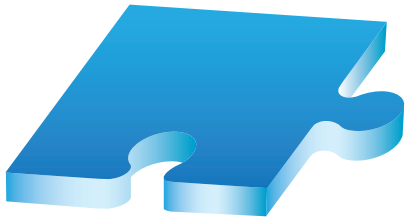


Section 1 : Overview

In this section we set out the background to the Water Resources Management Plan and explain where the technical information can be found

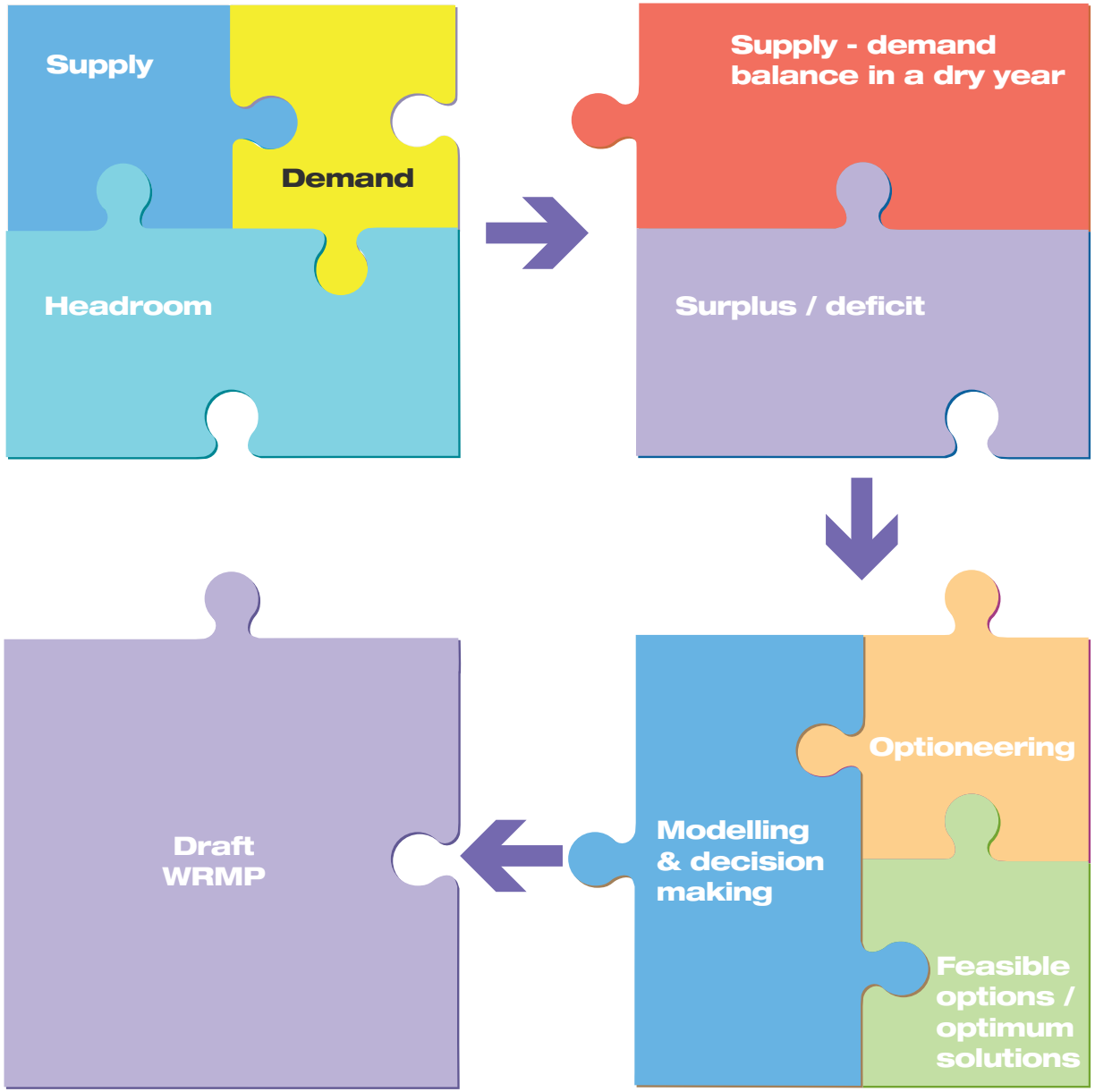
Introduction

1.1 This Water Resources Management Plan (WRMP14) updates, and replaces, our current Water Resources Management Plan ('WRMP09'), which was approved in December 2010. The WRMP14 has been prepared to meet the statutory requirements of section 37A to 37D of the Water Industry Act 1991 (as amended by the Water Act 2003) and the Water Resources Management Plan Direction 2012; which requires each water company to prepare a water resources management plan showing how it intends to manage and develop water resources over a 25 year period to "maintain an efficient and economical system of water supply within its area".

1.2 The WRMP14 sets out our estimate of the amount of water required and the measures we consider necessary to maintain the supply and demand balance over the period covered by the plan, from 2015 to 2040. In so doing, it explains the account we have taken of the implications of climate change, future population and housing growth (including demographic change) and the nature and frequency of measures such as water use restrictions, that we would expect to impose during a drought situation.

1.3 In preparing the WRMP14 we have followed the latest version of the Water Resources Planning Guideline ('Water Resources Planning Guideline, the Guiding Principles for developing a Water Resources Management Plan' and 'Water Resources Planning Guideline, the technical methods and instructions' (as updated August 2013), Environment Agency, Ofwat, Defra and Welsh Government) referred to as the 'guidelines' in this WRMP14. Working closely with the regional office of the Environment Agency and with Natural England, we have prepared the WRMP14 within the overall context of the Government's vision for

Figure 1.1: Water Resources Management Plan building blocks



future water management set out in the White Paper, 'Water for Life' (December 2011) and associated documents.

1.4 Following the guidance produced by Defra on security-sensitive information we have shown only the general location of individual sites and sources. We have also respected the confidentiality of any commercially sensitive information that has been provided to us in the course of preparing the WRMP14.

1.5 Before producing our WRMP14, we were required to pre-consult, publish and consult upon a draft version of the WRMP (dWRMP14). In accordance with the Water Resources Management Plan Regulations 2007 and the Water Resources Management Plan Direction 2012, we completed a 12 week consultation on our dWRMP14 between 13 May 2013 and 5 August 2013.

1.6 Following the conclusion of the consultation period we prepared a 'Statement of Response' to explain how we have taken account of matters raised by consultees. The Secretary of State then approved the rWRMP, allowing us to publish this document.

