

# SES Water Draft Water Resources Management Plan 2019: Strategic Environmental Assessment (SEA)

Non-Technical Summary

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## Quality information

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# 1. Introduction

SES Water (as a Water Company) has a statutory duty to prepare and maintain a Water Resources Management Plan (WRMP) identifying how they intend to maintain the balance between water supply and demand over a minimum period of 25 years. The SES Water Water Resource Management Plan 2019 (WRMP19) will set out the preferred programme (comprising a range of options) to reduce any deficit through implementation of both supply and demand options.

AECOM has been commissioned to undertake the Strategic Environmental Assessment (SEA) of SES Water's Water Resource Management Plan for Periodic Review 2019 (WRMP19). The purpose of SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation of plans with a view to promoting sustainable development. It is a systematic assessment tool to support and inform decision-making.

The requirement to undertake a SEA arises from European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' (the 'SEA Directive'). The SEA Directive is transposed into English law through the Environmental Assessment of Plans and Programmes Regulations 2004 (the 'SEA Regulations'). The SEA Directive and associated regulations require a SEA to be undertaken for certain plans and programmes, which are likely to have significant effects on the environment.

There are two key procedural requirements of the SEA Directive, which are:

1. When deciding on 'the scope and level of detail of the information' to be presented in the assessment, the SEA consultation bodies<sup>1</sup> must be provided with the relevant information and given five weeks to comment on the proposed scope and the level of detail the assessment will enter into.
2. A report (the 'Environmental Report') is published for consultation alongside the draft plan - in this case the dWRMP19 - that presents an assessment of the plan as published (i.e. discusses 'likely significant effects' that would result from implementation of the dWRMP19) and any reasonable alternatives.

This is a Non-technical Summary (NTS) of the Environmental Report and supporting appendices for the WRMP19.

## 1.1 Structure of this NTS

This NTS has been prepared to meet the requirements of the SEA Regulations and to facilitate consultation with relevant stakeholders. The NTS is structured as follows:

- Chapter 1 (this chapter) - sets out the need for an SEA and any other relevant assessments;
- Chapter 2 - sets out the background to the WRMP;
- Chapter 3 - provides a summary of the proposed SEA scope, including SEA Framework;
- Chapter 4 - sets out how alternatives were developed, the key findings of the assessment and explains reasons for selecting the preferred programme;
- Chapter 5 - sets out the key findings of the assessment for the Draft WRMP19;
- Chapter 6 - sets out the key findings of the assessment for the Final WRMP19; and
- Chapter 7 - sets out next steps along with proposed indicators for monitoring.

