



# Topic Paper 10 Water



Version 1.0



## **Introduction**

This topic paper is one of a series, prepared by the Council, to support preparation of its Local Development Framework (LDF). The topic papers in the series currently comprise:

1. Demography and Social Trends
2. Policy Context
3. The Natural Environment
4. The Built Environment
5. The Economy
6. Tourism
7. Retail
8. Housing
9. Leisure and Open Space
10. Water
11. Transport

The purpose of the papers is to provide all parties who may wish to participate within the Local Development Framework process access to the same baseline information that the Council intends to use in the preparation of its Development Plan Documents and Supplementary Planning Documents. They provide a digest, rather than a substitution, for fuller information obtained from other sources. Other topic papers may be added over time.

Should you have any questions relating to the content of these papers, please contact [planningpolicy@swale.gov.uk](mailto:planningpolicy@swale.gov.uk).

## **1. Introduction**

- 1.1. Water is essential for life and it is important that we treat water as the scarce resource it is in order to minimise impact on the environment and human health. The efficient use of water, which takes into account its long-term availability and quality is an important factor in sustainable development.
- 1.2. The South East of England is an area the Environment Agency have described as having 'serious water stress'<sup>1</sup>. At the same time Swale is in an area at risk from tidal, surface water and groundwater flooding. With population growth and its associated development, and alongside climate change, these problems may be exacerbated if demand increases and supplies are stretched.
- 1.3. Water scarcity, demand and growth, flooding and climate change all also have the potential to effect water quality. This in turn effects not only human development, but wildlife and our natural world. Achieving a balance between these conflicting demands is a challenge for us all.

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<sup>1</sup> Environment Agency, 2007

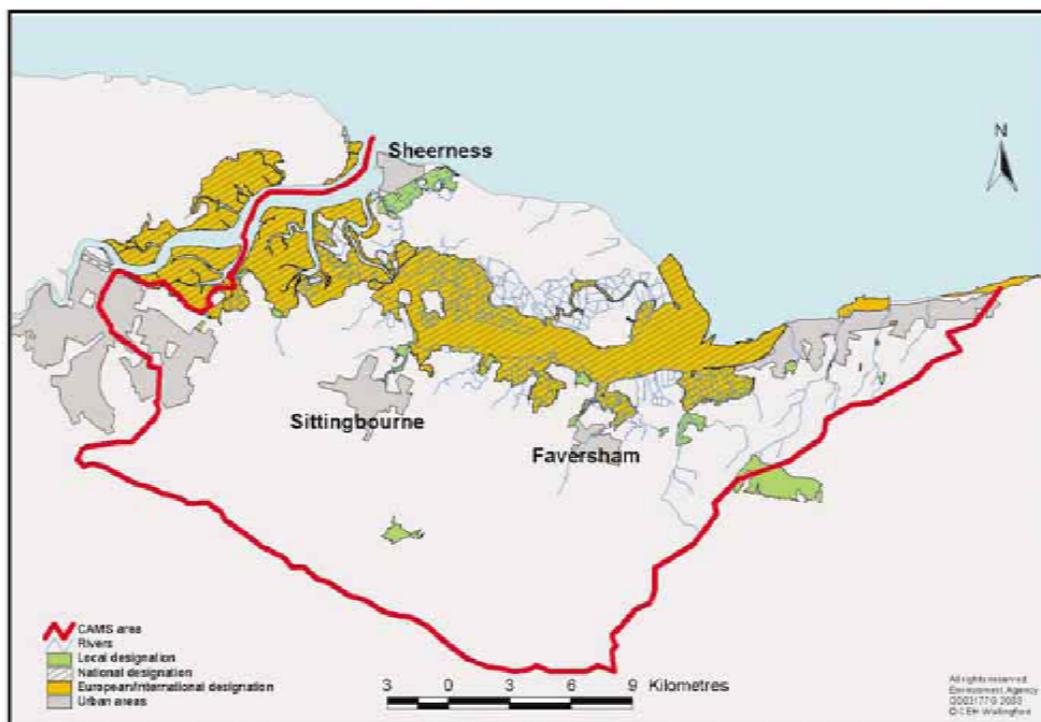
1.4. This paper explores the existing situation in Swale, before going on to examine the future supply/demand balance. It also looks at flooding and water quality as well as plans, policies and programmes that relate to water and concludes with some **Key Messages**.

## 2. The Current Situation in Swale

### 2.1. Context

2.2. Swale lies on the north Kent coastline, its principal towns being Sittingbourne, Faversham and Sheerness. The principal water feature is The Swale, a strip of sea which separates the mainland from the Isle of Sheppey, which is designated a main river by Defra. There are 4 tidal creeks at Milton, Conyer, Oare and Faversham. There are no other distinctive rivers in Swale but there are a series of spring-fed and surface water streams that flow from the North Downs into the low-lying land of the Swale/Medway marshes and onto the Swale Estuary. These streams are groundwater dependent, so changes in water abstraction from the North Downs Chalk aquifer can affect stream flow.

2.3. Much of the northern part of the Swale is comprised of low-lying land drained for agriculture (grazing marshes) or kept as wetlands (inter-tidal mud flats). The habitat value of the grazing marsh depends largely on careful surface water management. This area has been designated as a Ramsar Site, a Special Protection Area and a Site of Special Scientific Interest in recognition of the bird population which is supported by the inter-tidal mud flats and the grazing marshes as shown in Figure 1.



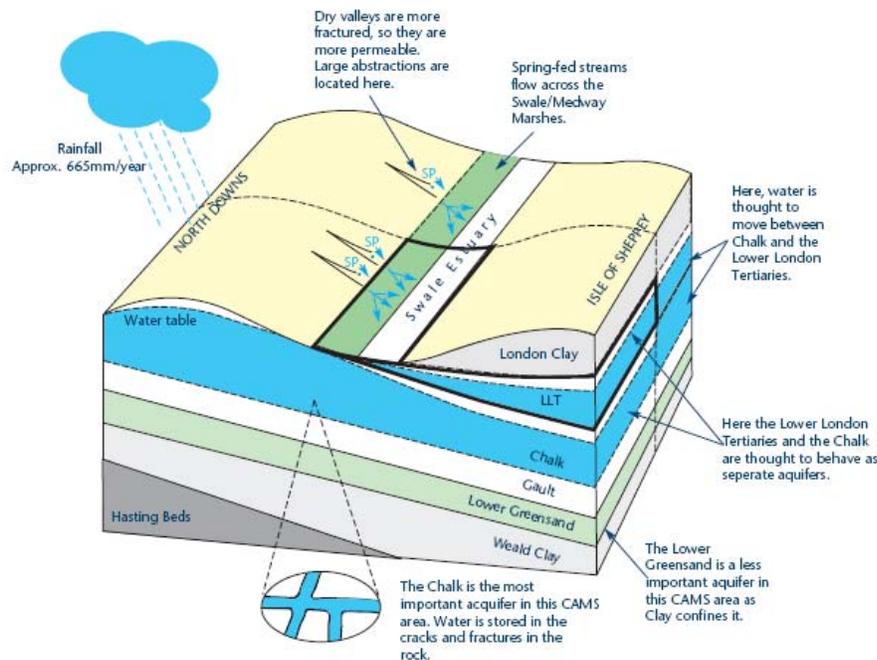
**Figure 1: Water Related Conservation Designations<sup>2</sup>**

2.4. The Swale marshes are managed by water level rather than flow, using Water Level Management Plans developed by the Lower Medway Internal Drainage Board or the

<sup>2</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

Environment Agency to ensure all users have suitable levels for their water needs. Generally, water levels are kept high in the marsh in summer to allow for wet fencing (the practice of using a wet ditch as fencing for animals) and to ensure that abstraction can take place from ditches and streams and to keep levels low in winter to increase storage capacity and reduce flood risk<sup>3</sup>.

2.5. The catchment is groundwater dominated, therefore geology plays a crucial role in water availability. Figure 2 illustrates the basic hydrogeology of the area<sup>4</sup>.



Basic hydrogeology of the North Kent & Swale CAMS area

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Figure 2: Basic hydrogeology of the North Kent & Swale CAMS area<sup>5</sup>

## 2.6. Supply

2.7. South East England has amongst the lowest rainfall in the United Kingdom (total annual rainfall averages about 730 mm/ year<sup>6</sup>) and is an area under serious water stress. Swale itself has even lower rainfall, estimated at an average of 665mm/year<sup>7</sup>. Compared to the rest of Europe, water resources are under greater stress only in drier countries such as Cyprus and Spain. Indeed, when we take population density into account we actually have less water per person than hotter, drier countries like Morocco and Egypt<sup>8</sup>.

<sup>3</sup> Environment Agency 'North Kent and Swale CAMS', April 2004, p.3

<sup>4</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>5</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>6</sup> Southern Water 'Water Resources Management Plan: Revised Draft Following Consultation', April 09

<sup>7</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>8</sup> Environment Agency Water resources in England and Wales – current state and future pressures, 2008

- 2.8. The Water Companies relevant to Swale are Southern Water and South East Water. Southern Water provides wastewater treatment to all of Swale and supplies water to Sittingbourne, Sheppey and the west of the borough. South East Water provides water to the east of the borough.
- 2.9. The majority (68%) of Southern Water's supplies comes from groundwater, predominantly from the Chalk aquifer which is widespread across the region. A further 28% comes from river abstractions: including the Medway and Stour in Kent. The remaining 4% of supplies come from the surface water impounding reservoirs, all of which are owned and operated by the company. The largest of these is Bewl Water. This is a pumped storage reservoir, with water being abstracted from the River Medway, stored and subsequently released as required for re-abstraction further downstream. The reservoir is owned and operated by Southern Water, but South East Water has an entitlement to 25% of the yield<sup>9</sup>.
- 2.10. Over 70% of the water South East Water delivers comes from just over 150 boreholes and wells, with the remainder from six river intakes and surface water reservoirs<sup>10</sup>.
- 2.11. The Environment Agency's State of Groundwater Report outlines the aquifers present within the North Kent and Swale catchment and is shown here in Figure 3. The Environment Agency's CAMS (Catchment Abstraction Management Strategies<sup>11</sup>) shows Licensed Water Abstraction points across the catchment (Figure 4).

