

# State of Medway Report

## Water Supply

November 2008



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## State of Medway Reports

This is one of a series of factual reports that are being produced to inform the preparation of Medway's Local Development Framework or LDF. Each deals with a specific topic and draws together available information from a variety of sources.

The reports are intended to establish the current position and a baseline for further work. They also help in highlighting gaps in the information base. We would be pleased to hear from any interested party about any information sources that have not been referred to or gaps that should be addressed in future work.

At this preliminary stage no attempt has been made to identify issues arising from this research or options for addressing such issues. That will follow over the next few months but we would be happy to receive any initial suggestions now.

If you would like to comment on or respond to this report please use one of the methods set out in our 'Engagement Protocol', which is being widely publicised.

To monitor progress being made on the LDF please regularly check our website at [www.medway.gov.uk/ldf](http://www.medway.gov.uk/ldf).

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### 1. Introduction

- 1.1 Along with air and food, water is a vital element of human existence and access to a clean and reliable supply of drinking or 'potable' water is fundamental to the way we live. Until fairly recently the existence of an assured supply had been largely taken for granted – not least because regular rainfall was seen as characteristic of the nation's weather. However severe drought events and increasingly erratic weather patterns attributed to climate change, have underlined the importance of our water resources and their potential vulnerability.
- 1.2 Concern over the availability of supplies is particularly strong in the southeast – the driest region in the country, with the lowest level of rainfall landing and getting through to water supplies. Within the southeast Medway is situated on the eastern side and so rainfall levels are even lower than in areas to the west.
- 1.3 With high levels of development planned across the region there are therefore real concerns over how future requirements are to be met and how human demand can be balanced with the need to protect the

natural environment. In simple terms, if too much water is extracted within a local area, damage to the natural environment results.

- 1.4 Understanding what is termed the 'demand – supply balance' is therefore of obvious importance.

## **2. The Medway Context**

- 2.1 The principal supplier of water to the Medway area is Southern Water with South East Water and Thames Water serving small parts of the area. At present water is provided from the following sources:

- Pumped groundwater – this is drawn from the water table, the level in the ground below which all porous spaces and cracks are filled with water. When rock formations (particularly chalk) yield usable amounts of water they are called aquifers.
- Surface water – this comes from manmade reservoirs and by extracting some of the flow from rivers.

- 2.2 Currently 76% of Medway's supply comes from local groundwater sources and 24% from surface water sources outside the area.

- 2.3 There are 34 groundwater sources and 1 surface water source. The groundwater sources are exploited by a system of local pumping stations. There is limited, if any, potential to extract more groundwater. There are no reservoirs within Medway's boundaries although a supply of water comes from Bewl Water near Tunbridge Wells via the River Medway. However some local groundwater sources also serve Thanet via a pipeline and taking this into account these sources together provide a minimum deployable output of 145.31 MI/d (mega litres per day) and a peak deployable output of 188.05 MI/d.

- 2.4 Due to the presence of some surface water storage, the area is generally resilient to one season's drought but becomes more vulnerable to two or more seasons of low rainfall. This is due to the fact that groundwater resources take longer to recover than surface water sources.

- 2.5 The Bewl Water Reservoir is the only source that can significantly benefit from the introduction of any Drought Orders due to higher allowable extraction rates from local rivers. Groundwater sources cannot be supplemented in this way. Medway has suffered from the effects of drought on a number of occasions, with the most recent being in 2004-2006. In this instance there was serious stress on water resources and a drought plan had to be applied for, although due to changes to the supply side, this did not need to be activated.

