower Greensand aquifer over abstracted and over licensed increasing risk of low flow problems in associated water features;</p> <p>Declining chemical and biological quality of the River Stour downstream of Ashford, failure to meet government targets, (before WDF put in place);</p> <p>Low fish population between Ashford and Wye;</p> <p>Poor river habitat in some town centre areas.</p>	<p>Lower Greensand and Chalk aquifers are under pressure from existing groundwater abstractions with 'no water available for licensing' to protect river ecology<sup>37</sup>. Abstraction is also playing a part in water quality failure. Many elements of the Stour have improved since 2009 but there are some elements that have worsened to 'poor' (none of the rivers in the Ashford Borough currently meet WFD targets);</p> <p>Measures in place within the CIP catchment plan for fish passage improvements on the Great Stour.</p>	<p>Local planning policy can require new development to incorporate sustainable drainage systems to prevent potential pollution and address surface water runoff which helps to retain groundwater sources. These are appropriate for most developments. It is important that maintenance is assured through planning policy and subsequent condition.</p> <p>Site-specific requirements should be identified in liaison with the relevant statutory body early on.</p> <p>Identify specific indicator targets to be improved.</p>
Social	<p>Low amenity and recreation value of the rivers through Ashford. Low public awareness of their presence and value.</p>	<p>Ashford Green Corridor protected through policies EN13, EN14, TC26 and U21 for peoples enjoyment. Planning application approved for Conningbrook Lakes water-based leisure and country park.</p>	<p>Local planning policy can protect and enhance Ashford's Green Corridor and provide opportunities to extend the green corridor where site allocations are present.</p> <p>Establishment/retention of ProWs alongside rivers or other forms of mandating the effective management and retention of safe access to water-facing green sites.</p>

<sup>35</sup> Ashford Integrated Water Management Study (2005)

<sup>36</sup> Environment Agency (2003), Stour Catchment Abstraction Management Strategy

<sup>37</sup> Stour Abstraction Licensing Strategy (2013) Environment Agency

			Strict avoidance of inappropriate development close to riverways.
Water supply	Limited potential for further abstractions in the catchment; Lack of headroom in Ashford supply zone to meet water company projected peak demand.	South East Water supply area classified an 'area of serious water stress' <sup>38</sup> South East Waters – Water Resource Management Plan – twin track approach to managing supply/demand deficit.	Demand management such as water efficiency and the use of sustainable drainage to retain groundwater supplies are essential for the long-term resilience of water supplies.  There clear evidence for the need and the viability of restricting water consumption to 110l/p/d as per Building Regulations Part G2.
Water demand	Increasing per capita demand for water (currently around 160-170 litres per person per day).	Overall demand for household water remains the same within homes and with an increase in population; this needs to be offset by increased metering and more efficient water using devices (toilets, washing machines etc).  South East Water monitoring significant reduction in per capita demand for water (approx. 18% reduction per person per day)  Current SEW baseline 166 litres per person per day. For Ashford, current consumption is lower on average, at 142l/p/d, and the aim therefore should be to treat this as an appropriate indicative figure.	There is a need for local authorities, developers and water companies to work closely together to deliver the water efficiencies necessary and meet the identified long-term water supply targets. Local Planning policy can require new development to incorporate water efficiency devices within development.
Wastewater	Need for additional conveyance capacity within the existing Ashford sewer system to accommodate	Ashford has recently had substantial investment in wastewater infrastructure, to upgrade facilities, notably	Local planning policy can require adequate water supplies and wastewater treatment facilities to be in

<sup>38</sup>Environment Agency, Water Stress Classification (July 2013).