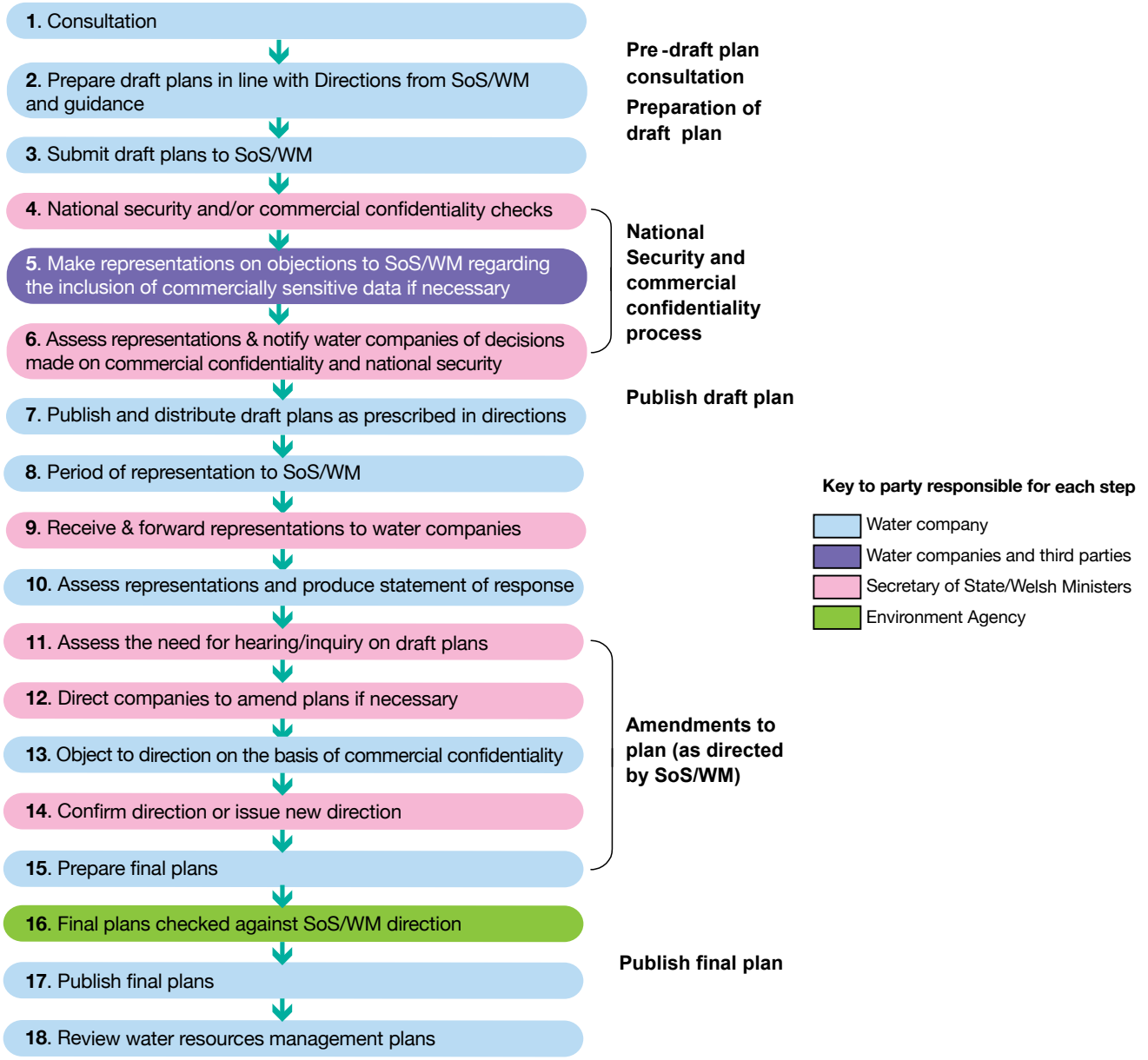
Linkages to other programmes

1.7 In building our WRMP14 we have taken into account our other statutory duties, which we fulfil through other company policies and programmes, as explained in:

(i) Our Long Term Strategy published in Spring 2013, sets out how, over the next 25 years, we will put customers' priorities at the heart of our business, and address the specific challenges we face around climate change, population growth, and the need to balance customers' demand for water with a continuous supply of safe, high quality drinking water, against an economic and political backdrop of keeping water bills affordable. This strategy sets out how we will achieve our purpose – which is to produce and deliver a reliable supply of high quality drinking water that customers consider is good value for money.

(ii) Our Business Plan (South East Water's Future Plans 2010 to 2015), which is updated every five years and submitted to Ofwat, our economic regulator, explains our plans and projects to maintain services to customers, or make improvements to our services, and the cost of so doing. Our current Business Plan covers the period 2010 to 2015 and includes a total investment programme of £390m, principally devoted to three key drivers: maintaining assets;

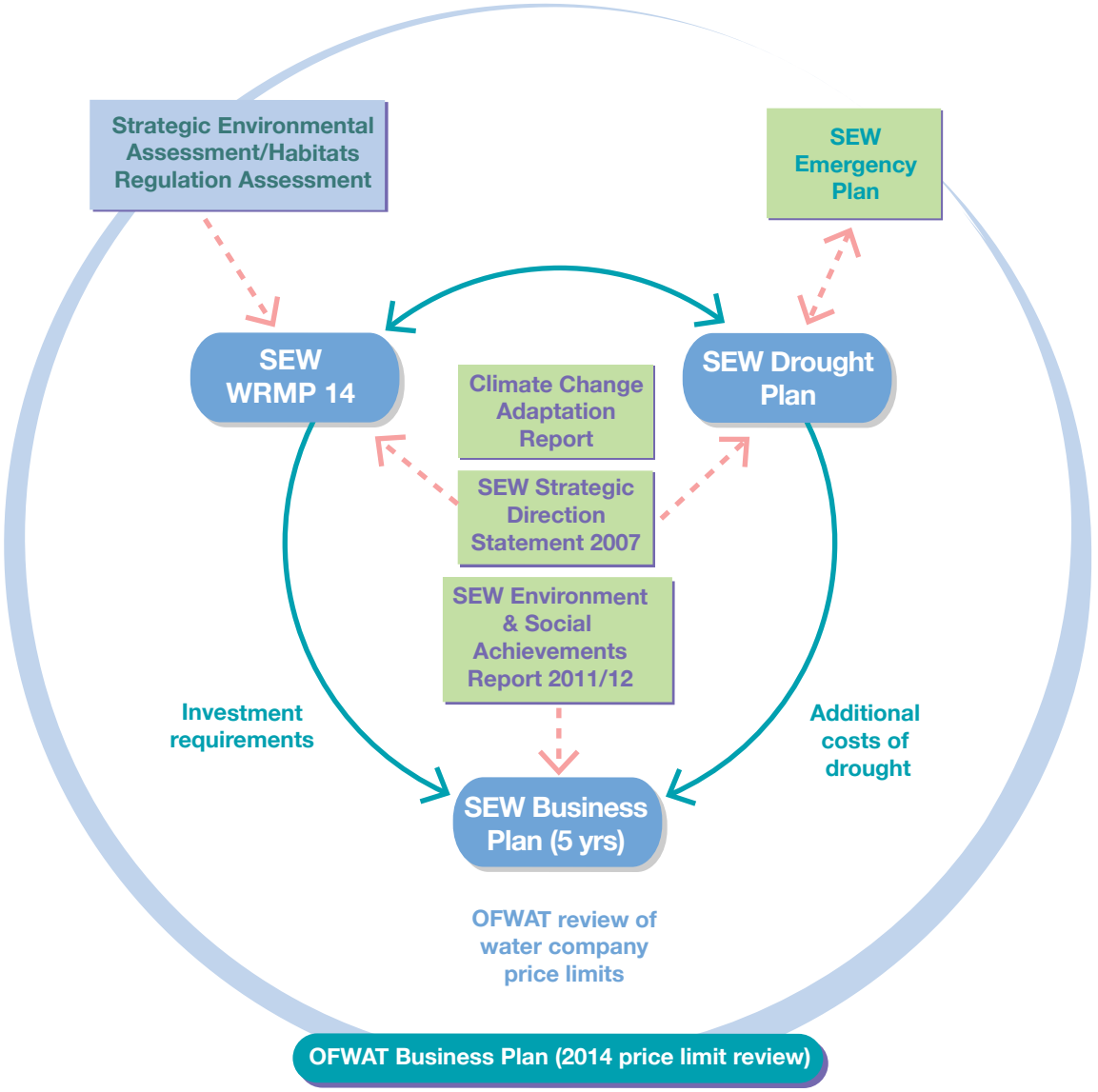
Figure 1.2 : The statutory process for preparing a WRMP