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- 2.6 The River Medway scheme, which will include a wastewater recycling plant, is therefore particularly important in ensuring some resilience in the event of differing drought conditions.
  - 2.7 Medway is not a suitable location for a surface water reservoir so any additional future demand will have to be met from sources outside the area or by introducing desalination.
  - 2.8 Water Quality can be affected by both direct discharges of any effluent where business or industry is located on either the coastline or the riverbank, called point source pollution. The impact of runoff water is called diffuse pollution and this can occur in both urban and rural settings. In rural areas this will, in general, be from agricultural sources where land or crops have been treated and then heavy rain causes chemicals to percolate into the ground or be transported into local watercourses. The largest source of urban diffuse pollution tends to come from roads and sewers, when the available capacity is exceeded during heavy rainfall. In addition, there are a large number of other sources by which the water quality of local watercourses can be affected in both urban and rural environments.
  - 2.9 Given the extent of aquifers under the main urban areas in Medway strong controls are in place to limit the potential for groundwater pollution. However a main trunk sewer running close to the banks of the Medway to the Motney Hill Sewage Works surcharges into the river during periods of severe rainfall, affecting water quality in the estuary.

### **3. Policy context**

- 3.1 This section briefly summarises the policy context for water, covering national guidance, regional guidance and existing local policy.

#### *National Policy*

- 3.2 There is no specific planning policy guidance or planning policy statement dedicated to the subject. PPS1: Delivering Sustainable Development refers broadly to water supply provision in terms of developing new communities, PPS12: Local Development Frameworks expects continuous and progressive involvement by utility providers through the production of new LDFs. Otherwise there are references in various other guidance notes and statements to the impact of development on water supplies, flooding, biodiversity etc.

#### *Regional Policy*

- 3.3 The only specific policy relating to water supply and water quality is within the Draft South East Plan. Due to the water supply situation in the South East and some of the predicted impacts of climate change, these have been identified as particularly important issues. The

beginning of Chapter 5: Natural Resource Management is devoted to water related issues and pertinently following the examination of the draft plan, the first policy relating to sustainable water resources and river quality management has been divided into two separate policies.

- 3.4 Policy NRM1 concerns sustainable water supply and it states that Local Authorities (LAs) in conjunction with the Environment Agency (EA) should:

*“i. Ensure compatibility with River Basin Management Plans and take account of other plans and strategies including water company asset management plans, the Environment Agency’s Regional Water Resources Strategy and Catchment Abstraction Management Strategies, groundwater vulnerability maps and groundwater source protection zone maps....and*

*iv. Encourage winter water storage reservoirs and other sustainable land management practices which reduce summer abstraction, diffuse pollution and runoff, increase flood storage capacity and benefit wildlife and recreation.*

*v. Direct new development to areas where adequate water supply can be guaranteed from existing and potential water supply infrastructure. Where this is not possible, development should be phased so that sustainable new capacity can be provided ahead of new development.”*

- 3.5 Policy NRM2 relates to Water Quality and states that this will be *“maintained and enhanced through avoiding adverse effects of development on the water environment”* and that LAs should promote land management initiatives to reduce diffuse pollution.

- 3.6 In the accompanying text to policy NRM2 Medway is identified as an area where there are potential constraints to water supply, though this is pending more detailed feedback from the EA.

- 3.7 Policy NRM3 deals with strategic water resources development and is reproduced in full below.

*“There is a demonstrable need for new water resource schemes and increased demand management over the period of the Plan to cater for water supply needs of current and future development and the protection of the environment. Strategic new water resource options that may be required to be operational over the Plan period include:*

*i. Upper Thames reservoir, Oxfordshire by 2019/20*

*ii. Enlargement of Bewl reservoir, Kent by 2014/15*

*iii. Broad Oak reservoir, Kent by 2019/20*

*iv. Clay Hill reservoir, East Sussex by 2014/15*

*v. Havant Thicket reservoir, Hampshire by 2020/21*

*Local authorities should work with the water companies and the Environment Agency in assisting in the timely delivery of schemes.*

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*Local Development Documents should allocate and safeguard sites identified for the reservoir schemes identified in this policy and others that are identified by the companies and Environment Agency as being required to deliver necessary water infrastructure.*

*Additional resource schemes, including enlargement of Darwell reservoir, a strategic option in north- west Sussex, together with bulk water transfers, effluent re-use and desalination may also be required. In considering applications for new water resource schemes, consideration should be given to:*

- i. Need at local, sub-regional, regional, and inter-regional scales*
- ii. Presence of alternative options and environmental impact including water efficiency in new and existing properties*
- iii. Potential to deliver social and environmental benefits”*

- 3.8 Although none of the locations listed in the policy are in Medway they are of considerable indirect significance. As indicated in Section 2 above, any additional water supply capacity serving Medway will have to come from elsewhere. Hence the enlargement of Bewl would have a direct impact, while the Broad Oak reservoir would avoid the need for the Medway – Thanet pipeline.