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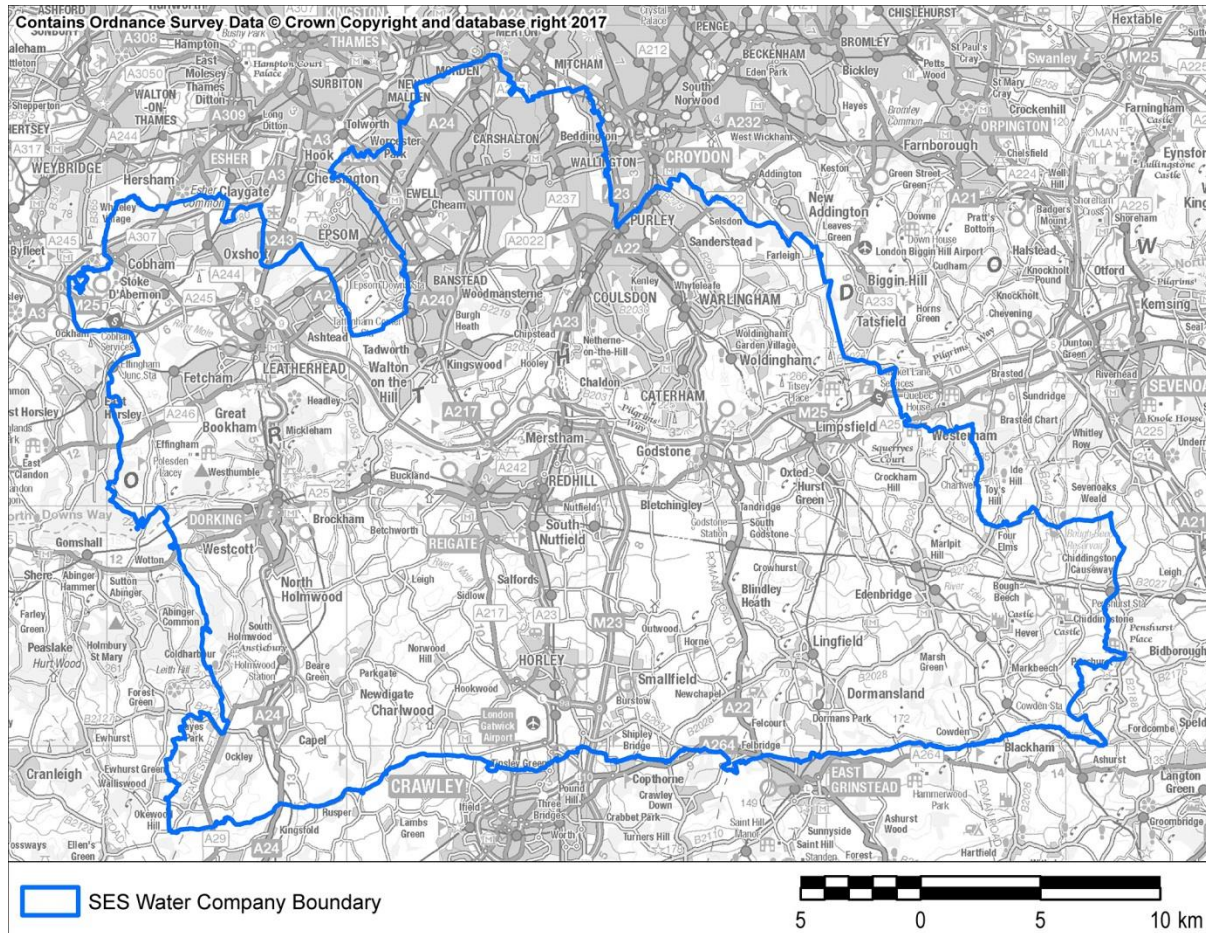
<sup>1</sup> In England these are the Environment Agency, Historic England and Natural England.

## 2. The Water Resource Management Plan

### 2.1 Introduction to SES Water

SES Water are a water-only supply company and serve over 675,000 people<sup>2</sup>. The supply area covers 834km<sup>2</sup> within Surrey, West Kent, and also the London Boroughs of Sutton, Croydon and Merton. The SES Water supply area is formed of one company-wide WRZ for the entire supply area.

Figure 1: SEA Water supply area



SES Water supplies, on average, 160 million litres of water per day (Ml/d) in this area. However, during the summer period this can increase to above 200Ml/d. Approximately 85% of the raw water is abstracted from groundwater sources and 15% from river sources.

The majority (approximately 85%) of the SES Water’s deployable output is from four main groundwater aquifer resources units (ARUs). These are:

- North Downs Chalk;
- Confined Chalk;
- Mole Valley Chalk; and
- Lower Greensand.<sup>3</sup>

<sup>2</sup> Sutton and East Surrey Water (2014) Final Water Resource Management Plan [online] available at: [http://www.waterplc.com/userfiles/file/WRMP\\_Final\\_MainReport.pdf](http://www.waterplc.com/userfiles/file/WRMP_Final_MainReport.pdf)

<sup>3</sup> Ibid.



## 2.2 About the WRMP

Water companies in England and Wales are required by law (Water Act 2003) to produce a WRMP every five years. The WRMP must set out how a water company intends to maintain the balance between water supply and demand over at least a 25-year period. The Plan must be prepared in accordance with the EA Water Resources Planning Guideline (WRPG)<sup>4</sup> developed by government and water industry regulators. It must also take account of and support government policy and aspirations for providing secure, sustainable and affordable water supplies to customers.