meeting the demand for water; and meeting legal water quality obligations. The approach we set out in the Business Plan allows us to respond to the challenges set by increasing demand for water, climate change and the maintenance of ageing infrastructure, whilst at the same time ensuring that our customers' bills are no higher than they need to be. We are currently finalising our Business Plan to be submitted to the economic regulator, Ofwat, in summer 2014. This plan covers the period 2015 to 2020, and takes account of the measures set out in the WRMP14 and the cost of their implementation. The Business Plan includes more detail of the impact on customers' bills.

(iii) Our Drought Plan (South East Water's Drought Plan April 2013) explains how we will manage water resources before, during and after a drought situation, i.e. a temporary period of water shortage caused by an exceptional shortage of rainfall. We are legally required to prepare and maintain a Drought Plan, which follows the guidelines set down by the Environment Agency. In our Drought Plan we explain how we intend to manage supplies under different types and severities of drought, including arrangements for working with other water companies and measures to influence and restrict the demand for water, for example through water efficiency campaigns, reducing leakage or imposing temporary restrictions on water use. The Drought Plan also considers options to increase supply, such as

Figure 1.3: The relationship of the WRMP to other documents



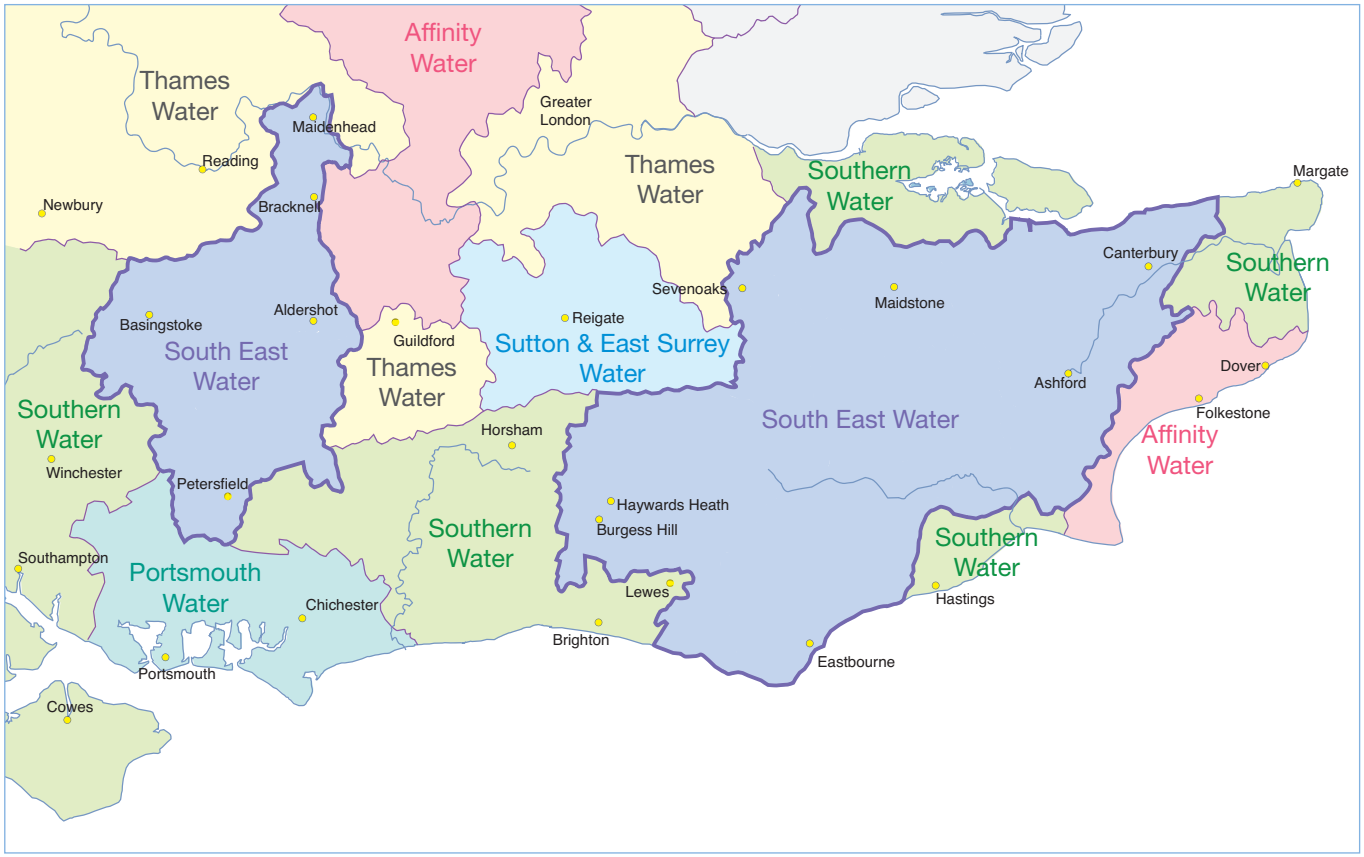
applying to alter existing abstraction licences or works to bring unlicensed or disused sources into use. Experience of the drought that affected our supply area in 2012 underlines the need for and importance of adequate preparation in advance of the emergence of a drought situation.

Introduction to South East Water

1.8 We are one of 20 regulated water companies in England and Wales and supply clean, potable water to around 2.1 million people living in approximately 900,000 properties. Our supply area is split into western and eastern regions and covers around 5,700km2 across Kent, Sussex, Surrey, Berkshire and Hampshire. Within our supply area, Southern Water and Thames Water provide a separate service for the removal and treatment of wastewater.

1.9 Around 73% of the water we supply is sourced from over 250 boreholes and wells, with the remainder coming from six river intakes and three surface water reservoirs. Water is pumped from these sources, treated and distributed to our customers through more than 14,500 km of water mains. In total, around 8% of our supplies come from water transferred into the area from sources owned and operated by other water companies under joint rights or bulk supply agreements. There are, however, no water mains connecting our eastern and western supply areas.

Figure 1.4 : Relationship of South East Water supply area to neighbouring water supply areas



1.10 Our supply area is divided into eight Water Resource Zones (WRZ), with two zones making up our Western Region and six zones in the Eastern Region.