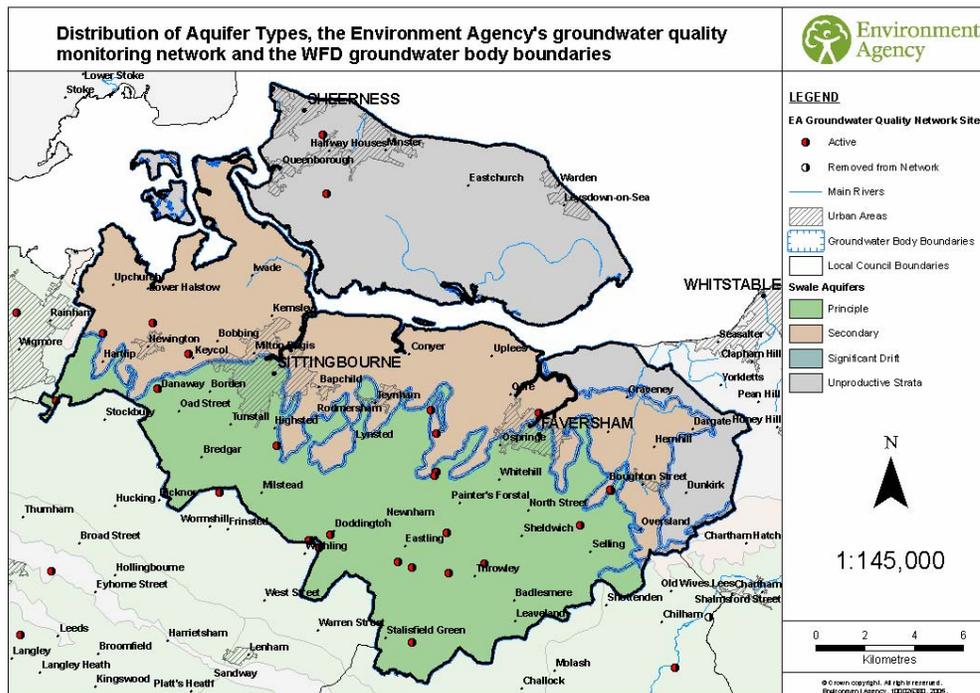


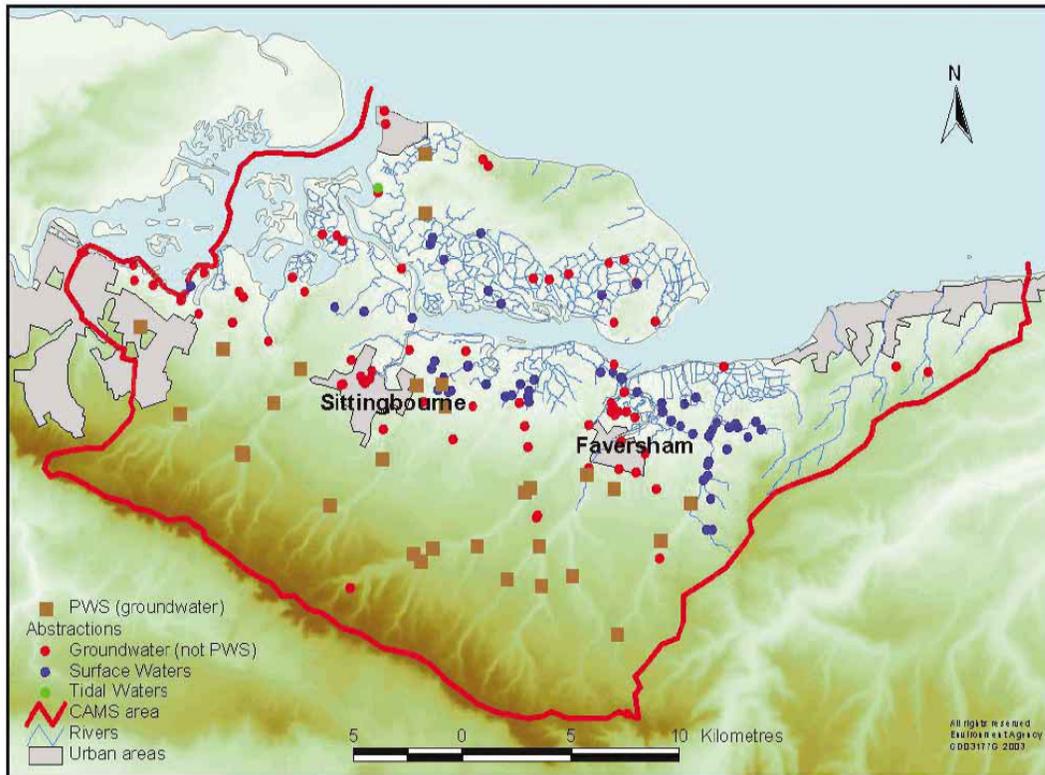
Figure 3: Distribution of Aquifer Types across North Kent and Swale catchment<sup>12</sup>

<sup>9</sup> Southern Water 'Water Resources Management Plan: Revised Draft Following Consultation', April 09

<sup>10</sup> South East Water 'Draft Water Resource Management Plan', May 2008

<sup>11</sup> CAMS provide a catchment abstraction management strategy, based on local water availability. The current CAMS for Swale is dated 2004, and a review of this CAMS started last year, 2008.

<sup>12</sup> Environment Agency Fact Sheet 'State of Groundwater Report Swale Borough Council', 2009



**Figure 4: Licensed Water Abstraction Points in the North Kent and Swale catchment<sup>13</sup>**

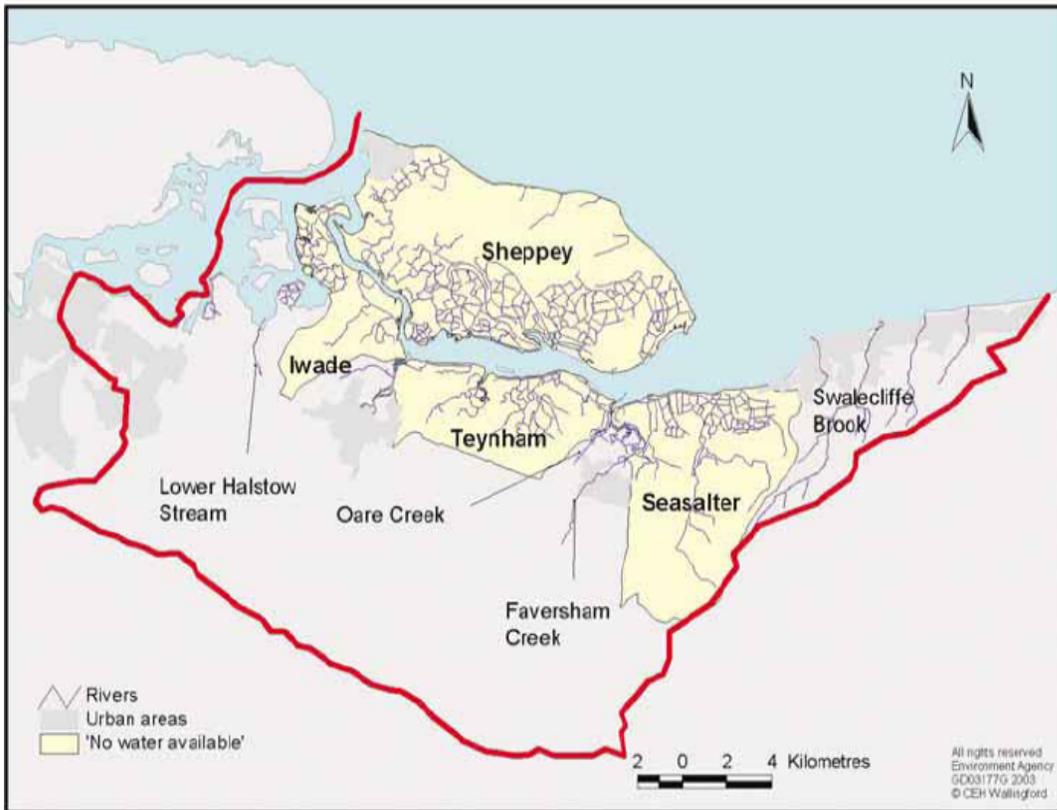
2.12. The CAMS sets out how much water is available in each Water Resource Management Unit in the catchment, looking at surface water and then groundwater (Figures 5 and 6). Table 1 explains what the categories mean.

Indicative resource availability status	Definition	Colour Coding for illustration on map
Water available	Water likely to be available, although some restrictions may apply.	Blue/mauve
No water available	No water available for further licensing at low flows/levels although water may be available at higher flows/levels with appropriate restrictions.	Yellow/white
Over-licensed	Current actual abstraction is resulting in no water available at low flows/levels. If existing licences were used to their full allocation, they would have the potential to cause unacceptable environmental impact at low flows/levels. Water may be available at high flows/levels with appropriate restrictions.	Orange
Over-abstracted	Existing abstraction is causing unacceptable environmental impact at low flows/levels. Water may still be available at high flows/levels with appropriate restrictions.	Red/pink

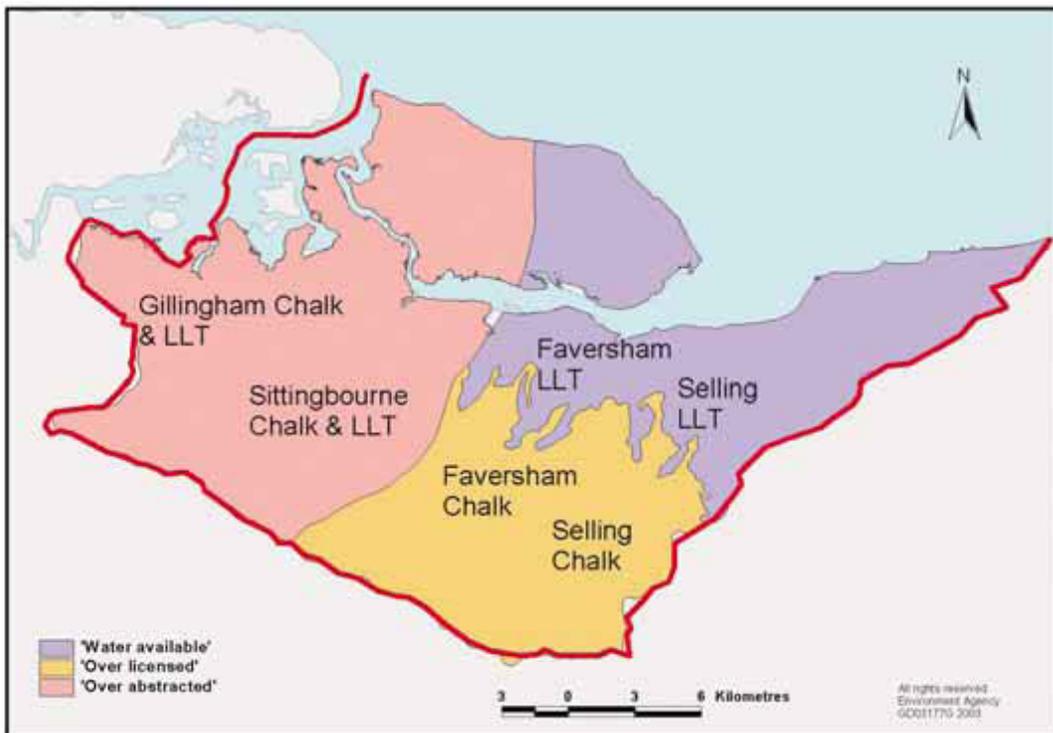
**Table 1: Resource availability status categories<sup>14</sup>**