*Kent & Medway Structure Plan*

- 3.9 Policy NR8 of the Kent and Medway Structure Plan 2006 states that development will not be permitted if it would give rise to unacceptable impact on the quality or yield of the county's watercourses, coastal waters and/or groundwater resources.
- 3.10 Policy NR9 supports the development of water supply and wastewater facilities where there is a demonstrable need, the proposal represents the best environmental option and there is appropriate mitigation. It also supports the enlargement of Bewl Water.

*Medway Local Plan*

- 3.11 Policy CF12 in the Medway Local Plan 2003 sets down what criteria development must meet to be acceptable, such as not having a detrimental impact on either the supply of water or its quality.

*Water Resource Management Plans*

- 3.12 Southern Water and South East Water have both been consulting on their respective Water Resource Management Plans (WRMPs), from May-August 2008. These will be submitted to the Department for Food and Rural Affairs (DEFRA) with the Environment Agency as a formal consultee. They outline what demand is expected in the future and how the water companies intend to ensure the provision of water supply over the next 25 years.



- 3.13 The introduction of the Water Framework Directive and its transposition into English legislation in 2003 also means that water companies in conjunction with the EA, should now produce plans to cover the protection, improvement and sustainable use of water. However these plans and documents are produced separately, even though they may inform each other.
- 3.14 Both WRMPs stress the importance of demand side measures, including the compulsory installation of water meters but these are unlikely to be sufficient by themselves. Southern Water's Water Resources Management Plan therefore proposes new supply measures.
- 3.15 These include the intended construction of a wastewater recycling facility on the River Medway during the period 2015-2020. It is hoped that as well as helping to ensure supply of water, this would also allow greater resilience to drought conditions as it would provide a constant deployable output and will also have energy benefits over desalination. This will have a capacity of 20 MI/d. It is intended that it will become operational during the period 2020-2035.
- 3.16 Further into the future it is also considered that previous plans for the raising of Bewl Water Reservoir and a new reservoir at Broad Oak near Canterbury may need to be investigated. A further suggestion is that if these proposals are insufficient, a desalination plant on the River Medway with an output of 10MI/d may also need to be considered.
- 3.17 Although a Broad Oak reservoir would not supply Medway it would reinforce supplies to Thanet and so do away with the current pipeline transfer from Medway.
- 3.18 It should be stressed however that the WRMPs are still subject to approval by DEFRA.

#### **4. Demand situation**

- 4.1 As indicated above, given that local water sources are already fully exploited, it is necessary to consider Medway in a wider context. Due to Medway's designation as a growth area within the Thames Gateway and the allocation of 16,300 houses in the Draft South East Plan, the demand for water will increase significantly in the future.
- 4.2 According to the figures within Southern Water's Water Resources Management Plan average annual demand within the Medway area is 119.5 MI/d, which can rise to 151.8 MI/d during peak times in dry years. Taking the higher amount this is slightly above the national average of 148 litres per person per day in 2006. There is no underlying trend of increasing water usage, so it should be expected that this will remain

about the same and then reduce over time as efficiency measures take effect.