1.11 WRZs are the basic framework for planning water resources, managing supply and demand and identifying investment priorities. The boundary of each WRZ describes an area within which the supply and demand for water is largely self-contained, which means that all our customers within a single WRZ share the same level of service and experience the same risk of water supply failure.

Figure 1.5 : Relationship of our water supply area to Local Authority Districts

1.12 We have undertaken separate assessments of the integrity of each WRZ in line with guidance produced by the Environment Agency, and have reviewed our conclusions with the Agency's regional water resources planners. This work has enabled us to reach the overall conclusion that the approach to WRZs that we have taken in WRMP14 is appropriate; that the WRZs defined within the WRMP14 are fit for purpose, and that each zone functions in compliance with the Environment Agency's Guideline for Resource Zone Integrity. Appendix I provides the detailed evidence that supports our conclusion that the guideline requirement on WRZ integrity has been met.

Our overall approach

1.13 The central purpose of this WRMP14 is to explain to our customers, our regulators and a wide range of stakeholders (with a variety of individual interests), how we intend to manage the supply/demand balance of water in the future. The strategy we outline in this document is based on a 'twin track' approach in which we have identified both the measures needed to manage demand for water in the most efficient way, and those measures required to deliver and bring forward the additional resources that will nonetheless be needed during WRMP14's lifetime. We have selected what we believe to be the "best value" and most cost-effective set of options, the inclusion of which has been underpinned by extensive customer research and stakeholder input and challenge. We also believe this WRMP14 will provide us with the most resilience in the face of considerable risk and uncertainty to supplies, while ensuring that we can continue to operate in an environmentally and socially sustainable manner. In short, the strategy set out in this WRMP14 is designed to provide security of supply for our customers in an affordable and responsible manner.

1.14 To provide a clear and consistent framework, early in the WRMP14 preparation

Figure 1.6 : Our Water Resource Zones

process we drew up a set of objectives which acknowledge a wide range of considerations;

- Statutory guidance on the preparation of WRMPs;
- National debate and policy, for example as expressed in the Water White Paper;
- The views of our customers, including direct input from customers through surveys and research;
- Our approach to addressing resilience and risk;
- The regional picture, with the benefit of the Water Resources in the South East (WRSE) Group's assessment of the potential for resource sharing and a strategic direction for South East England;
- The deliverability of the programme, including any uncertainties regarding consents;
- Inputs from the Environment Focus Group (EFG), the Customer Challenge Group (CCG) and individual stakeholders full details of which can be found in Section 2, and
- Our experience of the most recent drought.

1.15 Our overall objective is to prepare a robust plan that is transparent and understandable to our customers and stakeholders, allows improved levels of resilience to be delivered sustainably in an affordable way and at an acceptable pace, and includes and manages risk to levels that are acceptable to the Company.

1.16 In addition the WRMP14 aims:

1. To improve the mix of supply sources operated by the Company in the medium to longer term, reducing the existing over reliance on groundwater, and improving resilience to drought and climate change;

2. To support bulk supplies and sharing of resources where they improve resilience in drought, are more cost effective and are supported with the right terms and contracts;

3. To meet the political agenda for more ambitious demand management, leading to reduced levels of per capita consumption, to an extent that can be technically and economically justified and with a suitable level of provision for associated uncertainties and risks;

4. To improve the robustness of the existing supply forecast to take account of operational experience including the most recent drought;

5. To support the outcomes from the WRSE Group's modelling work where this can be demonstrated not to leave customers or the Company in a worse position in terms of cost to deliver the plan, or levels of risk;

6. To enable the Company to meet customer expectations regarding levels of service;

7. To support outcomes that are cost effective, environmentally sustainable and affordable; and

8. To ensure transparency, in as fully inclusive manner as possible, so that the WRMP14 can enjoy the support of our customers, regulators, and stakeholders.

1.17 These objectives underline the Company's commitment to:

i. Identify and, where feasible and advantageous, to employ opportunities to share resources with neighbouring water companies;
ii. Fully and consistently explore opportunities to manage demand;
iii. Proactively engage with a range of stakeholders, in respect of both analyses and options generated by ourselves and other options they may suggest;
iv. Understand and take account of our customers' views;
v. Fully and fairly calculate and present the costs and benefits of the options; and
vi. Select the best value sustainable solution to balance supply and demand, taking account of the challenges and uncertainties we face and our environmental and social responsibilities.

Challenges and opportunities

1.18 Achieving our objectives requires us to acknowledge opportunities and address significant challenges, including a number that are unique to our supply area.

Environmental responsibility – location within an environmentally sensitive area

1.19 A significant proportion of the Company's supply area is within areas designated for their landscape or nature conservation value (see Figure 1.7). Approximately 44% is within either the South Downs National Park or an Area of Outstanding Natural Beauty (AONB). The national average is 24%. In addition, extensive areas have been designated under the Habitats Directive and the Wild Birds Directive ('European Sites') or the Ramsar Convention('International Sites') and/or are Sites of Special Scientific Interest ('SSSI'). In the light of Natural England's Designation Strategy 2012 (Natural England, 'Natural England Designations Strategy' NE353, July 2012), it is possible that more of our supply area may be so designated in the coming years.

1.20 The condition of the water environment is key to the maintenance and improvement of the nature conservation value of most European sites and SSSIs, and it also makes a highly important contribution to the landscape of the area. The existence of so many nationally significant designations presents us with challenges but there are also opportunities to make a contribution to a better environment in our water management operations and when we promote new infrastructure. National policies for development in or close to National Parks, AONBs and SSSIs countenance major infrastructure development only where it can be demonstrated that there is a lack of alternatives. The requirements relating to European sites are to similar effect and also have statutory force. The nature of the natural water environment in our supply area is such that adverse effects may result from works or operations some distance away. Hence the implications for us of the many designations within our area should not be taken as being restricted to the areas identified in Figure 1.7.

1.21 We take our environmental management responsibilities very seriously and have adopted an over-arching Environmental Strategy (South East Water Environmental and Social Achievements Report 2011/12), which we apply across all areas of our business. In particular, we seek to manage land we hold for operational water supply and aquifer protection to the highest environmental standards. Some twenty-four of our operational sites, including Arlington reservoir in East Sussex, are within SSSIs.

1.22 In line with our Environmental Strategy and the guidelines, at appropriate points in the plan-making process, we have reviewed feasible options against agreed environmental criteria. We have applied this approach to all feasible options, whether they are intended to manage demand or increase supply.

1.23 This means that at an early stage of the optioneering process we removed from further consideration options that we judged would be likely to have a significant impact on nationally designated sites or sensitive areas, even with the addition of appropriate mitigation measures.

1.24 Multi Criteria Analysis (MCA) then enabled us to fine-screen the list of Constrained Options further and consider a combination of issues to help to indicate whether or not an option would be more or less environmentally acceptable, promotable or feasible when compared to other options.

1.25 At the end of 2012 we consulted on the scope of the Strategic Environmental Assessment (SEA) to accompany the WRMP14 and took note of the comments we received. Environmental costs and benefits, and potential options identified during our consultation were included in the scenario testing of the set of preferred options. To ensure that we have fully explored opportunities for sharing water with our neighbours, we took forward regional options to be assessed as part of the SEA of the WRMP14.