<sup>13</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>14</sup> Environment Agency 'North Kent and Swale CAMS', April 2004



**Figure 5: Surface water availability<sup>15</sup>**



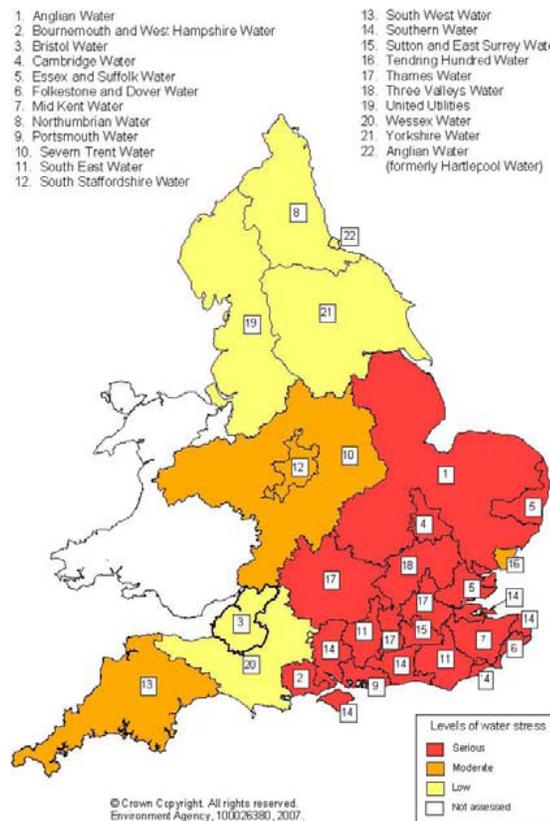
**Figure 6: Groundwater availability<sup>16</sup>**

2.13. The overall picture is slightly mixed for North Kent and Swale. There is no water available for abstraction when you look at Figure 5 for surface water. Figure 6 for groundwater units show

<sup>15</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>16</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

that water is available in parts of the borough but over abstracted in others<sup>17</sup>. Figure 6 is a little misleading on its own as the capacity of the water available aquifer is relatively small. The general trend the Environment Agency want to see with these Water Resource Management Units is one of revoking or reducing of old licenses and reduced, time-limited abstraction overall with the aim of achieving more sustainable limits. At present this CAMS area is transferring water out of its catchment to the Stour and Medway catchment. However, the overall conclusion should be that Swale is within an area of serious water stress, as is highlighted in Figure 7.



**Figure 7: Levels of water stress<sup>18</sup>**

#### 2.14. Demand

2.15. In the North Kent and Swale area, public water supply in 1999 accounted for 76.63%, industry 22.49% and agriculture 0.88% of abstractions<sup>19</sup>. Using Southern Water's figures, during the year 2007-8, leakage, including that lost from customers' supply pipes, accounted for 15% of distributed input.

2.16. Within Swale, metered households use between 130 and 160 litres per person per day. Unmetered households in Swale use 160-170+ litres per person per day<sup>20</sup>. 28% of homes in

<sup>17</sup> Environment Agency 'Water for People and the Environment: Water Resource Strategy for England and Wales', March 09

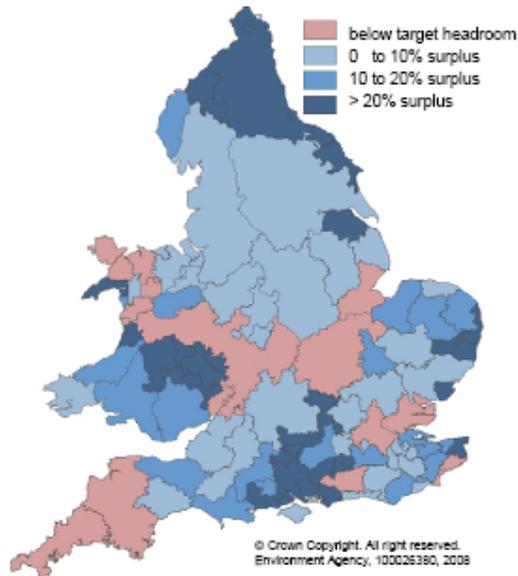
<sup>18</sup> Environment Agency, 2007. Please note this diagram does not reflect latest Water Companies boundaries which came into effect in December 2007.

<sup>19</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>20</sup> In contrast, in the developing world it is more usual for people to use 10 litres per person per day (EA data)

England and Wales have water meters. Households with metered water have so far used about 10% less water than those that are unmetered<sup>21</sup>.

2.17. The difference between available supplies and demand is known as ‘headroom’. Each water company calculates its target headroom to ensure it can reliably meet customer demand in a dry year. According to the EA, in Swale we currently have between 10-20% surplus although we are in proximity to areas with a 0-10% surplus as well as one below target headroom (see Figure 8)<sup>22</sup>.



**Figure 8: Relative security of public water supplies (from data reported to Ofwat, 2008)<sup>23</sup>**

2.18. Section 3 of this paper will examine the future supply/demand balance in Swale.

### 2.19. Water and Environmental Quality

2.20. The existing water features within Swale have experienced many pressures over time. During the 1960s major drainage works were undertaken within the enclosed marshes and this led to the creation of large arable fields and a loss of grazing marshes. The use of fertilizers and pesticides on the upper parts of the catchment still pose a risk to groundwater quality<sup>24</sup> and have contaminated surface water streams feeding the tidal creeks, resulting in contamination of these areas.

2.21. Throughout England, nitrate levels of surface and groundwater are increasing. This is a concern, as the nitrate has to be removed before water can be supplied to customers and it can harm the environment. Most of the North Kent and Swale CAMS area is not included in the Nitrate Vulnerable Zone (NVZ). Only the North Downs and an area to the south east of

<sup>21</sup> Levett Therivel Scott Wilson / Government Office for the South East South East RSS: SA and HRA / AA of the Secretary of State's Final Revisions

<sup>22</sup> Environment Agency Water resources in England and Wales – current state and future pressures, 2008

<sup>23</sup> Environment Agency Water resources in England and Wales – current state and future pressures, 2008

<sup>24</sup> Environment Agency 'North Kent and Swale CAMS', April 2004 and Environment Agency Fact Sheet 'State of Groundwater Report Swale Borough Council', 2009

Faversham have groundwater NVZ designation. Farmers within a NVZ area have to follow DEFRA guidelines to ensure nitrate leachate is within set levels<sup>25</sup>.

- 2.22. Urbanisation has resulted in channel modification notably around Sittingbourne and Faversham and associated pollution and sewage treatment works have all limited the ecology of the Chalk springs<sup>26</sup>.
- 2.23. The area also has important industrial activities including brewing, paper manufacture, port activities and steel manufacturing.
- 2.24. Groundwater levels within the borough are changing. Industrial water abstraction, has declined in recent years highlighted by the closure of Sittingbourne Paper Mill. The reduction in groundwater abstraction in the centre of Sittingbourne has meant that ground water levels have returned to their natural levels increasing the risk of localised groundwater flooding at times of intense rainfall when capacity of the existing drainage system is at its maximum.
- 2.25. Currently none of the river length in the Swale/North Kent catchment is achieving good ecological status/potential<sup>27</sup> Expected progress to 2015 is moderate<sup>28</sup>.
- 2.26. Table 2 summarises the status of groundwater in Swale for the Water Framework Directive. This is made up of an assessment of chemical and quantitative status. The overall status for the groundwater body across Swale is poor<sup>29</sup>.

AQUIFER TYPE (% of Swale)	GROUNDWATER BODY (% of Swale)	CHEMICAL STATUS (Draft)*	QUANTITATIVE STATUS (Draft)*	OVERALL** STATUS (Draft)
Principal (38%)	North Kent Swale Chalk (37%)	Good Status, Low Confidence	Poor Status, Low Confidence	Poor
	East Kent Chalk: Stour (<1%)	Poor Status, High Confidence	Poor Status, Low Confidence	Poor
Secondary (32%)	North Kent Tertiaries (32%)	Good Status, Low Confidence	Poor Status, Low Confidence	Poor
	East Kent Tertiaries (<1%)	Good Status, Low Confidence	Poor Status, Low Confidence	Poor
Unproductive Strata (30%)	Unproductive Strata (30%)	Not assessed	Not assessed	-

\* Chemical & Quantitative Classifications will remain in Draft status until early 2009 when the final results are published.

\*\* If a groundwater body is classified as poor in either the quantitative or quality tests the overall status will be poor.

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**Table 2: Status of Groundwater in Swale<sup>31</sup>**

- 2.27. The ecological status/potential for estuarine and coastal waters is moderate<sup>32</sup> as Figure 9 shows.