	<p>flows from the new development areas; Need for additional treatment capacity at Ashford (Bybrook) WWTW to accommodate additional flows from proposed development; Investment in treatment (to address declining river water quality) needs to be balanced against demand for low customer charges; Limited data and regulation of non water company discharges; The current water industry planning / funding regime is designed to provide infrastructure required to serve new development incrementally and therefore wastewater infrastructure schemes are not set out for the entire period to 2031.</p>	<p>upgrading of the Ashford WTW (Bybrook) to take additional wastewater from proposed future growth.</p> <p>Southern Water has a statutory obligation to serve new development, and will plan necessary investment through the water industry's rolling five year price review process.</p> <p>Southern Water will work in collaboration with developers, supported by appropriate planning policies and planning conditions, to deliver the local sewerage infrastructure required to serve individual sites.</p>	<p>place to facilitate new development. It can limit the phasing of development to ensure that adequate wastewater drainage is provided in conjunction with or prior to development.</p> <p>Local plan policies should support delivery of necessary strategic wastewater infrastructure in parallel with new development. The precise timing of investment will depend on the timing of development coming forward.</p> <p>Local plan policies that allocate individual sites for development should ensure that each site connects to the local sewerage network at the nearest point of adequate capacity.</p>
Flood risk and drainage	<p>Current flood risk – estimated annual (average) damage in Ashford (2005) is £3.2 million.<sup>39</sup> Limited potential for additional flood storage reservoirs; Disagreements with developers when establishing site runoff rates.</p>	<p>Limited potential for additional flood storage reservoirs; All development required to provide SuDS onsite. Discharge runoff rates established through policy CS20.</p>	<p>Local planning policy can require all new development to incorporate appropriate SuDS for the disposal of surface water and to avoid any increase in flood risk. SuDS can be used to reduce the overall flood risk in Ashford through appropriate discharge rates as per specific location as well as existing and proposed land uses.</p>

<sup>39</sup>Environment Agency (2007), Stour Catchment Flood Management Plan

## 15 Mitigating issues through the Local Plan

Key findings from the study with implications for the local plan are set out below:

Chalk and Lower Greensand aquifers remain under pressure from existing groundwater abstractions, but further licences are now being denied with the Environment Agency stressing there is now 'no water available for licencing' in an attempt to protect river ecology. Downstream of Ashford, the Great Stour becomes an important lowland chalk river which is a scarce habitat. In recent years, the water quality of the Great Stour has failed the targets set by the Environment Agency. The health of the River Stour will be one of the main indicators of the success or failure of Ashford's 'sustainable development'. Ecologically, measures are being enacted to improve fish passage on the Great Stour.

Abstraction is a key factor in water quality failure. In the context of the Water Framework Directive's targets, elements of the River Stour have deteriorated since 2009 and none of the borough's rivers currently meet its targets. The greatest negative impact on water quality and increased use has not come through increased population (since per capita usage is falling), but through agricultural uses.

The current water industry planning and funding regime is currently inappropriate to support effective planning and provision of wastewater infrastructure over the longer term. This is due to undertakers being unable to secure funding for strategic infrastructure from Ofwat much in advance of need.

Post-development runoff rates would need to be over-attenuated, to reduce rates to below pre-development rates. The study suggested physical measures to manage flood risk resulting from development in Ashford; identifying the large-scale incorporation of SuDS throughout new development areas as the most efficient flood risk management option;

Encouragingly, recent improvements in water infrastructure, including the £12.4 million upgrade to the water treatment works at Bybrook and the improvements of the Ashford trunk sewers now means that all wastewater from Ashford's new developments can be dealt with. In addition, the South East Water Resource Management Plan (2015-2040) allocates over 39,000 homes to the borough, demonstrating that the planned 14,680 dwellings projected by the latest housing figures can be comfortably supplied with drinking water. Recent efforts have also resulted in per capita water consumption remaining constant, albeit consumption for agricultural uses has increased.

## 16 Conclusion

This paper provided an update to the Ashford Integrated Water Management Strategy 2006-2031 (AIWMS), published in 2005, which had previously identified water supply, flood risk, wastewater and environmental water quality as all having critical constraints on future growth in the Borough. Secondly, the paper also advised on how future levels of development could be reconciled against the latest management plans produced by the water industry to 2030. Thirdly, it also assessed the main current issues and constraints within the water cycle for evidence for local planning policy intervention as required. These were addressed in detail above, but this conclusion provides a thematic synthesis.

The AIWMS remains relevant and forms part of the Local Plan 2030 evidence base, as it covers a period to 2030, even though it addresses the borough's Growth Area expansion figures, which have now been revised down. Many of the recommendations contained within have been completed, but many others (e.g. continued attenuation) continue to be relevant.