- 4.3 Good quality data is available for the domestic use of water in Medway but only a very limited amount is available for non-domestic use. However it is known that there are a number of sectors, which place high demands on the water supply system of the area.
- 4.4 Both industry and agriculture can demand large quantities of water and both can have an impact on the quality of the water supply due to the potential for pollution.
- 4.5 Commercial development (offices etc.,) and leisure facilities (particularly swimming pools) can be substantial water users. There are various technologies available to improve water efficiency but significant benefits will only be achieved if these are retrofitted in existing developments on a large scale, in addition to efficiency measures in new buildings.
- 4.6 In response to this overall situation Southern Water is implementing a number of measures. These include:
- Increasing and improving supply pipe leakage detection and repair strategies
  - Introducing water meters to both domestic and commercial properties. This programme will be expanded to ensure there is a water meter in all properties without technical constraints by the end of 2009.
- 4.7 Despite these measures, Southern Water predict within their WRMP that on the basis of the minimum deployable output alone, there will be a deficit within the Medway area at 2010-11. That would then go into surplus in 2014/15 and continue to be in surplus until the end of 2019/20. However, at the end of the period 2020-2025 supply is forecast to return to deficit.
- 4.8 Alternatively using the peak deployable output as the basis instead, the supply to the Medway area begins in surplus and remains in surplus till after 2024/25. However this would require a consistently reliable rainfall pattern and all planned supply measures being put in place.

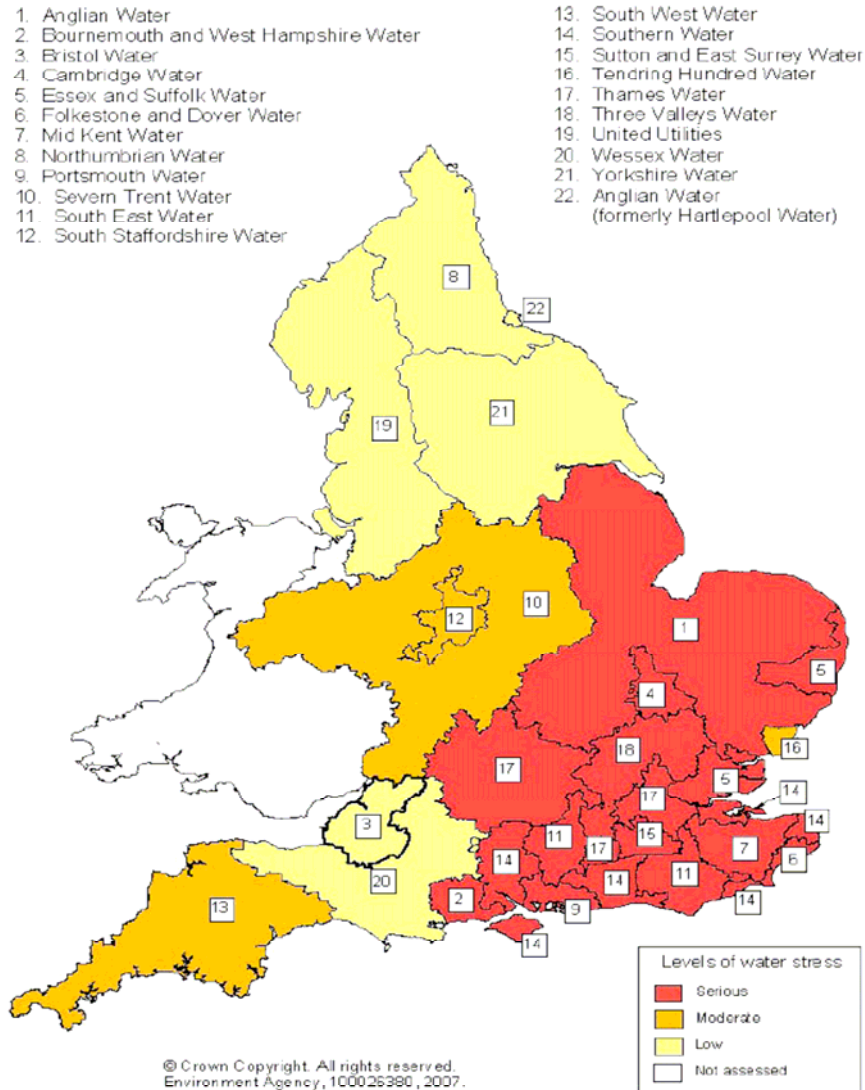
## **5. Supply situation**

- 5.1 This section considers the regional situation and then discusses the Medway area and the issues that arise.
- 5.2 All the water companies are part of the South East Water Resources Group. This looks at the strategic planning of water supplies, including considering whether supplies from another area may overcome deficits in some areas.