The SES Water dWRMP2019 will set out the preferred programme (comprising a range of options) to reduce any deficit through supply and demand options.

## 2.3 Development of the WRMP

The preparation of the dWRMP19 will follow the current Water Resources Planning Guideline. The process is summarised below:

1. Engage early with regulators, customers and interested parties;
2. Undertake pre-consultation;
3. Write the dWRMP19;
4. Send the dWRMP19 to the Secretary of State;
5. Publish and distribute the dWRMP19;
6. Carry out a public consultation on the dWRMP19;
7. Publish a statement of response;
8. Send the draft final WRMP2019 and statement of response to the Secretary of State;
9. Publish final WRMP2019;
10. Revise and review the final plan; and
11. Implement the WRMP.

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<sup>4</sup> Environment Agency (2016) Guidance: Water Resources Planning [online] available at: <https://www.gov.uk/guidance/balancing-water-resources>

### 3. Scoping information

The first stage in the SEA process sets out the context for the assessment, which is commonly referred to as 'scoping'. A review of the baseline environment was carried out as well as a review of other plans and programmes that may have implications for the emerging dWRMP19 and the SEA. This allowed the identification of key environmental problems or issues within and surrounding Affinity Water's operating area. A number of SEA objectives and assessment questions were then developed to address those key issues and provide a methodological 'framework' for undertaking the assessment of the dWRMP19 and any reasonable alternatives. The SEA objectives and assessment questions are set out in **Table 1** below.

**Table 1: SEA Framework**

SEA Objective	Assessment question
1. To protect and, where feasible, enhance biodiversity including designated and other important habitats and species	<ul style="list-style-type: none"> <li>• Is the option likely to affect the conservation status of any SPA/SACs, Ramsar Site, SSSIs or NNRs?</li> <li>• Is the option likely to affect ancient woodland, Biodiversity Action Plan (BAP) habitats and/or protected and BAP species?</li> <li>• Is there potential for contribution to achieving 'favourable' conservation status or for creation of new BAP habitats?</li> <li>• Would the option protect and enhance aquatic and terrestrial habitats and species?</li> <li>• Will the option affect any habitats that support legally protected species or species of conservation concern?</li> <li>• Does the option avoid or minimise habitat fragmentation?</li> <li>• Are there any opportunities for habitat creation or restoration?</li> <li>• Would it promote linkages between existing habitats?</li> <li>• WFD: Is there potential for contribution to achieving 'good' ecological status/potential?</li> <li>• Would the option affect the ability of biodiversity to adapt to climate change, and/or affect ecosystem services?</li> <li>• Does the option avoid spreading invasive non-native species?</li> <li>• Will the option help to meet UK Biodiversity Action Plan Objectives?</li> <li>• Would the option affect the ability of internationally, nationally and locally important wildlife sites to achieve favourable condition?</li> </ul>
2. To maintain and where possible improve freshwater fisheries	<ul style="list-style-type: none"> <li>• Does the option location affect any important fisheries (e.g. salmonid, coarse fish)?</li> <li>• Are there potential indirect impacts (e.g. from affecting other aspects of aquatic ecology (habitat or food species) upon which fish rely)?</li> <li>• Are there opportunities to improve fish migration or could migration be impeded?</li> <li>• WFD: Is there potential for contribution to achieving 'good' ecological status/potential?</li> </ul>
3. Minimise adverse impacts on communities and households especially the most vulnerable groups	<ul style="list-style-type: none"> <li>• Is there potential for significant disruption/nuisance/noise to households/communities e.g. from traffic/construction, access severance, disruption during operation?</li> <li>• Is there potential for public health or quality of life to be adversely affected or improved?</li> <li>• Are there any potential impacts on vulnerable sectors of society or risks of increasing social exclusion?</li> <li>• Will the option cause disruption/ loss of amenity at a household level?</li> <li>• Will the option lead to an increase in existing lighting levels in the area, particularly near designated sites and in rural settings?</li> </ul>
4. Protect and, where possible, enhance recreation and amenity facilities and increase access and enjoyment of the countryside	<ul style="list-style-type: none"> <li>• Will the option impact on any designated recreational areas, parks, recreational facilities (e.g. water sports) and National Trails/footpaths /access?</li> <li>• Are there opportunities to create new/additional recreational facilities, or potential to increase amenity/ access to riverside/countryside?</li> <li>• Will the use of rivers or other water bodies for angling or navigation be affected?</li> </ul>
5. To protect the quality of	<ul style="list-style-type: none"> <li>• Is there potential for loss or severance of agricultural land (ALC best and most</li> </ul>