<sup>25</sup> Environment Agency 'North Kent and Swale CAMS', April 2004

<sup>26</sup> Environment Agency Catchment workshops for river basin planning, Thames River Basin District, Delegate pack, May 2009

<sup>27</sup> Environment Agency Catchment workshops for river basin planning, Thames River Basin District, Delegate pack, May 2009

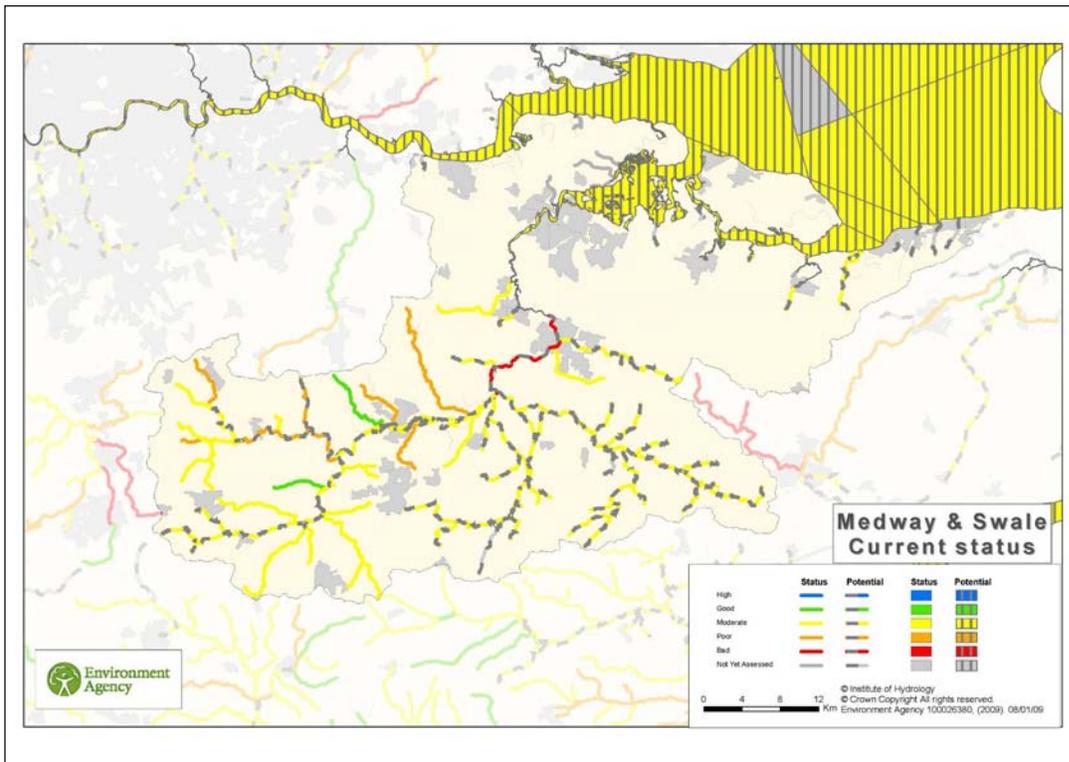
<sup>28</sup> Environment Agency Draft River Basin Management Plan, Thames River Basin District December 2008

<sup>29</sup> Environment Agency Fact Sheet 'State of Groundwater Report Swale Borough Council', 2009

<sup>30</sup> Environment Agency Fact Sheet 'State of Groundwater Report Swale Borough Council', 2009

<sup>31</sup> Environment Agency Fact Sheet 'State of Groundwater Report Swale Borough Council', 2009

<sup>32</sup> Environment Agency 'Water for Life and Livelihoods Annex A: Current state of waters in the Thames River Basin District', Figure A.5



**Figure 9: Medway and Swale Current Status<sup>33</sup>**

- 2.28. Improvements in the surface water bodies will be targeted at reducing physical pressures such as culverts, sluices and concrete banks for example in the Milton, Faversham and Oare Creeks.
- 2.29. Much of the work needed within Swale will be to improve the groundwater quality through addressing diffuse and point source pollution. Water quality has been recognised as a problem and action will be taken to improve sewage discharges in the Swale, Frognal Drain, Faversham Creek and Milton Creek<sup>34</sup>.
- 2.30. The Environment Agency indicates the risk to groundwater supplies from potentially polluting activities and accidental releases of pollutants by defining Source Protection Zones (SPZ) (Figure 10). Zones have been defined for more than 2,000 groundwater sources. These are wells, boreholes and springs used for major potable uses, in particular public drinking water supply. The zones are used, in conjunction with EA Groundwater Protection: Policy and Practice (GP3), to set up pollution prevention measures in areas at higher risk and to monitor the activities of potential polluters nearby.

<sup>33</sup> Environment Agency Catchment workshops for river basin planning, Thames River Basin District, Delegate pack, May 2009

<sup>34</sup> Environment Agency Catchment workshops for river basin planning, Thames River Basin District, Delegate pack, May 2009

Figure 4

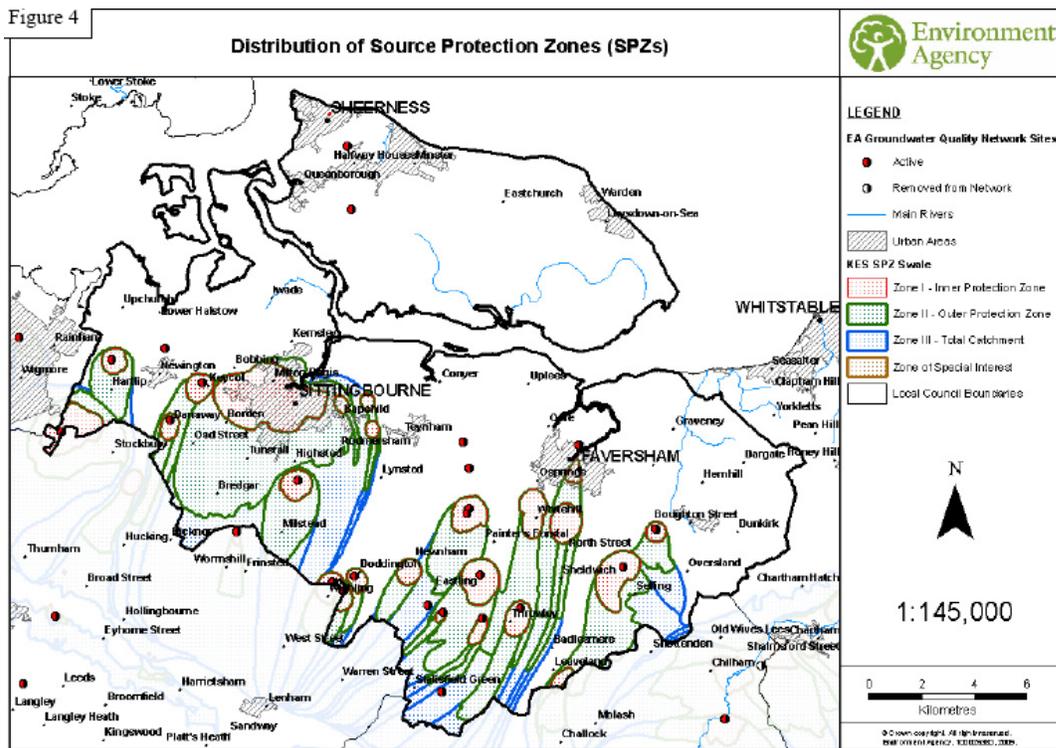


Figure 10: Distribution of Source Protection Zones

- 2.31. **Bathing waters** are evaluated by the Environment Agency. Bathing water quality has improved significantly since 1990. Between 1998 and 2008 the number of bathing waters meeting the European guideline standards increased by a third. This is largely due to water companies investing to improve the quality of their sewage discharges. There has been a small decline in bathing water quality since 2006, due to diffuse pollution from agricultural and urban sources, and storm sewage overflows operating more frequently. Further sewerage improvements are planned in the water companies' environment programmes.
- 2.32. In 2008 both monitoring stations in Swale, at Sheerness and Leysdown, were classed as having excellent bathing water quality<sup>35</sup>.
- 2.33. Diffuse pollution also effects bathing water quality. Examples of this sort of pollution include water runoff from farmland contaminated by livestock waste, road water runoff in urban areas and discharges from storm water drainage systems where sewers have been illegally connected into them. The Environment Agency are already addressing these problems using initiatives such as Catchment Sensitive Farming and Sustainable Urban Drainage Systems (SUDS).
- 2.34. A new Bathing Water Directive will take effect from 2015. This will set stricter water quality standards. The Environment Agency will carry out investigation to identify and tackle the sources of pollution to meet the new standards.
- 2.35. **Flood risk**
- 2.36. A high proportion of the borough falls within the Environment Agency's tidal flood zones. A Strategic Flood Risk Assessment (SFRA) for Swale has been completed (August 2009) which provides greater clarity of flood zones within the borough for present day, for 2070 (for commercial development) and 2115 (for housing), taking into account the effects of climate change.

<sup>35</sup> Environment Agency website – Bathing Waters – What's in Your Backyard?

- 2.37. The SFRA assessed 9 potential development areas in detail. In terms of tidal flood risk Sittingbourne Town Centre, Iwade and Faversham Town Centre have significant proportions of their areas in Flood Zone 1 (low risk). Other areas (including Milton Creek, Faversham Creek, Sheerness and Queenborough and Rushenden) had extensive areas covered by the tidal flood zones<sup>36</sup>. As the SFRA demonstrates, flood risk will increase with Climate Change.
- 2.38. Surface water, groundwater, and to a lesser extent fluvial, flooding also present risks and are highlighted in the SFRA. The SFRA gives guidance on the application of sustainable drainage systems.
- 2.39. The SFRA also gives guidance on the application of the Sequential Test and the preparation of Flood Risk Assessments, as required by PPS25.
- 2.40. Swale's SFRA has been prepared in partnership with the EA who will retain the model which can be used to ascertain level details and to assess the impacts of any mitigation works.

### **3 The Future Situation in Swale**

#### **3.1 Future Pressures**

- 3.2 There are already significant pressures on the water environment, and these pressures will be exacerbated with increased population and future development, Climate Change and the impacts of environmental legislation.
- 3.3 The overall trend of Climate Change in the UK is for warmer, wetter winters and hotter, drier summers with a potential for drought. UK Climate Projections 2009 show that for a medium emissions/central estimate scenario for 2020 summer temperatures are likely to increase by 1.6 degrees centigrade, we will see -7% decrease in summer rainfall and + 6 % increase in winter rainfall<sup>37</sup>. Our historic dependence on steady and predictable conditions needs to change. The Environment Agency's analysis indicates a drop in annual river flows of up to 15 per cent. There may also be a reduction in recharge to aquifers which will lead to a consequent lowering of groundwater levels. As well as reducing river flows and groundwater levels, climate change will have other effects on the water environment, such as increased water temperatures. The weather will become stormier increasing flood risk from tidal and surface water sources. This will be exacerbated by sea level rise.