Population growth and climate change were noted as key impactors on **Water Supply**. Since the AIWMS, the South East Water Resource Management Plan (2015-2040) has allocated capacity for over 39,000 homes to the borough, demonstrating that the planned 14,680 dwellings projected by the latest housing figures can be comfortably accommodated. While the population of the borough is expected to increase significantly through the plan period, the majority of water supply increase will come from increased agricultural use. However, water deficits are projected between 2025 and 2030 onwards unless overall supply is increased and demand reduced.

While planning's ability to reduce household consumption is restricted to the nationally described standards, non-domestic development is subject to a requirement to achieve maximum BREEAM water credits. Even then, this is proving technically and financially unviable, and henceforth an expectation of 40 percent improvement in water reduction against the baseline performance is to be expected.

On **Flood Risk**, the key legislation (albeit not wholly enacted) is the Flood and Water Management Act (2010). Changes in several national policy guidance documents, and new responsibilities bestowed on Kent County Council as the Lead Local Flood Authority have also impacted the horizon since the AIWMS was published. The AIWMS spoke of **Water Quality** as a critical constraint to growth, with the potential for urbanisation to increase pollution of groundwater, and reducing surface water recharge. Nevertheless, flood risk and water quality have been addressed in the Council's policy documentation, and the borough is Kent's leader in terms of the specification and delivery of surface water drainage through the water cycle so that development has positive impacts on runoff rates and groundwater condition. The Council's sustainable drainage supplementary planning document is currently being updated to reflect national changes in policy and evidence of local changes in environment in the intervening period since the last was published.

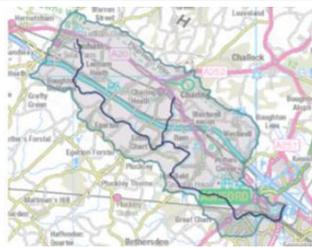
Unfortunately, the Environment Agency notes that groundwater aquifers are suffering from diffuse nitrate pollution from agricultural sources, on which planning policy cannot act. It notes that wastewater market failings are the main contributors to groundwater not

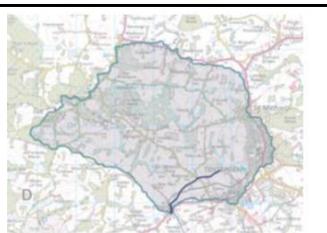
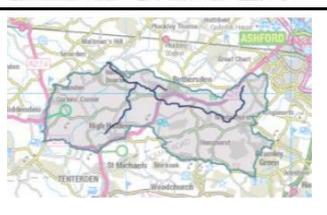
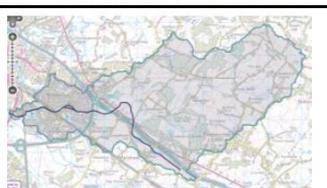
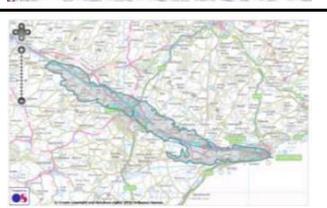
meeting 'good' status, especially given the short funding horizons for statutory undertakers. The geology of Ashford is not forgiving to any wastewater spillages. This was managed through the Water Framework Directive (WFD) and, while there has been certain improvement in many indicators, the WFD's 'lowest common denominator' approach means that overall improvement has not yet been achieved.

**Wastewater** has proven to be a major success of the AIWMS, delivering extra conveyance capacity at the Ashford Water Treatment Works at Bybrook. In parallel, trunk sewers were also improved in the centre of Ashford, facilitating the development at Chilmington Green. Southern Water now states that all proposed future development scenarios at this point can be accommodated. However, it is only with the growth figures in the local plan that Southern Water can bid to Ofwat for investments funding for the period 2020-2025. In the meantime, Southern Water has limited powers to prevent sewer connections even if there is insufficient capacity.

## APPENDIX 1 – SURFACE WATER BODY STATUS

Cycle 1 classification is the basis for the first RBMP, whilst cycle 2 refers to the updated RBMPs which have been submitted for Ministerial approval (January 2016).