1.26 The WRMP14 is supported by the SEA and, in parallel, a Habitats Regulation Assessment, to examine whether or not any aspect of the WRMP14, either alone or in combination, will have a significant impact on a European protected site. These two procedures we believe, ensured that our plan does least harm to the environment. Whilst we have sought to avoid the possibility of significant adverse impacts, the existence of so many designated areas adds to the general level of uncertainty and risk associated with gaining consent for new infrastructure.

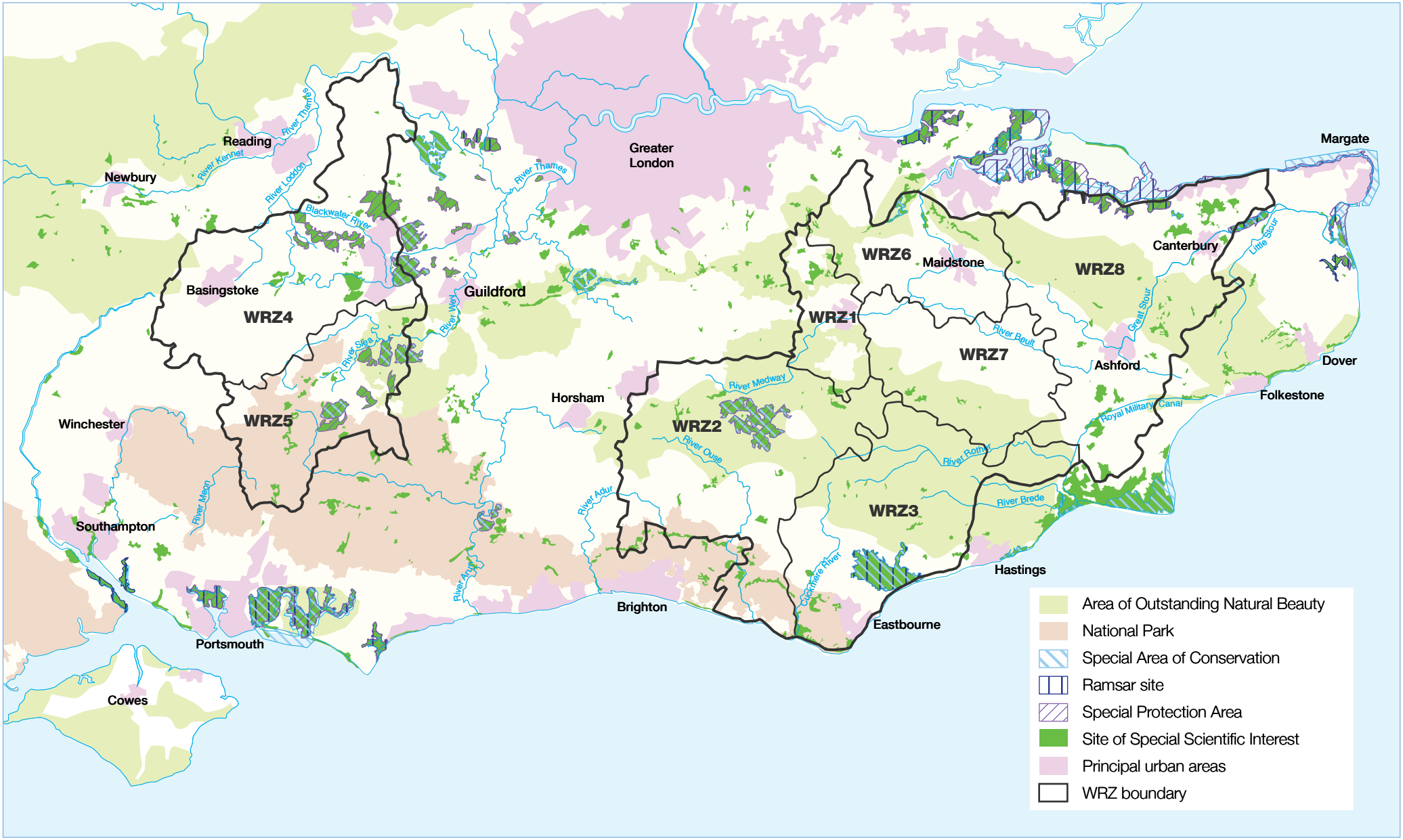
Location within South East England - an area with a growing population

1.27 The environmental challenge is compounded by the fact that South East England as a whole is officially identified as an area for significant population and economic growth. The population and the number of properties are set to increase during the lifetime of this WRMP14, and we need to take account of this growth as part of our work looking at supply and demand for water.

1.28 To assist with the WRMP14 we engaged Experian (Experian 'Population, Household and Dwelling Forecasts for WRMP14: Phase 2 Final Report' for South East Water, June 2013) to examine sources of population, numbers of properties, households and occupancy rates and to provide three sets of growth forecasts. Experian's advice, following the guidance produced by the Environment Agency (Environment Agency 'Methods of Estimating Population and Household Projections', 2012) and the Water Resources Planning Guideline, has resulted in accurate and robust estimates for the 2011/12 base year for our WRMP14, taking full account of Census 2011 data. Experian has undertaken a similar exercise for other water companies in the South East region, so we are confident that we have the necessary regional perspective. We have also engaged with the 33 local authorities in our supply area to gain an understanding of their own growth forecasts.

1.29 Using Census 2011 data, and information supplied by the local authorities across our region, Experian have produced plan-based estimates of household and population projections that we have

Figure 1.7 : Environmental context



adopted in our demand forecast in WRMP14. These estimates have been validated with the individual local authorities following area workshops held in November / December 2012.

1.30 The studies described above confirm that around 41,800 more people live in our supply area than we had forecast at the time of WRMP09. They also show that population growth during the period 2006 to 2010 was above the trend for the first half of the decade, in spite of the current economic downturn. Experian indicate that this trend of population growth is likely to continue, which will drive demand for additional water. At the same time the rate of new household formation has slowed, with the consequence that average household size has been falling at a lower rate than seen previously. We have taken this into account in testing our preferred plan.

1.31 Clearly the further ahead we look when making such projections, the greater the need for caution when using them to plan future infrastructure requirements; however, it is also the case that decisions to promote new infrastructure and water supply requirements need to be made and progressed well in advance of when the operational need actually emerges. General experience is that conventional large-scale additions to water infrastructure, such as surface water reservoirs and major transfer pipelines, have long lead times, potentially well over a decade before they can become operational. The sensitivity of the natural environment of our supply area means that the consenting process is necessarily complex. Large-scale water re-use schemes and desalination, may still require significant periods of time to be investigated, accepted, promoted, consented and developed.

1.32 For this WRMP14 we have tested a range of projections based on the work undertaken by Experian including the continuation of the trends in property and population growth, and also Experian's best estimate of the growth.

1.33 Section 4 'Demand Forecast' includes an explanation of how we have used Experian's work, and data from other sources to produce a robust range of forecasts of property and population growth. A full technical explanation of the calculations and judgements we have made can be found in Appendix 4.