5.3 Both Medway and the overall South East region has been categorised as an Area of Serious Water Stress, as shown by Fig. 1 below. Areas within the South East are also considered to be over abstracted, meaning that existing abstraction is causing unacceptable damage to the environment at low flows and Medway is one of these areas.

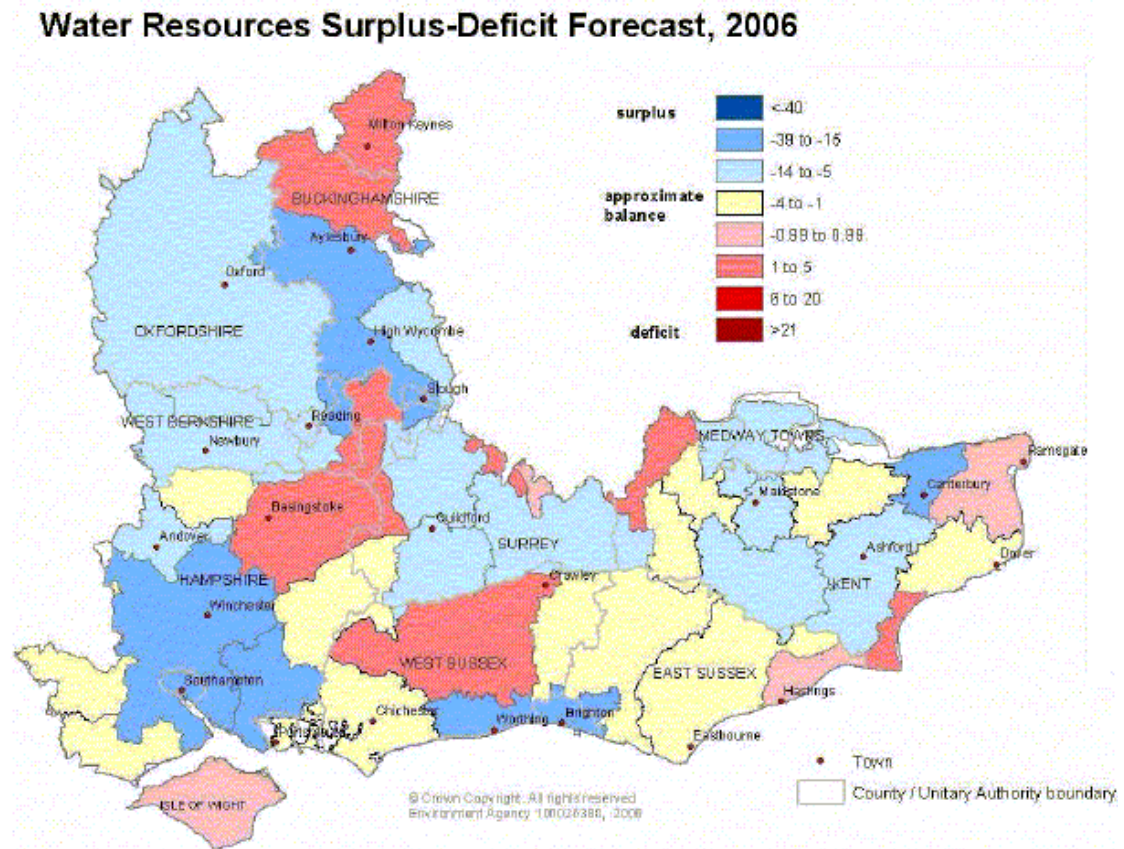
**Fig 1: Map showing classification of areas of relative water stress**

Figure 1: Map of areas of relative water stress



5.4 Figure 2 below shows the baseline situation in respect to water supply in 2006 with a surplus of 1-5MI/d within the Medway Towns. Figures 3, 4 & 5 then show the predicted situation, in relation to water supplies, over the period up to 2026, based on the housing allocation figures within the Draft South East Plan. These are based on the levels of growth set out in the Draft Plan along with 8% and 21% contingencies. They also assume increasing efficiency in terms of water use. These show a worsening deficit within the Medway Towns.