SEA Objective	Assessment question
land and soils, and maintain geological diversity	<p>versatile)?</p> <ul style="list-style-type: none"> <li>• Will the option result in the alteration of natural drainage patterns?</li> <li>• Could there be conflict with known contaminated land sites?</li> <li>• Would the option affect any geological SSSIs?</li> <li>• Does option allow or restore natural geomorphological processes?</li> <li>• Will the option ensure the efficient use of land (e.g., make use of previously developed land)?</li> <li>• Will the option result in soil erosion?</li> </ul>
6. To protect and where possible enhance river flows and groundwater resources	<ul style="list-style-type: none"> <li>• Will the option affect river flows?</li> <li>• Does the option take into account requirements for sustainability reductions, CAMS assessments of water availability, and the sensitivity of surface and groundwater to abstraction?</li> <li>• Will there be a conflict with any of these requirements?</li> <li>• Will there be any impacts on third parties, e.g. other abstractors?</li> <li>• Is there potential to help restore sustainable abstraction?</li> <li>• Is there potential to help ameliorate low flows?</li> <li>• Will the option minimise impacts from high and low water flows, particularly along the river bank and on channel processes?</li> </ul>
7. To protect and where feasible enhance the quality of surface waters	<ul style="list-style-type: none"> <li>• Is the option likely to affect biological or chemical quality elements?</li> <li>• Would the option affect flow regimes or significantly change water levels?</li> <li>• Is there potential for physical effects on the river channel and/or hydromorphology of watercourse(s)?</li> <li>• For Heavily Modified Water bodies, would the option contribute to or prevent the implementation of mitigation measures specified in the River Basin Management Plan?</li> </ul>
8. To protect and enhance groundwater quantity and quality	<ul style="list-style-type: none"> <li>• Is there the potential to affect groundwater quality (e.g. contamination)?</li> <li>• Would the option affect groundwater flows or significantly change groundwater levels?</li> <li>• Could the option contribute to meeting WFD objectives?</li> </ul>
9. To minimise the risk of flooding, and reduce flood risk where feasible to do so	<ul style="list-style-type: none"> <li>• Would the option result in a loss/gain of flood plain storage?</li> <li>• Could the option contribute to reducing flood risk (e.g. by attenuating flows)?</li> <li>• Will the option be at risk from flooding?</li> </ul>
10. To meet WFD Objectives	<ul style="list-style-type: none"> <li>• Would the option affect the ability of surface water bodies to reach Good Ecological Status or (if artificial or heavily modified) Good Ecological Potential; and for groundwater bodies to reach Good Quantitative Status?</li> <li>• Would the option prevent the status of water bodies reported in current River Basin Management Plans (RBMPs) to suffer no further deterioration?</li> <li>• Would the option affect the ability of surface water bodies to reach the RBMP 2021 objectives?</li> <li>• Would the option affect the ability of surface water bodies to improve in WFD status?</li> <li>• Would the option place waterbodies 'at risk of deterioration'?</li> </ul>
11. To reduce greenhouse gas emissions	<ul style="list-style-type: none"> <li>• Will the option have reduced levels of energy use and annual carbon emissions/size of carbon footprint?</li> <li>• Will the option affect emissions during construction and operation (including transport and other sources)?</li> <li>• Is there potential to offset energy use or contribute to renewable energy generation?</li> <li>• Will the option minimise embodied carbon in materials and equipment used in capital assets?</li> <li>• Are there opportunities for promotion of water use efficiency?</li> </ul>
12. To avoid adverse effects on key transport routes, significant land use and critical	<ul style="list-style-type: none"> <li>• Is there potential for loss of any existing properties?</li> <li>• Is there potential for conflict with major development allocations?</li> <li>• Will the option affect the operation of businesses?</li> </ul>