#### **3.4 The Future Supply/Demand Balance**

- 3.5 The future demand situation for Swale will be effected by many factors including population growth, changes in agriculture and climate change.
- 3.6 EA forecasts show that total national demand for water is likely to continue to rise steadily over the next 10 years. By 2020, demand could be around 5% more than it is today<sup>38</sup>.
- 3.7 The EA estimates that the population of Swale is likely to increase (2006-2031) by between 21 and 40%<sup>39</sup>, therefore demand for water in Swale is likely to increase more than the 5% nationally.
- 3.8 South East Plan population projections seems to imply a slightly slower population increase than the EA predict with the population of Swale increasing between 2006 and 2026 from 128,500 to 140,400<sup>40</sup>.

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<sup>36</sup> Halcrow 'Swale Borough Council, Strategic Flood Risk Assessment Draft', February 2009

<sup>37</sup> Defra UK Climate Projections 2009 Regional Data – South East England

<sup>38</sup> Environment Agency 'Water for People and the Environment: Water Resource Strategy for England and Wales', March 09

<sup>39</sup> Environment Agency Water resources in England and Wales – current state and future pressures, 2008

<sup>40</sup> South East Plan November 2008 Projections from KCC Analysis and Information Team

- 3.9 Changes in agriculture, including the artificial extension of the growing season using polytunnels and the need to supply food locally and import less, will also increase demands on water by direct abstraction for crop irrigation. Demand for water for irrigation could increase in all areas over the next 10 years, and could be 25 per cent higher by 2020. By the 2050s eastern, southern and central England and eastern margins of Wales could have irrigation needs higher than those currently experienced anywhere in England, and similar to those seen in central and southern Europe<sup>41</sup>.
- 3.10 The effects of climate change and warmer weather will also mean higher demands for water by households. By the 2050s, there may be an increase of between two and four per cent in domestic demand from climate change alone<sup>42</sup>.
- 3.11 **Government targets for per capita water consumption** are set out in Defra's Future Water: The Government's Water Strategy for England. It suggests that water consumption in existing properties could be reduced to an average of 130 l/hd/d by 2030 through demand management measures, with the hope of further reduction to 120 l/hd/d<sup>43</sup>.
- 3.12 CLG's Code for Sustainable Homes promotes reduction in consumption of potable water in dwellings, through the use of water efficient fittings, appliances and water recycling systems. The Code for Sustainable Homes Level 3 and 4 mandatory water consumption level is less than 105 litres per person per day (contrast with our current use of up to 170 litres per person per day). Levels 5 and 6 require consumption less than 80 litres per person per day. The Government target is that all new homes built from 2016 must be zero carbon rated ie Level 6.
- 3.13 **Water Companies' Water Resource Management Plan** - The water companies are required to produce Water Resource Management Plans which set out the long-term (25 year) balance between increasing demand and available supply.
- 3.14 The Water Companies set out to follow a "twin-track" approach. This comprises the parallel approach of reducing demand through demand management measures (leakage reduction, appropriate metering policies and the promotion of water efficiency initiatives) and the associated development of new sources, inter-zonal transfers or inter-company bulk supplies.
- 3.15 **South East Water** Resource Zone 8 (partly within Swale) remains in surplus until 2019 and these pre-2020 surpluses will be used to support exports to Resource Zone 7, and then indirectly the inter-Resource Zone transfers from Resource Zone 7 to Resource Zones 1, 2, 3 & 6. Post 2020 a new groundwater scheme is planned for development at Hoplands Farm, near Canterbury, to maintain the supply demand balance to 2026.
- 3.16 From 2026 the proposed Broad Oak reservoir remains selected as part of South East Water's modelled least cost solution, despite challenge from the Environment Agency. Given the long lead in times of reservoir options, South East Water has retained Broad Oak in its plan but remains committed to investigating alternatives and finalising a regional solution during the AMP5 period from 2010 to 2015.<sup>44</sup>
- 3.17 South East Water Draft Business Plan (August 2008) states that they plan to increase metering of household properties by increasing the penetration of metered household properties from 37% to 65% by 2015 and to 90% by 2020. However, the Environment Agency have substantial concerns about 'fundamental elements of South East Water's water resources management plan and do not believe it provides a robust plan for public supplies

<sup>41</sup> Environment Agency 'Water for People and the Environment: Water Resource Strategy for England and Wales', March 09

<sup>42</sup> Environment Agency 'Water for People and the Environment: Water Resource Strategy for England and Wales', March 09

<sup>43</sup> Department for Environment, Food and Rural Affairs (2008). *Future Water: The Government's water strategy for England* [online] available at: <http://www.defra.gov.uk/environment/water/strategy/pdf/future-water.pdf> (accessed 23 March 2009).

<sup>44</sup> South East Water 'Water Resources Management Plan Statement of Response', January 2009, p 25

and the environment<sup>45</sup>. They believe considerable further work is needed to demonstrate an appropriate plan. In particular, the medium and longer term resource development proposals should not be promoted without further review. South East Water's plan falls down on:

- using over cautious demand forecasts and not fully assessing Climate Change impacts
- not taking enough account of demand management and per capita consumption targets set by Government
- having an over-reliance on new resources such as Broad Oak

3.18 As a result of these concerns on 3<sup>rd</sup> August 2009, the Secretary of State announced that South East Water's plan should be given further consideration in public at a public inquiry.

3.19 **Southern Water** describe their plan as firmly "demand management-led" and assumes the completion of a programme of universal metering by 2015, further reductions in leakage and the continued promotion of water efficiency.

3.20 By 2015 Southern Water aim to:

- introduce universal metering by installing over 500,000 meters
- implement asset improvement schemes for groundwater sources
- optimise interzonal transfers (to Kent Thanet)

Before 2035 Southern Water aim to:

- renew the scheme bulk supply to South East Water
- implement licence variation to the River Medway Scheme
- implement licence variation of groundwater source
- implement further leakage reduction
- implement Aylesford wastewater recycling scheme
- implement raising Bewl Water
- implement bulk Supply from Bewl Water to South East Water
- implement bulk Supply from Burham to South East Water<sup>46</sup>

3.21 As of 3<sup>rd</sup> August 2009, the Secretary of State announced that Southern Water is amongst the group of 10 water companies that can finalise their Water Resource Management Plans for publication.

3.22 **The Water Resources in the South East (WRSE) group** is a technical group including representatives of the Environment Agency, each water company and the Regional Assembly. They undertook modelling work on the levels of growth outlined in the draft South East Plan. On this basis, the Assembly concluded in 2008 that all WRMPs in the South East include a range of measures to secure sufficient drinking water supply into the future<sup>48</sup>.

3.23 Not everyone is so confident. Whilst the water companies Water Resource Management Plans set out fairly confident projections for meeting demand with supply and maintaining headroom, other analysts disagree. A paper by Richard Sturt of the Consumer Council for Water argues that we could face a shortfall in supply of 29% of input by 2030<sup>49</sup>. The CPRE's research is also doubtful that that the water companies in the South East have made realistic

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<sup>45</sup> Environment Agency 'Statement of Response Advice Report: South East Water' 1 May 2009

<sup>46</sup> Southern Water 'Water Resources Management Plan Revised Draft following Consultation', April 2009, Table 11.1

<sup>48</sup> David Payne, Regional Planning Manager SEERA, 'Regional Assembly/Regional Planning Committee/23 July 2008 on Water Resource Management Plan', 14 July 2008

<sup>49</sup> Richard Sturt, Chairman Consumer Council for Water (Southern Region) Kent's Water Supply: Water, Water Everywhere, Nor Any Drop to Drink', 2006

predictions. A report by Graham Warren for the CPRE states that ‘by 2025, with the effects of climate change, better care for our environment under the Water Framework Directive and massive housing growth, the public water deficit [in the South East] could be as much as a billion litres per day’<sup>50</sup>.

### 3.24 Sustainability Appraisal of the Regional Spatial Strategy

- 3.25 The Regional Spatial Strategy sets the long term spatial planning framework for the South East and sets housing requirements for Swale (2006-2026) of 10,800 dwellings. The Sustainability Appraisal (SA) for the Regional Spatial Strategy (RSS) analyses the impact of the RSS’s policies. In the short to medium term (to 2020) it concludes that as the RSS will lead to more housing and employment and although per capita water use is likely to decrease, total water use in the region is likely to increase. The Environment Agency expects the RSS’s ‘twin-track’ approach of providing more water resource infrastructure and influencing people’s behaviour to keep resources in balance. However both ‘tracks’ are subject to uncertainties, and it is possible that water resources will be a constraint within the lifetime of the RSS. Climate change is likely to increase water use; water metering and implementation of the Water Framework Directive to decrease it. Other regions are also likely to increase the pressure on water resources due to increased households / population<sup>51</sup>.
- 3.26 In the long term (beyond 2020) impacts on water use in the region are likely to grow over time, as more housing and employment development is built and as the water infrastructure deficit increases. Climate change is likely to exacerbate water resources problems in the long term. However, while the whole region is affected, Swale is not selected by the SA to be an area of significant affect<sup>52</sup>.
- 3.27 The RSS’s SA drafts recommended that the RSS should specify that Code for Sustainable Homes level 3 or better should be required throughout the region. However, GOSE deemed this was a matter for Local Authorities to deal with through the LDF process.
- 3.28 However, despite some uncertainty, it is likely that in Swale we will have a positive supply situation in the short to medium term (to 2020) with current development levels. However, this is heavily dependent on demand management such as leakage reduction, and water efficiency measures. Within Swale, the Environment Agency ,through their influence on Water Companies’ Water Resource Management Plans, are pushing for a greater emphasis on efficiency rather than new infrastructure, as reflected in the final drafts of the Southern Water and South East Water’s Water Resource Management Plans<sup>53</sup>.
- 3.29 An option for Swale is to increase housing numbers above the 10,800 set out in the RSS. This would have obvious impacts on water quality and resources which would need to be evaluated in Swale’s Sustainability Appraisal and possibly through a Water Cycle Study.
- 3.30 A Water Cycle study is<sup>54</sup>:
- a method for determining what sustainable water infrastructure is required and where and when it is needed
  - a risk based approach ensuring that town and country planning makes best use of environmental capacity and opportunities, and adapts to environmental constraints;

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<sup>50</sup> CPRE, Graham Warren, ‘A Water Resources Strategy for the South East of England’, 2007

<sup>51</sup> Levett Therivel Scott Wilson / Government Office for the South East South East RSS: SA and HRA / AA of the Secretary of State’s Final Revisions, p 204

<sup>52</sup> Levett Therivel Scott Wilson / Government Office for the South East South East RSS: SA and HRA / AA of the Secretary of State’s Final Revisions, p 204

<sup>53</sup> Levett Therivel Scott Wilson / Government Office for the South East South East RSS: SA and HRA / AA of the Secretary of State’s Final Revisions, p 204

<sup>54</sup> Environment Agency ‘Water Cycle Study Guidance’ January 2009

- a way for all stakeholders to have their say, preventing any unexpected obstacles to growth
- the process that brings all the available knowledge and information together to help make better, more integrated, risk based planning decisions

3.31 A Water Cycle Study is usually led by the Local Authority in partnership with the Environment Agency and Statutory Water Companies. The Government Office, Natural England, the Regional Development Agency, Internal Drainage Boards, Developers and County Councils can also be involved.