Working with other water companies

1.34 We have worked closely with other water companies in the region, who are also preparing WRMPs to the same regulatory timetable. Our membership of the WRSE Group has enabled us to fully explore opportunities for sharing existing and new strategic water resources in the most efficient and effective way whilst maintaining security of supply, protecting the environment and minimising costs to customers. We are one of six regional water companies (Southern Water, South East Water, Portsmouth Water, Affinity Water (formerly Veolia), Thames Water, and Sutton and East Surrey Water) that make up the group, which is chaired by the Environment Agency with input from Defra, Ofwat, the Consumer Council for Water and Natural England.

1.35 In preparing our WRMP14 we took the decision to use the same regional model as developed by the WRSE Group. This has allowed us to co-operate with other water companies in investigating options like bulk transfers and shared resource opportunities that have implications beyond our supply area, such as the utilisation of existing and potential new regional water grids. It has also enabled us to test our own scenarios (which are based on more detailed knowledge of local conditions and levels of service tuned to the unique and specific needs of our domestic and business customers) against the regional picture. The same combination of local knowledge and regional awareness means we are more accurately able to determine the likely costs associated with possible options. Following such 'benchmarking', and where it is reasonable to do so, we have taken forward some of the opportunities identified by the WRSE Group in our WRMP14.

1.36 As well as identifying opportunities, the Group's work has highlighted the fact that most other water companies face similar challenges. Though they may differ in scale and intensity, pressures of rising population, climate unreliability and environmental sensitivity are common concerns.

1.37 The work to consider the merits of extending the existing regional water grids and developing further connections between water companies therefore recognises that the region as a whole is already water stressed and experiencing pressure. The region currently has a finite amount of water to be shared around, without increasing the number of sources available for supply. The most recent drought, in which the whole region was affected, demonstrates this issue.

1.38 In looking at regional solutions for the future, a combination of extending existing water grids plus further sharing of supplies, some of which are reliant upon some new resource developments, has been carefully explored and considered.

1.39 In formulating our strategy for the next 25 years, we are acutely aware that whilst increased connectivity between companies may resolve some issues, it does not tackle the reality that unless the number and/or output of sources is increased, a finite amount of water will have to be shared much further by an increasing population. Notwithstanding our measures to conserve supplies and reduce demand, to simply manage demand inevitably means that the availability of inter-company transfers of bulk supplies will become less resilient and reliable. Experience shows that at the times of drought, when water transfers are most relied upon, the whole region is likely to be more affected and so the volume of water we expect may not be available where and when we most need it.

1.40 Section 8 and Appendix 8 provide further details of this work.

High reliance on groundwater sources

1.41 Around 73% of our supplies come from the large underground aquifers primarily in the chalk and greensand within our supply areas. Our high degree of reliance on the regular replenishment of the groundwater presents us with challenges in both the short and long-term.

1.42 The dry winter of 2010/11 was followed by unusually low rainfall and high temperatures during early Spring 2011, resulting in mild drought conditions by April. By October 2011 we had moved into a moderate-severe drought condition and by February 2012, following the driest two year period on record, the Government declared that the South East of England was in drought. Under these conditions, our groundwater supplies were at historical low levels and we were entering new territory with regard to worsening operational conditions.

1.43 The resultant heavy rainfall during 2012 filled our reservoirs, but groundwater supplies replenish over a much longer period; indeed it was only during the finalising of the dWRMP14 (March 2013) that we saw many of our groundwater sources returning fully to average levels for the time of year.

1.44 Recent drought conditions saw some of our groundwater resources recording new historical low levels. The experience of the drought has provided us with a greater understanding of our resources and how they behave in extreme conditions, which we have used in drafting the WRMP14. It has also underlined the need to take steps to improve the reliability and resilience of our portfolio of sources.

Area of serious water stress

1.45 The whole of the South East of England is classified by the Environment Agency as an area of 'serious water stress'. This is defined as an area where the demand for water is a high proportion of the water available, which can lead to serious

Figure 1.8 Water Resources in the South East (WRSE)

stress on the water environment. We are addressing the demands this situation places upon us by prioritising responses to leakage alerts, continuing our customer metering programme, improving our education and awareness programme, implementing demand management measures and introducing new initiatives to ensure we operate reliably and sustainably within a water stressed region. Neighbouring water companies have similar programmes, acknowledging that any demands for water can frequently impact across company supply boundaries.

1.46 During November 2012 the Environment Agency consulted on its proposed changes to the criteria used to classify water companies' supplies being drawn from water stressed areas. These covered the impacts of climate change, changes in demand from all sectors that use water, and an assessment of environmental needs. Should the Environment Agency decide to apply these more detailed criteria, it would not affect the classification of our supply area, and those of our neighbouring water companies, as one in 'serious water stress'.

Maintaining levels of service

1.47 We need to be confident that the WRMP14 can meet the levels of service that have been assessed and quantified by the Company. By building in greater levels of resilience into the WRMP14 we can provide greater assurance that the planned levels of service expected by our customers can be met.

1.48 Levels of service are best described as 'a contract between a water company and its customers setting out the standard of service that customers can expect to receive from a water company' (the guidelines).

1.49 This service is expressed in terms of the frequency of restrictions (temporary use bans) imposed by us that customers are willing to accept. It also determines the levels of demand that we need to plan to meet. Our current quoted level of service for restrictions is 1 year in 10. The adoption of more frequent levels of service restrictions (for example, 1 year in 5) would result in lower demand forecasts for water, as it is more restricted. Conversely less frequent restrictions (for example, 1 year in 20) would result in a higher demand forecast, as water use becomes less restricted.

1.50 Customers are consulted on the levels of service they wish us to plan for. This is determined through testing with customers their acceptance of current planned levels of service compared with alternatives e.g. more frequent (1 in 5 year restrictions) and reduced cost to customers; less frequent (1 in 20 year restrictions) but higher cost to customers.

1.51 The work we undertook with our customers ahead of the dWRMP14 confirmed that they support the retention of our existing levels of service. Therefore the WRMP14 continues to be based upon:

- Temporary water use restrictions: no more than once in 10 years (10% annual probability of occurrence);
- Non-essential water use restrictions: no more than once in 40 years (2.5% annual probability).

1.52 Our environmental level of service target, in relation to having to apply for permission (via Drought Permits and/or Drought Orders) to vary abstraction licence conditions and quantities, is no more than once in 50 years (2.0% annual probability).

1.53 Section 3 provides more detail of how levels of service have been taken into account in our assessment of availability of supply.

1.54 Section 8 provides more detail of how we have tested the impacts of changing levels of service as part of scenario testing used to determine the preferred plan.

1.55 Whilst WRMP14 continues to be based upon meeting a 1 in 10 year level of service for water supplies, on two occasions in the past 10 years we have found it necessary to impose

temporary restrictions on customers' water use to maintain security of supplies. To ensure we are more likely to operate to our planned level of service, we have explored how more resilience can be built into the building blocks of WRMP14.

Uncertainty of climate change

1.56 In accordance with the guidelines, our assessment of climate change has been completed in two parts: the first is a vulnerability assessment to identify which of our sources are most sensitive and at risk to different climate change scenarios; then, having identified those sources, our second approach is to complete more detailed modelling to understand what levels of reductions in water availability we should forecast into our WRMP14.