SEA Objective	Assessment question
infrastructure	<ul style="list-style-type: none"> <li>• Could the option affect critical infrastructure/transport assets, e.g. the closure or restrictions on the transportation network?</li> <li>• Will the option result in the loss of high grade agricultural land?</li> <li>• Will the option make the most effective use of existing assets, or propose new use for assets made redundant as a result of the option development?</li> <li>• Will it affect any navigation routes?</li> </ul>
13. To promote sustainable use of resources	<ul style="list-style-type: none"> <li>• What is the type of waste expected to be generated and is there potential for reuse on site?</li> <li>• Can materials be obtained from sustainable sources?</li> </ul>
14. To maintain and enhance local air quality	<ul style="list-style-type: none"> <li>• Will the construction or operational activities associated with the option affect local air quality (e.g., proximity to AQMAs or sensitive habitats)?</li> <li>• Will the option help improve existing local air quality?</li> </ul>
15. To protect and where feasible enhance sites and features of archaeological, historical and architectural interest, and their settings	<ul style="list-style-type: none"> <li>• Could the option significantly affect (directly or via their setting) any historical, cultural and archaeological sites, e.g. Scheduled Monuments, listed buildings, Registered Parks and Gardens, Conservation Areas, historic landscapes?</li> <li>• Will the option involve abstraction which may alter the hydro-geological setting of water dependent cultural heritage assets?</li> </ul>
16. To maintain and where feasible enhance landscape character and visual amenity	<ul style="list-style-type: none"> <li>• Will the option affect any nationally designated landscapes e.g. AONBs?</li> <li>• Are there any important historic landscapes affected by the proposed option?</li> <li>• Is there potential to significantly enhance townscape/landscape character/ visual amenity?</li> <li>• Will the option affect public access to existing landscape features?</li> <li>• Will the option help to protect or enhance non-designated areas of natural beauty and avoid the loss of local distinctiveness?</li> </ul>

## 4. SEA alternatives

### 4.1 Introduction

There is a requirement for the Environmental Report to explain what work was undertaken to develop and then appraise reasonable alternatives for the dWRMP19. It must set out how the findings of the SEA informed SES Water's decision-making and the selection of the preferred programme of options proposed within the dWRMP19.

### 4.2 Unconstrained options

SES Water identified a list of unconstrained options brought forward from WRMP14 (if not implemented) as well as any new options identified internally, that could help to balance the forecasted supply-demand deficit. These options were screened against a range of criteria, which considered the yield uncertainty (how well is the concept understood), its technical difficulty, its promotability with regulators and customers and other stakeholders, its flexibility for change in the future (is the cost likely to be worth spending today for long-term resource availability), is it sustainable in terms of energy and material use, and does it impact on conservation or heritage sites, or have a social impact from change to the general landscape or economic changes (such as job creation).

SES Water identified 46 supply and 42 demand unconstrained options that could help to balance the forecasted supply-demand deficit. Based on the findings of the screening, wider evidence and consultation with the EA - 25 supply and 23 demand unconstrained options were rejected and not progressed for further consideration and 21 supply and 19 demand options were progressed for an assessment of costs and social and environmental impacts.

Following the consultation on the dWRMP, further EBSD runs were carried out and to reflect SES Water's evolving business plan a number of additional demand options were identified. This brought the number of feasible demand options up to 28.

### 4.3 Constrained options

Each constrained option was assessed against the full SEA Framework of objectives and assessment questions established during scoping. A single assessment encompassing all the demand options was carried out as they are unlikely to result in any significant effects.

The assessment found that demand options were not site-specific and generally involve reducing water use and loss through water efficiency measures, metering, reuse and leakage control. It was concluded that there are no significant differences between the options in terms of the SEA objectives and that none are likely to arise in a significant effect.