3.32 Much of the data and information required for a water cycle study will already exist within the organisations who have responsibility for operating, regulating and managing the water environment. One of the key benefits of a partnership approach is unlocking this information and knowledge and making it available. Due to the development levels proposed in Swale, and following the advice on the Environment Agency website, it is recommended that a Water Cycle study be undertaken in Swale, starting with a Scoping study. However, a Water Cycle study would have significant costs.

### 3.33 Metering

3.34 As levels of water metering increase, average water use per person is likely to reduce. This is because people who have a water meter generally use 10 to 15 per cent less water than those that do not. As more people pay for water according to the volume used, it is thought that the average use per person will move towards a more conservative volume<sup>55</sup>. However, the SA for the RSS points out that it is not clear whether this reduction would also take place for remaining households<sup>56</sup>.

3.35 The EA explain that on average, over England and Wales, water companies expect the water used by both metered and unmetered households to increase slowly from year to year. However, the average use per person for all households is expected to fall because the forecast water savings resulting from installing meters should more than compensate for the underlying growth in water use<sup>57</sup>.

### 3.36 Future Quality

3.37 Increased water temperatures, reduced supply of water and tidal and surface water flooding negatively affect water quality and the environment. The Water Framework Directive aims to improve water quality and promote the sustainable use of all UK water bodies, including coastal waters, estuaries and all inland water bodies.

3.38 It requires all UK river basins to reach "good status" by 2015, through demanding environmental objectives, including chemical, biological and physical targets. As outlined above currently none of the river length in the Swale/North Kent catchment is achieving good ecological status/potential and the Environment Agency are not expecting an improvement by 2015. Action may therefore be required in Swale to reduce abstraction to enable water bodies to achieve good ecological status and comply with the WFD. As outlined above the Environment Agency also plans to improve groundwater quality through addressing diffuse and point source pollution and to improve sewage discharges in the Swale, Froggnal Drain, Faversham Creek and Milton Creek.

<sup>55</sup> Environment Agency 'Water for People and the Environment: Water Resource Strategy for England and Wales', March 09

<sup>56</sup> Levett Therivel Scott Wilson / Government Office for the South East South East RSS: SA and HRA / AA of the Secretary of State's Final Revisions

<sup>57</sup> Environment Agency Water resources in England and Wales – current state and future pressures, 2008

- 3.39 Improvements in the surface water bodies will also be targeted at reducing physical pressures such as culverts, sluices and concrete banks for example in the Milton, Faversham and Oare Creeks.
- 3.40 The expected progress towards achieving good ecological status and good ecological potential in rivers in the North Kent catchment is moderate<sup>58</sup>.

### 3.41 Sustainable Urban Drainage

- 3.42 Initiatives to slow water down and reduce the load on drainage systems can reduce flood risk, provide opportunities for water use other than for drinking and benefit water resources and the environment. Sustainable drainage systems (SuDS) provide a flexible approach to drainage and can include 'green' roofs (with vegetation), rainwater harvesting, permeable pavements, natural watercourse corridors, wetlands, reedbeds and ponds. SuDS provide an opportunity to treat polluted run-off from both urban and rural diffuse sources before it enters watercourses. These corridors and wetlands can form an attractive and functional part of accessible urban green space. Along with land management practices that help retain water in soil, many of these approaches will help to reduce the risk of flooding and can provide opportunities to improve recharge to the Chalk aquifer.
- 3.43 Planning conditions and/ or legal agreements to secure the implementation of SuDS are becoming common practice, and need to become routine especially in areas where pressure on water resources is high. The Environment Agency and others recommend that in future there is less connection of surface water with combined sewers by reviewing the automatic right to connect to sewers and using SuDS more widely. This will reduce the burden on treatment works and reduce the risks of flooding.

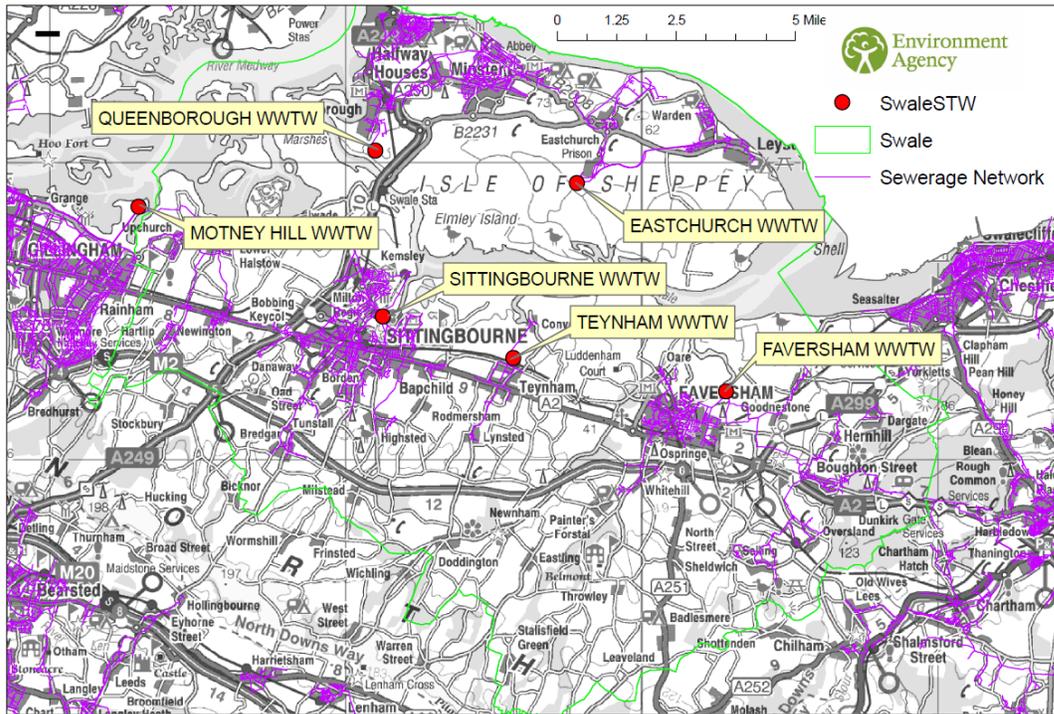
### 3.44 Sewerage

- 3.45 The forecast growth in the South East poses particular challenges for the provision of sewerage and wastewater treatment services. There are locations in the South East of England where, even using the best conventional technology, the environmental carrying capacity of rivers or estuaries to accept additional treated wastewater is at its limit<sup>59</sup>.
- 3.46 Within Swale there are Waste Water Treatment Works at Faversham, Teynham, Sittingbourne, Eastchurch and Queenborough and immediately outside the borough at Motney Hill (see Figure 11).

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<sup>58</sup> Environment Agency Catchment workshops for river basin planning, Thames River Basin District, Delegate pack, May 2009

<sup>59</sup> Southern Water, Water Services, Customers and the Community: Strategic Direction Statement' December 2007



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**Figure 11: Waste Water Treatment Works in Swale**

3.47 The Environment Agency has identified areas of concern where the receiving waters are almost at their capacity to receive effluent discharges. Consents in these areas have been set accordingly, but may need to alter again in the future if growth continues. A colour coded system has been devised to advise Planners:

- GREEN Areas of allowable development. These are catchments that do not give concern, so all reasonable applications can be accommodated.
- AMBER Areas where limited development is allowable. All except large developments can be accommodated, when checks should be made regarding the exact capacity available.
- RED Areas where caution should be exercised, and confirmation sought from Southern Water that the works is capable of receiving additional flows.

3.48 Table 3 sets out the status of the Treatment Works listed above. The overall conclusion within Swale is that sewerage is not a major issue compared to other Local Authority areas.

<b>WWTW</b>	<b>Status</b>
Faversham	AMBER
Teynham	GREEN
Sittingbourne	AMBER
Eastchurch	GREEN
Queenborough	RED
Motney Hill	AMBER

**Table 3: Status of Waste Water Treatment Works in or adjacent to Swale** <sup>60</sup>

#### 4 Policy context

##### 4.1 The relevant plans, policies and programmes are:

4.2 **Planning Policy Statements** PPS1: Delivering Sustainable Development, PPS3: Housing, PPS 9: Biodiversity and Geological Conservation, PPS 23: Pollution Control and PPS25: Development and Flood Risk are all relevant to this issue.

4.3 **Defra's Future Water: The Government's Water Strategy for England** (2008) sets out the Government's vision for sustainable delivery of secure water supplies and an improved and protected water environment. It suggests that water consumption in existing properties could be reduced to an average of 130 litres/head/day by 2030 through demand management measures, with the hope of further reduction to 120 litres/head/day <sup>61</sup>.

4.4 **CLG/Defra's report Water efficiency in new buildings**<sup>62</sup> (2007) outlines policies and measures that aim to reduce domestic consumption in new properties to 125 litres /head/day through the introduction of new building regulations. Government has also consulted on amending the Building Regulations to include minimum water efficiency standards for new homes, and will review the Water Supply (Water Fittings) Regulations 1999 later in 2009<sup>63</sup>. However there is uncertainty about when these will be agreed, and associated implementation put in place.