Fig 2: Map showing water resource surplus-deficit across the South East in 2006



5.5 As can be seen in Figure 3, the level of water supplied to the Medway area would end up having a deficit of  $-4$  to  $-1$  MI/d by 2011.

Fig 3: Map showing water surplus-deficit across South East projected for 2011  
Water Resources Surplus-Deficit Forecast, 2011

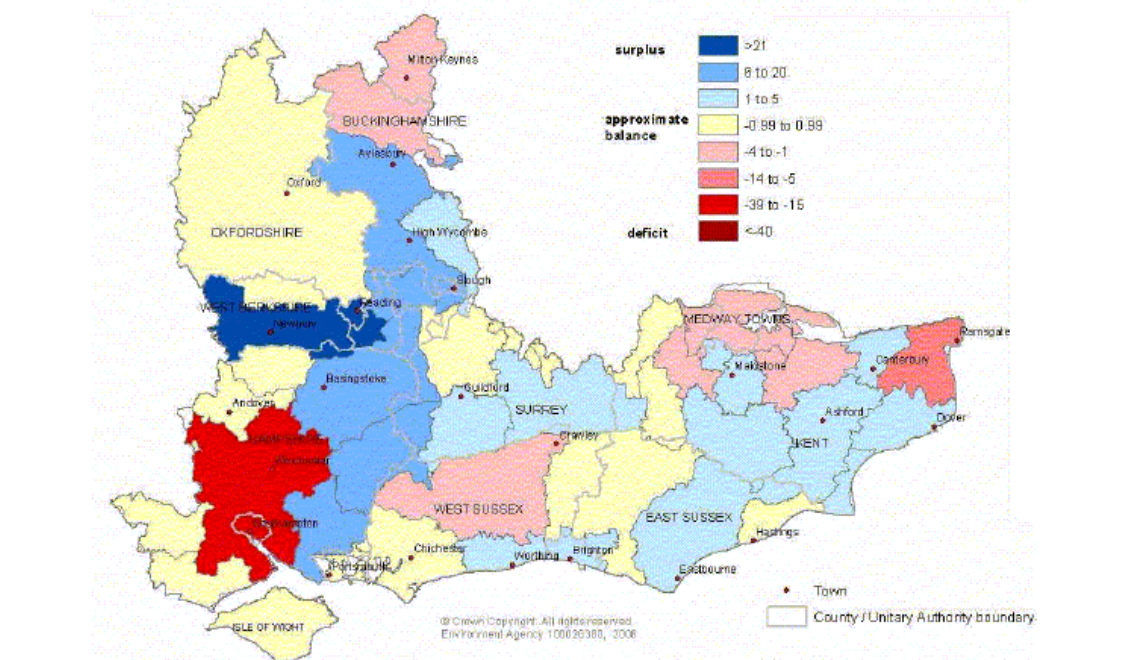
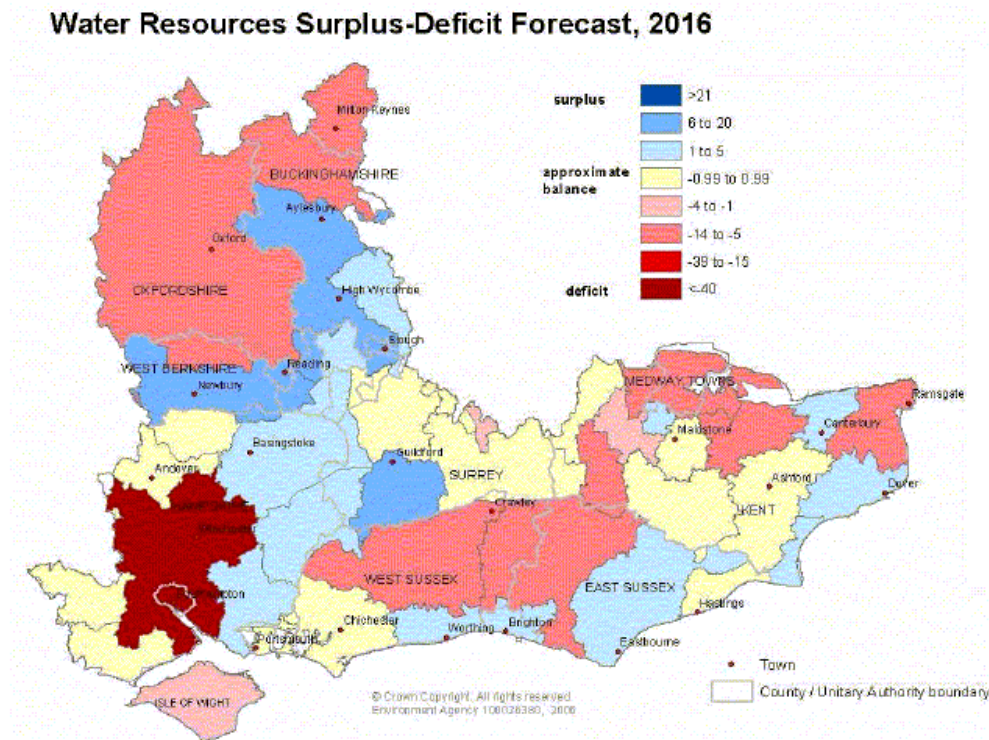
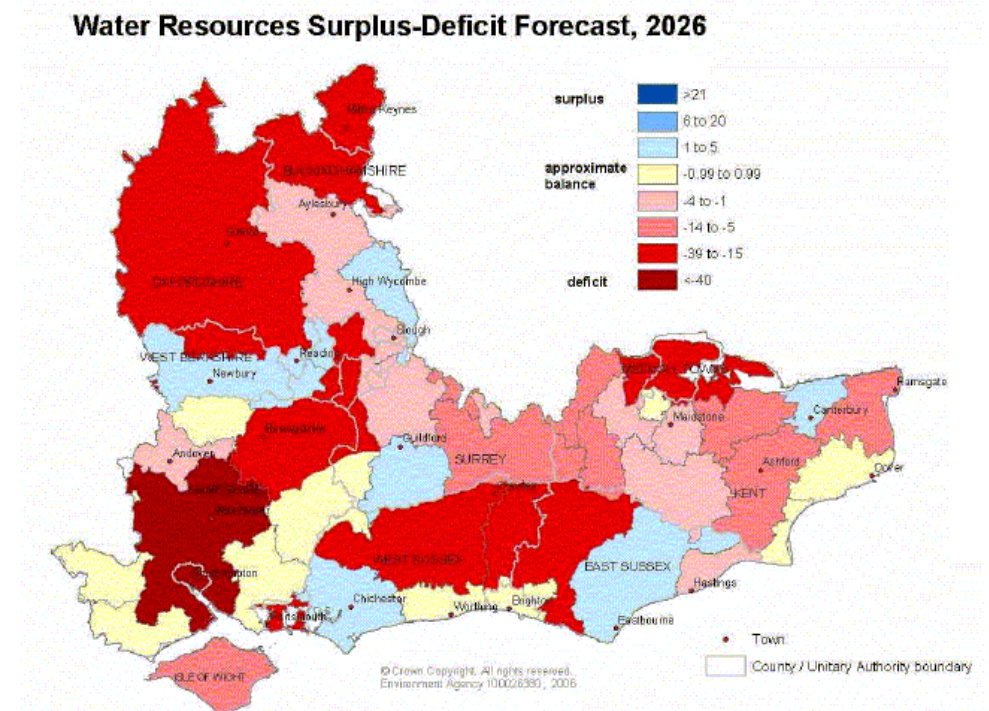


Fig 4: Map showing water surplus-deficit across the South East projected for 2016



5.6 Figure 4 shows that the deficit would continue to worsen over the next 5 year period, creating a deficiency of  $-14$  to  $-5$  MI/d by 2016.