Water Body (with unique reference code)	Map*	Current Ecological Status (or EP in the case of HMWB)	Current Chemical Status	Barriers to Good status (or GEP for HMWB)	Proposed Date for Achieving Good status (or GEP)
Upper Great Stour  GB107040019660 not designated artificial or heavily modified		Poor	Good	Fish; Macrophytes and Phytobenthos Combined; Phosphate	Cycle 2 Pass
Great Stour between Ashford and Wye  GB107040019741 not designated artificial or heavily modified		Moderate	Good	Phosphate	Cycle 2 Pass
Great Stour between Wye and A2  GB107040019742 not designated artificial or heavily modified		Moderate	Good	Macrophytes and Phytobenthos Combined; Phosphate	Cycle 2 Pass
East Stour  GB107040019640 not designated artificial or heavily modified		Poor	Good	Macrophytes and Phytobenthos Combined; Phosphate	Cycle 2 Pass
Beult  GB106040018270 heavily modified		Moderate	Fail	Fish; Dissolved Oxygen; Phosphate; Mitigation Measures Assessment	Cycle 2 Fail
Cradlebridge Sewer  GB107040019530 heavily modified		Moderate	Good	Dissolved Oxygen; Phosphate; Mitigation Measures Assessment	Cycle 2 Pass
Upper Beult  GB106040018300 not designated artificial or heavily modified		Moderate	Good	Invertebrates; Macrophytes and Phytobenthols Combined; Dissolved Oxygen; Phosphate	Cycle 2 Pass

<p>Newmill Channel downstream of A28</p> <p>GB107040013630 heavily modified</p>		<p>Moderate</p>	<p>Good</p>	<p>Ammonia; Phosphate; Mitigation Measures Assessment</p>	<p>Cycle 2 Pass</p>
<p>Upper Newmill Channel</p> <p>GB107040019690 not designated artificial or heavily modified</p>		<p>Moderate</p>	<p>Fail</p>	<p>Macrophytes and Phytobenthos Combined</p>	<p>Cycle 2 Fail</p>
<p>Upper Beult – High Halden and Bethersden Stream</p> <p>GB106040018280 not designated artificial or heavily modified</p>		<p>Poor</p>	<p>Fail</p>	<p>Fish; Macrophytes and Phytobenthos Combined; Dissolved Oxygen; Phosphate</p>	<p>Cycle 2 Fail</p>
<p>Sherway</p> <p>GB106040018320 heavily modified</p>		<p>Moderate</p>	<p>Good</p>	<p>Dissolved Oxygen; Phosphate; Mitigation Measures Assessment</p>	<p>Cycle 2 Pass</p>
<p>Reading Sewer (Newmill Chan to Cradlebridge Sewer)</p> <p>GB107040013520 heavily modified</p>		<p>Moderate</p>	<p>Good</p>	<p>Dissolved Oxygen; Phosphate; Mitigation Measures Assessment</p>	<p>Cycle 2 Pass</p>
<p>Tenterden Sewer</p> <p>GB107040019540 heavily modified</p>		<p>Moderate</p>	<p>Good</p>	<p>Dissolved Oxygen; Phosphate; Mitigation Measures Assessment</p>	<p>Cycle 2 Pass</p>
<p>Aylesford Stream</p> <p>GB107040019650 not designated artificial or heavily modified</p>		<p>Moderate</p>	<p>Good</p>	<p>Macrophytes and Phytobenthos Combined; Phosphate</p>	<p>Cycle 2 Fail</p>
<p>Kent Greensand Eastern</p> <p>GB40701G501400 Groundwater body  (2015 data)</p>		<p>Not applicable</p>	<p>Poor</p>	<p>General Chemical Test</p>	<p>Cycle 2 Fail</p>
<p>East Kent Chalk – Stour</p> <p>GB40701G501500 Groundwater body  (2015) data</p>		<p>Not applicable</p>	<p>Poor</p>	<p>Chemical Status Element</p>	<p>Cycle 2 Fail</p>

<p>Walland Marsh/RMC (Iden to Appledore)</p> <p>GB107040013670 artificial</p> <p>(2015) data</p>		<p>Moderate</p>	<p>Good</p>	<p>Fish; Dissolved Oxygen; Phosphate; Mitigation Measures Assessment</p>	<p>Cycle 2 Pass</p>
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