1.57 HR Wallingford, who assisted with writing the methodology for the industry as included in the guidelines, was commissioned by us to complete the works and provide further confidence in the assessment undertaken.

1.58 Our assessment of future climate change scenarios covered a wide range of outcomes. As required by the guidelines, we have included the central case in our baseline and incorporated the high and low ranges into the uncertainty component of the WRMP14.

1.59 As well as reductions being applied to our existing sources, climate change impacts are included in our demand forecasting assumptions, and have also been considered when looking at new options to meet future water demand during the life of WRMP14.

Sustainability reductions

1.60 We have had no sustainability reductions to implement during the 2010 to 2015 period, however a number of investigations were agreed for completion during that period. The outcomes of those investigations, agreed with the Environment Agency, have been incorporated into the preparation of the WRMP14.

1.61 More detail on sustainability reductions can be found in Section 3 and Appendix 3. In summary, a degree of uncertainty is inevitable. It is possible that the Environment Agency may require further sustainability reductions as part of the on-going National Environment Programme (NEP). After the publication of our dWRMP14, we received the NEP from the Environment Agency for delivery during the period 2015 to 2020. Further details of the NEP are included in our WRMP14 Appendix 9.

Reducing the demand

1.62 We are committed to reducing the demand for water, which will act as a brake on the rate of growth in demand anticipated from continued population increases. A key element of our 'twin-track' approach - demand management, is a complex area fully explored in Section 4. It presents both significant opportunities (especially to minimise the scale of the requirement for additional water resources) and challenges (particularly in respect of the degree of certainty that can be attached to the outcome of measures designed to change behaviour but unsupported by official sanctions). In summary we forecast a reduction in our customers' use of water from 166 litres per person per day to between 130 and 149 litres per person per day by 2040. The range of outcome is indicative of our prudent view of the uncertainty that we must build into our plan.

Challenges and opportunities – drawing conclusions

1.63 The challenge facing us is to establish a framework in WRMP14 within which we can manage water resources over the period to 2040 against the backdrop of climate change uncertainty, in an environmentally sensitive area of serious water stress where significant population and property growth are expected. We recognise that we cannot operate in isolation, and must work in partnership with others within the wider context of the regional water supply position. However, there is only a finite amount of water within the regional water grid, which has to be shared amongst an increasing population. Taken together

with uncertainty about the parameters of climate change and the possibility of additional sustainability reductions, this means that the availability of inter-company transfers of bulk supplies will become less resilient and reliable without new resource development. At times of drought, when bulk supplies are most needed, the whole region may be affected and supplies that we might be relying on may well not be available to us.

1.64 As a result we have concluded that to continue with a strategy that our analysis of the current position shows to be over reliant on our groundwater sources, would present a higher risk when considering the security of those supplies. Some of these sources reached historic low levels during the most recent drought. We have used information about the performance of our sources under extreme conditions to assist us in defining a more resilient mix of sources in the WRMP14.

1.65 As part of the WRMP14, we need to manage demand to ensure we provide a reliable water supply in a sustainable way that is affordable to our customers. As the other arm of our 'twin-track' approach, we want to achieve a reduction in customers' use of water.

1.66 We consider that this strategy will ensure we can tackle the challenges we are presented with, maintain our planned levels of service to customers and meet our clear statutory duties.

What we have achieved since WRMP09

1.67 Our monitoring shows that we are making progress in managing our resources to take account of our environmental and social responsibilities to reduce demand for water, lower our carbon footprint and continue to make savings across the business where possible. Our Annual Performance Report 'Tap into the Source' (2012) and our yearly 'Environmental and Social Achievements Report' (2012) provide full details.

1.68 The total water abstracted during 2011/12 was significantly lower than during 2010/11 (185,595 Ml compared to 195,163 Ml). Total domestic water demand has decreased by 1% overall with the influence of the customer metering programme, the impact of the high profile publicity campaign to encourage customers to use less water and through focused demand management during our drought campaign. Per capita consumption for measured customers is down by over 5% and for unmeasured customers it is down by 1.3% against the previous year. We have also been working closely with our commercial customers as part of the drought management programme, and usage has dropped by 5.4% over previous years' consumption levels.

1.69 The total water demand during 2012/13 was significantly impacted by the weather – it was overall a very wet year. This meant that demands were lower again than during the previous two years (520 Ml/d compared to 549 Ml/d in 2011/12 and 560 Ml/d in 2010/11). Total domestic water demand decreased by 3.7% overall. Per capita consumption for measured customers was down by over 1% and unmeasured customers was down by 5.7% against the previous year. Commercial customers usage dropped by 8.7% over previous years. Again it is important to recognise 2012/13 was a very wet year.

1.70 Reducing leakage and promoting water efficiency remain important priorities of our strategy to manage the supply/demand balance. In the past three years we have invested over £88m in managing supply and demand during 2010-11 to 2012-13, including:

- Meeting our leakage target for 12 consecutive years;
- Delivering and in the last 3 years exceeding, our water efficiency savings target;
- Installing over 101,290 water meters;
- Providing increased treated water storage at service reservoirs; and
- Completing mains upgrades and improvement works at operational sources.

Environmental and social responsibilities

1.71 Our annual Environmental and Social Achievements Report sets out our approach to

the management of environmental risk, legal compliance and what we see as areas of future environmental risk for our business. It explains our strategy to ensure that environmental, social and sustainability issues are effectively conveyed into all aspects of our business. We aim to operate efficiently and to minimise our environmental impacts through the prudent use of natural resources, reductions in waste production and carbon emissions, and protection of the environment. We deliver this through the provision of strategies and performance targets in the following areas:

- Water resources and strategic water resource management;
- Carbon accounting and climate change;
- Waste reduction, minimisation and management; and
- Land, biodiversity and management of Company owned SSSIs.

How we have prepared our draft Water Resources Management Plan for 2015 to 2040

1.72 The following paragraphs are a route map to the WRMP14. They briefly summarise our approach to key topics and explain where details of the processes and procedures we have followed and our analysis and conclusions can be found in the rest of the document (i.e. in Sections 2 to 10, supported in some cases by an appendix with the same number).

Engagement

1.73 Learning lessons from WRMP09, in October 2011 the Company engaged with key stakeholders at the start of the WRMP14 process. Implementing a specially prepared WRMP14 Stakeholder Engagement Plan, we embarked on a two-way dialogue with regulators, stakeholders, local authorities, politicians, other water companies, customers and the media; a dialogue that has continued over the past 24 months and has informed the production of this WRMP14.

1.74 Regular meetings of the Environment Focus Group (EFG), which comprises members from local planning authorities, statutory bodies, regulatory authorities, environmental non-government organisations and local interest groups have been convened to scrutinise our work as we have progressed through each of the building blocks of WRMP14, particularly the options appraisal process. The contribution made by the EFG has been supplemented by wider local authority and non-government office briefings and workshops, held between October 2012 and early 2013, and advance briefing sessions to Parish Councils and Members of Parliament ahead of publishing the dWRMP14 during Spring 2013.

1.75 We continued our engagement activities during the wider consultation period for the dWRMP14 between May 2013 and August 2013, including drop in sessions and further briefing sessions with local stakeholders and communities affected by options contained within the plan.