A range of different supply-side option types were considered through the SEA process, which included options for the abstraction of water from surface and groundwater bodies as well as new pipelines to transfer water within and outside Affinity Water's operating area. The SEA found that while there is the potential for significant negative effects for some options during construction and operation, it is highly likely that the significance of these effects can be reduced during detailed planning and design of schemes. The assessment found that negative effects during construction primarily arise as a result of the requirement for new infrastructure and the significance of this effect is dependent on the presence of, or pathways to, sensitive receptors. Negative effects during operation generally relate to potential changes in water levels / flows as a result of increased abstraction.

### 4.4 Programmes

The findings of the SEA for constrained options were then used to inform the development of alternative programmes (packages of constrained options) through EBSD modelling. An environmental scenario was developed which excluded supply-side options that were identified as potentially causing a risk to WFD status. The exclusions made were the combined results of SEA screening and unconstrained options screening, which was made after consultation with the

Environment Agency. These model runs would enable SES Water to decide on the best programme of measures to suit their business from the range of programmes generated by EBSD modelling. The preferred plan was selected taking into consideration the Government's guiding principles and the preferences of stakeholders and customers. The plan focuses on affordability, innovation, resilience and reducing consumption.

## 5. SEA of the Draft WRMP19

### 5.1 Introduction

This chapter presents the key findings in relation to the preferred programme of options set out in the dWRMP19. It builds upon the SEA work carried out for alternatives, in particular constrained options discussed previously.

### 5.2 dWRMP19

The proposed schemes in SES Water's dWRMP19 are set out below in **Table 2**. The supply and demand management schemes are expected to deliver enough additional water to meet predicted demand until 2079/80.

**Table 2: Preferred Plan**

Name	Delivery Year	Option utilised
<b>Worst drought on historic record (WDHR)</b>		
SESW-MET-555: Compulsory smart metering - higher meter penetration	2020	Y
SESW-LEA-399d: Mains renewal	2020	Y
SESW-LEA-303: Enhanced pressure management	2020	Y
SESW-EXW-WAF1 : Existing WAFU Sources	2020	Y
SESW-NGW-N4: Leatherhead licence increase	2054	Y
SESW-NGW-R5: New borehole (Mole Valley Chalk) - Fetcham Springs	2057	N
SESW-NGW-N5: New Lower Mole Abstraction source	2063	N
SESW-WEF-308: Campaign targeting domestic customers with high consumption - leaking toilets	2065	Y
SESW-WEF-307: Variable infrastructure charge	2069	Y
SESW-WEF-157: Dual flush toilets retrofit	2069	Y
SESW-LEA-302c: Improve RM efficiency	2070	Y
SESW-LEA-301a: Improve ALC efficiency	2071	Y
SESW-RTR-N8: Pipeline linking Pains Hill, Duckpit Wood and Chalk Pit Lane to existing treatment works at Westwood and Godstone	2074	N
SESW-WEF-022: Non HH WEFF company led self install	2075	Y
SESW-WEF-305: Domestic retrofit targeting high consumers	2075	Y
<b>1 in 200 year drought</b>		
SESW-MET-555: Compulsory smart metering - higher meter penetration	2020	Y
SESW-LEA-399d: Mains renewal	2020	Y
SESW-LEA-303: Enhanced pressure management	2020	Y
SESW-EXW-WAF1 : Existing WAFU Sources	2020	Y
SESW-NGW-N4: Leatherhead licence increase	2053	N
SESW-NGW-R5: New borehole (Mole Valley Chalk) - Fetcham Springs	2056	N
SESW-LEA-302c: Improve RM efficiency	2057	Y
SESW-NGW-N5: New Lower Mole Abstraction source	2064	N
SESW-WEF-307: Variable infrastructure charge	2065	Y
SESW-WEF-308: Campaign targeting domestic customers with high consumption - leaking toilets	2065	Y
SESW-WEF-022: Non HH WEFF company led self install	2075	Y
SESW-WEF-021: Household WEFF programme partnering approach home visit	2075	Y
SESW-WEF-305: Domestic retrofit targeting high consumers	2075	Y

Name	Delivery Year	Option utilised
SESW-RTR-N8: Pipeline linking Pains Hill, Duckpit Wood and Chalk Pit Lane to existing treatment works at Westwood and Godstone	2078	N

It should be noted that a number of these schemes, including the four supply-side schemes, will either not be utilised and/ or not delivered during the statutory plan period and therefore may not necessarily be utilised if not required. Despite this, all of the schemes have been considered through the SEA as they could potentially be utilised in the future.