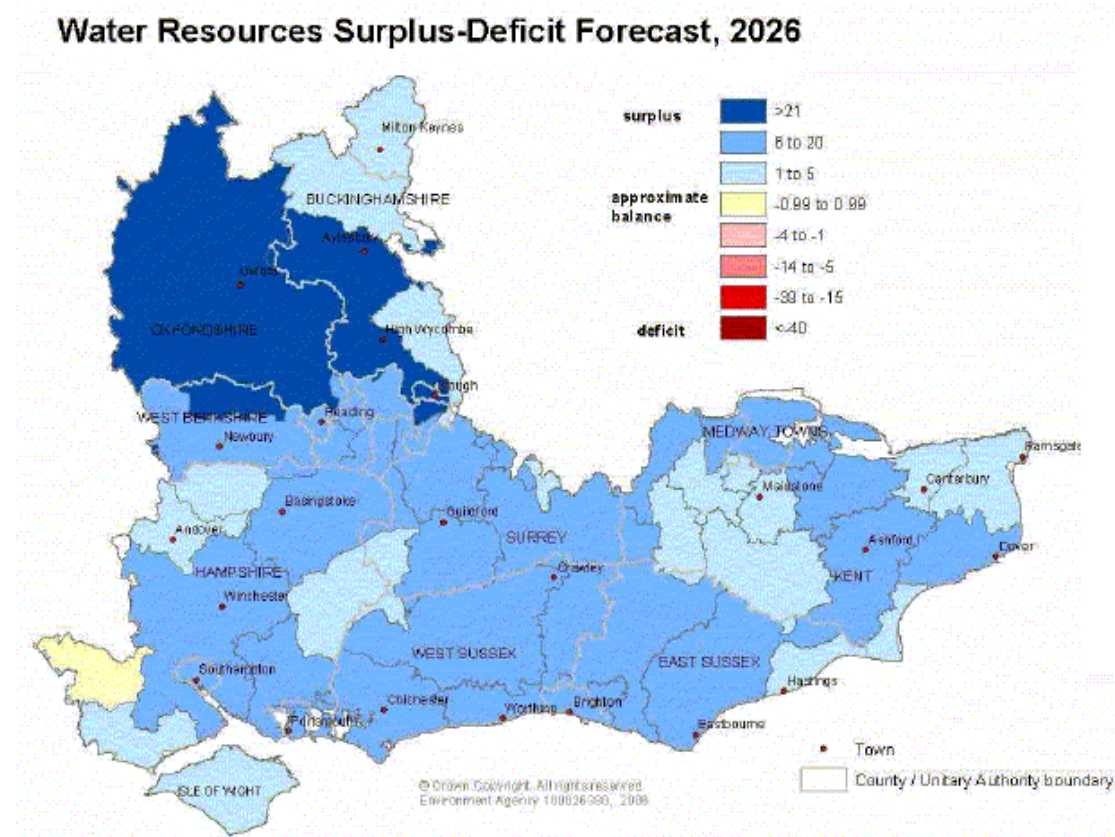
Fig 5: Map showing water surplus-deficit across the South East projected for 2026



5.7 This then reaches a deficit of  $-39$  to  $-15$  MI/d by 2026.

- 5.8 The figures above show the problems for water supply if no additional provision is made. Figure 6 shows that if all the infrastructure suggested, within plans from the various water companies covering the area are implemented and there are efficiency savings within existing buildings as well as new builds, then there would be a surplus of 6 to 20 MI/d in the Medway Towns by 2026.

**Fig 6: Map showing the water surplus-deficit for 2026 with further resources and efficiency savings**



- 5.9 In the responses to the Draft South East Plan, although it is accepted that water supply is a particular issue in the South East region, it is suggested that of the 7 reservoirs proposed throughout the region, 4 would not be needed if household demand were cut.

## 6. Conclusions

- 6.1 If all the proposals within the Water companies' WRMPs are implemented within the periods specified, then Medway's water supply will be assured for approximately the next 20+ years. However, concerns remain if they do not to occur within the time periods specified, that there is little contingency planning included. The target headroom within Southern Water's WRMP is only 5% and South East Water's is even lower at only 2/3%.

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