1.76 Prior to finalising our Statement of Response and the rWMP14 we met with the EFG in September 2013 to take them through the representations we received on our plan and explain our overall responses to these. We also continued our dialogue with Natural England, and met with the Environment Agency and Ofwat to ensure we adequately addressed matters they raised with us in their respective representations on our dWRMP14.

1.77 Three representatives on the EFG – the Environment Agency, Natural England and the Consumer Council for Water – are also members of our CCG, ensuring that there is a strong understanding of the linkages between the WRMP14 and our Business Plan for 2015 to 2020.

1.78 Using targeted and far reaching customer research, for both domestic and commercial customers, and qualitative and quantitative methods, we have focused on customers' views around water, their preferences around the range of options that could secure future water supplies, and their willingness to pay for either enhanced

levels of service, or to accept a deterioration in service in return for reduced bills. That research has confirmed that continuity of supply and the quality of the water supplied is the top priority of customers, closely followed by affordable bills. Additional information and comprehensive data has been gathered from micro-component surveys, which have provided a better understanding of usage for demand forecasting.

1.79 Section 2 contains a fuller explanation of our work on engagement with key audiences, regulators, stakeholders and other water companies, including the role of the WRSE Group, the EFG and CCG, and how we have continued our engagement through the water planning process to the WRMP14.

Supply forecast

1.80 Alongside the forecast of demand, the preparation and validation of the supply forecast is one of the key activities underlying the WRMP14. The supply forecast identifies what volumes of water are currently available to meet demand, how these are distributed, and how this position might change during the course of the WRMP14 period, i.e. from 2015 to 2040. We calculate our supply forecast by determining the Water Available for Use (WAFU).

1.81 Our work on preparing Supply Forecasts is described in detail in Section 3. Our recent work has provided a better understanding of our existing resources and services, including lessons learnt from the 2012 drought in terms of outages, process losses and deployable outputs. We have also looked carefully at the resilience of our resources and the reliability of supplies, including any we rely on from other water companies within the region, and how the effects of climate change may alter our supplies over the time period of the dWRMP14.

Demand forecast

1.82 Section 4 explains our work in assessing Demand Forecasts. For this WRMP14 we have updated our modelling approach using the recommended micro-component analysis method advocated in the updated guidelines. We have undertaken a number of customer surveys which, together with evidence gathered from our on-going metering programme, has allowed us to gain a greater understanding of customers' water usage and which collectively have informed and assisted the process in reducing uncertainty around the demand forecast. Increased levels of evidence will become available during the plan period as the metering programme is extended and we collect more new data around how metering and demand management measures impact customers' water usage.

1.83 The WRMP14 uses 2011/12 as the base year for demand forecasts in accordance with the guidelines. There are a number of key areas where we have been able to revise data from that used in WRMP09 to produce a more robust assessment including:

- The use of a micro-component survey undertaken during 2012 based on 10,500 customer returns;
- Updated information from Experian on total population residing within our supply area; and
- Updated information on property numbers.

1.84 Experian has used 2011 Census data and Local Authority forecasts to provide water companies with the most up to date population and property assessments for the South East of England, and these are included in our WRMP14 in line with the guideline.

1.85 To supplement the work undertaken on our behalf by Experian, we continue to engage directly with local planning authorities across our supply area to ensure we have the most up to date and informed view of likely population and household growth. Where uncertainty still remains in the demand forecasting work, this is explained and the risks highlighted.

Headroom

1.86 There are many uncertainties in forecasting the supply and demand for water in the future, especially when making predictions 25 years ahead. To take this into account in forecasting both supply and demand, a planning allowance, or 'Target Headroom', is added to the demand forecast.

1.87 Section 5 explains how we have calculated target headroom accounting for climate change, bulk supplies, population changes and water efficiency. Relevant technical information is provided in Appendix 5.

Supply demand balance

1.88 Having described our best estimate predictions of baseline supply and demand for water and how we have calculated our target headroom, Section 6 explains how we have taken all these parts and calculated the supply demand balance. Our work in preparing the WRMP14 shows that, in the future, demand for water will be greater than the existing available supplies, which results in a deficit in our supply demand balance.

Optioneering

1.89 Section 7 gives details of the Options Appraisal Process from initially considering over 900 unconstrained options, reducing to the set of 320 feasible options. In doing so, we have followed the 'twin track' approach, and looked at ways of reducing and managing demand, alongside options that could increase supplies, and at a cost which is acceptable to our customers and the environment.

1.90 Early engagement with key stakeholders, which continued throughout each stage of the process of drafting dWRMP14, has helped ensure that options have been rigorously and transparently tested against a range of opinions and provided a clear audit trail of the degree of consensus reached when it came to selecting the range of preferred options in the WRMP14. Additional research among our customers about the range of options available, through customer surveys, and including 'willingness to pay' research, have also provided us with a better understanding of their key priorities and issues.

1.91 Regulators and stakeholder groups told us they found the use of Multi Criteria Analysis to assess environmental and social impacts easy to understand and productive discussions have helped produce a rounded set of deliverable options. Compared with WRMP09, we have sought to deliver greater levels of transparency, understanding and engagement with interested parties. While the technical approach has been broadly the same, albeit using updated guidance from the regulatory authorities, greater emphasis has been placed on engagement with customers, stakeholders and regulators at every stage of the process.

1.92 We consider that our proactive involvement in and work with the WRSE Group has enabled us fully to meet the requirement of the Water White Paper to explore opportunities to share water resources. It has provided us with information about regional water transfer options to be included in WRSE option modelling and available for our own modelling work. We believe that the exchange of information, the format of the WRSE Group, and the modelling processes of the Group fully meets the requirements of the Neighbour Contact Plan as set out in Appendix 12

of the guidelines. The procedures we established for continuing to work with our neighbouring companies provided appropriate mechanisms for ongoing engagement and also for the discussion of resource sharing opportunities outside the remit of the WRSE Group where these were needed.

Developing the Preferred Plan

1.93 Section 8 describes how we have developed our Preferred Plan, and explains our long term view of risk and uncertainty, acknowledging the fundamental nature of many of the challenges we face.

1.94 We have also undertaken a SEA and a Habitats Regulations Assessment of our options, involving stakeholder groups and local authorities in this process. Our objectives and approach to risk are included in Section 8.

Preferred Plan

1.95 Our Preferred Plan for the period 2015 to 2040 is set out in Section 9. It explains when we expect to need additional supplies to manage and maintain the supply-demand balance. In Appendix 9 we include more detail of how we have stress tested our preferred plan using different sensitivity tests to demonstrate it is a robust plan for the future.

1.96 Whilst legally we were strictly only required to set out what our preferred options are, we considered that to make the consultation on our dWRMP14 worthwhile, we needed to consult on the range of alternative options that are available over the same 25 year period, and which could also meet the shortfall in water. These alternatives are explained in Section 9.

Plan Assurance

1.97 The Plan Assurance is included as Section 10, which outlines the steps we have taken to ensure the material assumptions underpinning our WRMP14 are robust and consistently applied.

Water Resources Planning Tables

1.98 As required by the guidelines, we have also prepared a series of Water Resources Planning Tables to accompany our plan.