4.5 The aims of **Defra's Making space for Water** are to manage the risks from flooding and coastal erosion by employing an integrated portfolio of approaches which reflect both national and local priorities, so as:

- to reduce the threat to people and their property; and
- to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.

<sup>60</sup> Information taken from Environment Agency Southern Region, 'Water Quality and Planning – A Guide, Draft Vn 3, September 2008

<sup>61</sup> Department for Environment, Food and Rural Affairs (2008). *Future Water: The Government's water strategy for England* [online] available at: <http://www.defra.gov.uk/environment/water/strategy/pdf/future-water.pdf>

<sup>62</sup> Communities and Local Government / Department for Environment, Food and Rural Affairs (2007). *Water efficiency in new buildings* [online] available at: <http://www.communities.gov.uk/documents/planningandbuilding/pdf/WaterEfficiencyNewBuildings.pdf>

<sup>63</sup> Communities and Local Government (2008). The Building Act 1984, The Building Regulations 2000. Proposals for amending Part G (Hygiene) of the Building Regulations and Approved Document G: Consultation [online] available at: <http://www.communities.gov.uk/publications/planningandbuilding/partgconsultation> (accessed 2 April 2009).

- to secure efficient and reliable funding mechanisms that deliver the levels of investment required to achieve the vision of the strategy.

4.6 **CLG's Code for Sustainable Homes** promotes reduction in consumption of potable water in dwellings, through the use of water efficient fittings, appliances and water recycling systems. Code for Sustainable Homes Level 3 and 4 mandatory water consumption level is less than 105 litres per person per day (contrast with our current use of up to 170 litres per person per day). Levels 5 and 6 require consumption less than 80 litres per person per day.

4.7 Sir Michael Pitt conducted an independent review of the flooding emergency that took place in June and July 2007. The **Pitt Review** includes 92 recommendations for change including:

Recommendation 7: There should be a presumption against building in high flood risk areas, in accordance with PPS25, including giving consideration to all sources of flood risk, and ensuring that developers make a full contribution to the costs both of building and maintaining any necessary defences.

Recommendation 10: The automatic right to connect surface water drainage of new developments to the sewerage system should be removed.

Recommendation 14: Local authorities should lead on the management of local flood risk, with the support of the relevant organisations.

Recommendation 15: Local authorities should positively tackle local problems of flooding by working with all relevant parties, establishing ownership and legal responsibility.

Recommendation 18: Local Surface Water Management Plans, as set out under PPS25 and coordinated by local authorities, should provide the basis for managing all local flood risk.

Recommendation 23: The Government should commit to a strategic long-term approach to its investment in flood risk management, planning up to 25 years ahead.

Recommendation 24: The Government should develop a scheme which allows and encourages local communities to invest in flood risk management measures.

4.8 **Water Resource Management Plans** set out how Water Companies intend to supply water over the next 25 years. In doing so, they need to take account of population changes, climate change, and how to protect the environment from unnecessary damage caused by taking too much water. Water Companies must:

- plan a twin track approach with a balance between:
  - demand management such as leakage control and increased metering, and
  - resource developments such as new reservoirs or desalination.
  -
- take steps to further reduce leakage and outline how they are planning to stabilise supply pipe leakage
- plan to increase household metering particularly in areas where water is stressed, with appropriate protection for low income households and demonstrate how they will promote water efficiency

- forecast demand that is in line with Government's commitment to reduce water and energy use in new homes
  - assess the impact of climate change on both water availability and demand of current and future operations and reduce carbon emissions
  - ease the environmental impact of new schemes such as reservoirs
  - make environmental improvements by proposing to reduce the amount of water they take from the environment near Habitats Directive and SSSI sites
  - outline their level of service by stating when there would be restrictions on water use - such as hosepipe bans during times of drought.
- 4.9 The **Environment Agency** produces **Catchment Flood Management Plans** (CFMP) in order to:
- Understand the factors that contribute to flood risk within a catchment both now and in the future
  - Recommend the best ways of managing the risk of flooding within the catchment over the next 50 to 100 years.
- Most of Swale lies within the area covered by the North Kent Rivers Draft CFMP.
- 4.10 The **Environment Agency** produces **Catchment Abstraction Management Strategies** (CAMS). These are six-year plans which record how we are going to manage water resources in local area. The CAMS specific to Swale is the North Kent and Swale Catchment Abstraction Management Strategy, April 2004, with the next cycle starting in the Winter of 2010.
- 4.11 The **Environment Agency's River Basin Management Plans** are plans for improving water and wetlands. They contain the main issues for the River Basin District and the actions we all need to take to deal with them. Swale is within the Thames Estuary River Basin Management Area.
- 4.12 **Environment Agency's** definition of '**Water neutral**' development is where the total demand for water within a given spatial area is the same after new development is built, as it was before. That is, the new demand for water should be offset in the existing community by making existing homes and buildings in the area more water efficient.
- 4.13 Case study: Towards water neutrality in the Thames Gateway  
The Thames Gateway is Europe's largest regeneration project and a major growth area which will help deliver the Government's house building targets, with 160,000 new homes by 2016. Like much of the South East, the Gateway area is seriously water stressed, and there are few water supply options without serious cost and environmental implications. The Environment Agency, in partnership with CLG and Defra, led a study to explore the feasibility of achieving water neutrality – where the total water used after new development is no more than that used before the development, leaving water in the environment for wildlife and for people to enjoy. The study showed that, even with the forecast new development, population growth and increases in water demand, water neutrality is technically possible to achieve. This study demonstrated how growth and sustainable management of water resources can go hand in hand. The Environment Agency is working with Communities for Local Government (CLG), Defra, Ofwat and water companies to explore further the costs and delivery mechanisms for achieving water neutrality in the Thames Gateway.
- 4.14 The **Environment Agency** is developing a tidal flood risk management plan for London and the Thames Estuary. **The Thames Estuary 2100 project** (TE2100) was established in 2002 with the aim of developing a long-term tidal flood risk management plan for London

and the Thames estuary. The project, lead by the Environment Agency, covers the Tidal Thames from Teddington in West London, through to Sheerness and Shoeburyness in Kent and Essex. A key driver for the project is the need to develop an adaptable long term plan in the context of a changing estuary. It was acknowledged that the Thames was changing in relation to its climate, people and property in the floodplain and an underlying essential but ageing flood defence system. The plan was out for consultation (April – July 2009).

The preferred options for the first 25 years of the Plan (2010-2035) are:

- Continue to maintain the current flood defences system including planned improvements
- Ensure effective floodplain management (emergency and spatial planning) is in place across the estuary
- Safeguard areas that will be required for future changes to the flood defences
- Commence work to create new habitat through realignment of defences
- Monitor change indicators including sea level rise and climate change and review plan as required

For most of the developed Thames Gateway floodplain defences will be upgraded or increased. However, in undeveloped areas such as the North Kent Marshes flood risk will be managed as now, accepting that flood risk will increase as sea levels rise.

4.13 **The Government Office for the South East's South East Plan (2009)** recognises that water resources face increasing demand arising from existing and new development. Ensuring that new development has adequate supply and is water efficient is therefore a key challenge for the region. This encompasses the twin track approach of increased demand management and development of new sources of supply, together with the protection of river water quality and groundwater. A growing population will place extra demands on sewerage and wastewater treatment infrastructure and waters receiving effluent. Ensuring that water quality is maintained and improved, while accommodating new housing and economic development, is also a key challenge for the region. The extensive coastline is a distinctive regional feature and an important environmental, economic and recreational resource. The key policies for this paper are:

CC1 Sustainable Development  
CC2 Climate Change  
CC3 Resource Use  
CC4 Sustainable Design and Construction  
NRM1 Sustainable Water Resources and Groundwater Quality  
NRM2 Water Quality  
NRM3 Strategic Water Resources Development  
NRM4 Sustainable Flood Risk Management  
NRM5 Conservation and Improvement of Biodiversity

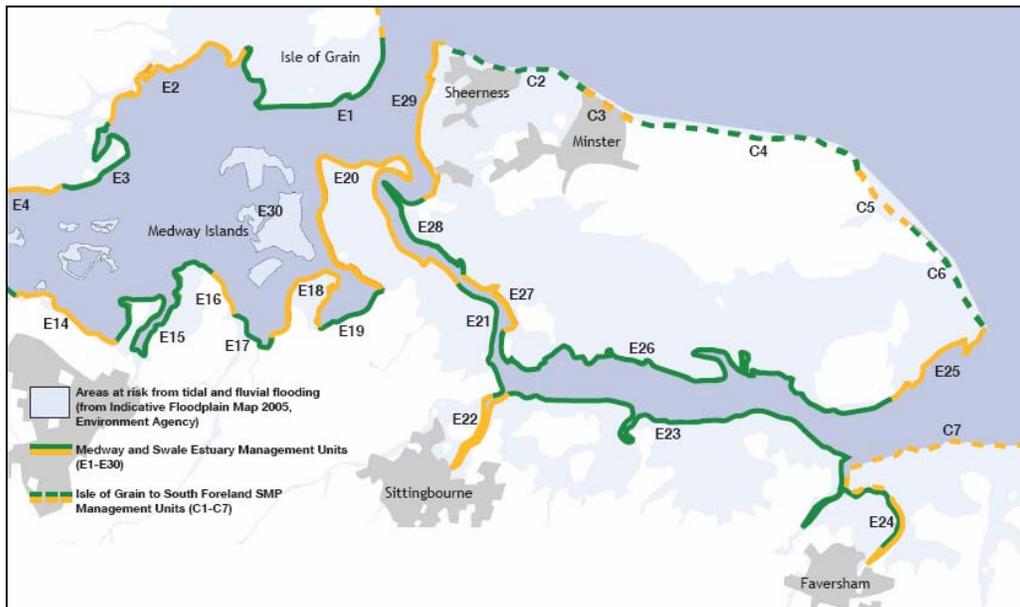
4.14 **South East England Regional Assembly's Regional Flood Risk Assessment for the South East (2008)** (Halcrow) identifies broad locations where significant housing coincides with high flood risk. The Thames Gateway is identified within this category. Residual risk is identified as an issue in the South East. Local Authorities are recommended to undertake SFRAs in accordance with PPS25, providing options for local flood risk effectively and to recommend mitigation and adaptation measures.

4.15 The Government's **Thames Gateway Parklands Vision** accepts the challenges of climate change and that Parklands must be responsive to environmental change by adapting defences and creating new inter-tidal habitats, and integrating riverside strategies in order

to create more accessible watersides and create opportunities for leisure, recreation and biodiversity.

- 4.16 KCC's Kent Environment Strategy** (2007) recognises the importance of high quality beaches and water environment. It sets out to ensure that beaches and bathing waters are free from human effluent, litter and oil and that quality standards are achieved (e.g. blue flag). It also recognizes that climate change and water are inextricably linked – the system of public water supply is a major energy user and therefore a source of emissions, while increased risk of water shortages is one of the likely impacts of climate change.
- Kent's water environment is under increasing pressure with water stress already having an impact on water quality and the wider environment – new development will add to these pressures
  - Given the environmental and economic costs of developing new sources of supply focus has to be given to reducing water use
  - Preparations for an increased risk of coastal and fluvial flooding associated with a changing climate need to be made.
- 4.17 KCC's Kent Design Guide** (adopted by Swale BC) promotes water efficiency measures through new development design.
- 4.18 The South East Coastal Group's Shoreline Management Plans - Isle of Grain to South Foreland and Medway Estuary and Swale** SMPs (consultation draft) Shoreline Management Plans (SMPs) are the coastal equivalent of CFMPs. Swale Borough lies within the Medway Estuary and Swale SMP and the Isle of Grain to South Foreland SMP areas. Copies of these policies are available from the South East Coastal Group website at [www.se-coastalgroup.org.uk](http://www.se-coastalgroup.org.uk). The coastline is divided into a number of policy units as shown in **Figure 12** (units are alternately coloured), within which a given policy is applied. The four main policies are:
- 'Hold the line' - maintain the existing defence line.
  - 'Advance the line' - build new defences seaward of the existing defence line.
  - 'Managed Realignment' - allow the shoreline to change with management to control or limit movement.
  - 'No Active Intervention' - a decision not to invest in providing or maintaining defences.

In some policy units, a combination of these four options may be applied.



**Figure 12 : Medway Estuary & Swale, and Isle of Grain to South Foreland Policy Areas (from Medway Estuary & Swale SMP 2007 Summary document)**

The policies for units within the Borough of Swale are summarised below:

- ‘Hold the Line’ is proposed for Kingsferry Bridge to Milton Creek (E21), Milton Creek (E22), Faversham to Nagden (E24), Rushenden to Sheerness (E29), Garrison Point to Minster (C2), Minster Town (C3).
- ‘Managed Realignment’ is proposed for Chetney Marshes (E20), Shell Ness to Sayes Court (E25), Sayes Court to North Elmley Island (E26) and Leysdown-on-Sea to Shell Ness (C6).
- ‘No Active Intervention’ is proposed for Ham Green to East of Upchurch (E16), Funton to Raspberry Hill (E19), the Medway Islands (E30) and Minster Slopes to Warden Bay (C4).
- ‘Managed Realignment with Localised Hold the Line’ is proposed for Motney Hill to Ham Green (E15), East of Upchurch to East Lower Halstow (E17) and Warden Bay to Leysdown-on-Sea (C5).
- Short term (20 years) of ‘Hold the Line’ then ‘Managed Realignment’ is proposed for North Elmley Island to Kingsferry Bridge (E27), Kingsferry Bridge to Rushenden (E28) and Faversham Creek to Seasalter (C7).
- Short term (20 years) of ‘Hold the Line’ then ‘Managed Realignment with Localised Hold the Line’ is proposed for Murston Pits to Faversham (E23).
- Short term (20 years) of ‘Managed Realignment’ then ‘No Active Intervention’ is proposed for Barksore Marshes (E18).

4.19 **Ambitions for Swale, Swale Borough Council’s Sustainable Community Strategy 2009-2026** looks to ensure that Swale enjoys an excellent quality of life by protecting and

enhancing the natural and built environment and ensuring that all regeneration in Swale is environmentally sustainable. The SCS aims to create a cleaner and greener Swale, in which people choose to live and work. Its ambitions for Swale's environment include:

- Responding to the challenges of climate change;
- Minimisation of use of natural resources, including water, energy and minerals;
- Continued awareness of, and planning for the flood risks affecting much of the Borough

**4.20 Swale Borough Council's Strategic Flood Risk Assessment (2009)** (Halcrow) identifies tidal overtopping and potential breaches as the main risk of flooding which will be exacerbated in the future due to sea level rise. The SFRA examines the entire borough at a Level 1 assessment and looks at nine potential development areas at a more detailed Level 2 assessment.

## Key Messages

- The Environment Agency has defined Swale, along with the rest of the South East and Eastern England as an area of 'serious water stress'. The EA highlights these areas as those where there is the greatest need to target water efficiency measures (Environment Agency: Water resources in England and Wales – current state and future pressures, December 2008).
- Swale is currently within an area of 10-20% headroom of water supply, however, it is in proximity to areas with significantly lower surplus, including areas below target headroom.
- Water Quality is mixed, but generally poor to moderate. Key steps to improve water quality include reducing physical pressures such as culverts, addressing diffuse and point source pollution through SuDS and improving sewage discharge as well as reviewing abstraction licenses. Pressure on water resources will add to pressure on water quality and will be managed as part of the Water Framework Directive. The Environment Agency's reviews of water quality status need to be monitored.
- Several of Swale's development areas are located within or adjacent to tidal flood zones. Flood risk will increase with Climate Change. Any development in these area will have to be managed very carefully, using the maps, data and guidance derived from the Strategic Flood Risk Assessment, following the policy outlined in PPS25 and in consultation with the Environment Agency.
- While Swale is in an area of serious water stress it is probable that development levels as set in the RSS are within sustainable limits in the short to medium term (to 2020) provided that demand management measures are followed. At the local level these measures could include requirements for Code for Sustainable Homes levels. Development at higher levels than set out in the RSS should be assessed using the Sustainability Appraisal and possibly through a Water Cycle Study. In the long term, and taking climate change into account, pressures on water resources are likely to become more significant and should be carefully monitored.
- Development, alongside Climate Change, will add to the pressure on Water Quality. At the local planning level, Sustainable Urban Drainage can assist in the treatment of polluted run-off from urban and rural diffuse sources. The Environment Agency's reviews of water quality status, including sewerage capacity, need to be monitored.
- The general direction of the plans, policies and programmes reviewed is towards improving water quality and conserving water resources. Government targets aim to reduce per capita consumption of water to 120-130 litres/head/day. For new homes, the Code for Sustainable Homes also sets high targets of 80 litres/head/day for Levels 5 and 6. At present implementation of the Code is voluntary and left to Local Planning Authorities to require through policy.
- Flood risk has been highlighted as of importance through PPS25 and the Pitt Review. A presumption against building in high flood risk areas has been set. Pitt also recommends that the automatic right to connect the surface water drainage of new developments to the sewerage system should be removed.

## **Annex A – Brief Legal Framework**

### **Urban Waste Water Treatment Directive 1991:**

- The Directive aims to protect the environment from the adverse effects of waste water discharges;
- All urban waste water must undergo secondary treatment or equivalent, in particular for:
  - All discharges from agglomerations of more than 15,000 population equivalent (i.e. with a 5-day BOD of 60g of oxygen per day);
  - All discharges to freshwater and estuaries from agglomerations between 2,000 and 10,000 population equivalent.

### **The EU Habitats Directive 1992 (Conservation (Natural Habitats and Conservation) Regulations 1994**

- Aims to protect wild plants, animals and habitats that make up our natural environment.
- The directive led to the setting up of a network of Special Areas of Conservation, which together with the existing Special Protection Areas form a network of protected sites across the European Union called Natura 2000.

### **Protection of Water against Agricultural Nitrate Pollution (England and Wales) Regulations 1996):**

- Surface or underground waters that are or could be high in nitrate from agricultural sources must be designated as Nitrate Vulnerable Zones (NVZ).
- Within these zones farmers must observe an action programme of measures restricting the timing and application of fertilisers and manures and must keep accurate records.

### **Groundwater Regulations 1998:**

- Impose the requirement to hold an authorisation to make discharges of certain pollutants to groundwater.
- Substances are classified into List I and List II:
  - List I includes the most toxic substances, which should be prevented from entering groundwater. These include pesticides, sheep dip, solvents, hydrocarbons, mercury, cadmium, cyanide, and other substances with mutagenic and/or carcinogenic properties. Disposal of List I substances into groundwater is prohibited, and its disposal onto land requires prior authorization from the EA.
  - List II includes less dangerous substances, although their entry into groundwater must still be restricted in order to prevent pollution. List II substances include some heavy metals, ammonia, phosphorous and its compounds. Direct discharge of list II substances into land or directly into groundwater requires prior authorization from the EA.

### **New Groundwater Regulations are due in 2009, arising from new requirements of the Water Framework Directive.**

### **Water Framework Directive 2000:**

- Aims to improve water quality and promote the sustainable use of all UK water bodies, including coastal waters, estuaries and all inland water bodies;
- It requires all UK river basins to reach "good status" by 2015, through demanding environmental objectives, including chemical, biological and physical targets;
- Three types of UK water quality standards are being developed
- Of importance to Swale when considering water resources for the borough and the impacts of increasing abstraction for public water supply is the link between groundwater and the

groundwater dependent surface water features, which make up the SPA and Ramsar designated features.

**The Water Resources Act 1991** controls the abstraction and impounding of water. **The Water Act 2003** brought in changes to:

- Modernise the regulation of water resources (abstractions and impounding of water) through significant changes to the licensing system.
- Sought to reduce damage to the environment and encourage water conservation.
- Required Water Companies to develop Water Resource Management and Drought plans
- Enabled the EA to encourage the transfer of water resources between water companies.

**Bathing Water Directive 2008** aims to protect public health and the environment from sewage pollution and farm waste at bathing waters and will come into effect in 2015.

**Draft Flood and Water Management Bill, April 2009** implements the key recommendations made in Sir Michael Pitt's independent review into the summer 2007 floods. It aims to:

- Reduce the likelihood and impact of flooding
- Improve our ability to manage the risk of flooding, by clarifying responsibilities
- Reduce pollution and improve water quality
- Give water companies better powers to conserve water during drought
- Reduce red tape and other burdens on water and sewerage companies and improve the overall efficiency and management of the water industry
- Give local authorities a clear leadership role in local flood risk management, encompassing all sources of flooding