The SEA for the dWRMP19 builds on the assessment work carried out for constrained options. The method is explained in Chapter 4.

## 5.3 Summary SEA findings

The SEA for the dWRMP19 builds on the assessment work carried out for constrained options. The method is explained in Chapter 4. A narrative is provided below to highlight some of the key positive and negative effects identified in relation to proposed demand and supply schemes.

### 5.3.1 Summary assessment findings for demand schemes

The assessment found that the demand schemes are not likely to have any significant positive or negative effects against SEA Objectives. The demand management schemes will help to reduce demand and therefore reduce pressure on water resources. In summary, the assessment found the following:

- There is likely to be a minor negative effect in the short term on communities and households. The demand options have the potential to result in some disturbance to communities in the short term through the installation of meters, water efficient devices and works to fix leaks. Good construction practices and detailed pre-works consultation would help to reduce construction impacts.
- The demand management options will help to reduce demand and therefore reduce pressure on water resources. This could have a minor positive effect on water levels in the medium to long term.
- The demand options will require travel to properties in order to install meters and water efficient devices. In the longer term there is the potential for a carbon saving associated with the reduced water requirement. However, there will be a minor negative effect in the short term. Careful operation of schemes will help to maximise efficiencies and minimise travel.
- There is the potential for some disturbance to transport routes in the short term. Careful operation of the schemes will minimise disturbance to transport routes.
- Further work will be required at the implementation stage to assess the environmental risks associated with leakage schemes once specific sites are known.

### 5.3.2 Summary assessment findings for supply schemes

Four supply schemes have also been selected as resilience options: SESW-RTR-N8 (Pipeline linking Pains Hill, Duckpit Wood and Chalk Pit Lane to existing treatment works at Westwood and Godstone), SESW-NGW-N5 (New Lower Mole Abstraction source), SESW-NGW-N4 (Leatherhead licence increase) and SESW-NGW-R5 (New borehole (Mole Valley Chalk) - Fetcham Springs). The narrative below highlights the key effects and proposed mitigation measures identified through the assessment.

**Table 3** below summarises some of the key impacts and proposed mitigation measures for the schemes, including areas for further investigation/assessment. Further studies and environmental assessments will be required at the project level once detailed planning and design has been carried out. These will be able to set out detailed mitigation measures to avoid and/or reduce the significance of any negative effects.



**Table 3: Proposed mitigation and areas for further investigation**

Scheme	Potential impact	Mitigation / further investigation
SESW-RTR-N8: Pipeline linking Pains Hill, Duckpit Wood and Chalk Pit Lane to existing treatment works at Westwood and Godstone	Potential for a major short term negative effect on biodiversity during construction as it requires the installation of a pipeline which passes through an Ancient Woodland.	The pipeline route should avoid the Ancient Woodland to the north of Duckpit Wood close to the M25. The detailed feasibility study to be carried out in the next five year business planning period will explore the environmental impacts of the proposed scheme in more detail. This should explore route options for the pipeline that avoids the Ancient Woodland and minimises potential impacts. During works related to pipeline installation it should be ensured that adequate pollution prevention measures are in place, especially if contaminated land is crossed.
	The assessment identifies the potential for construction impacts on predominantly local transport routes. However, there is also the potential for construction impacts to the A25 which links to the A22 and Junction 6 of the M25. It is assumed that there will be no disturbance to the M25.	Good construction practices should ensure that there is no significant residual effect.
	The new pipeline passes through the Surrey Hills AONB and the construction would be visible from a number of listed buildings and also passes close to a Registered Park and Garden. Potential for impacts in the short-term during construction.  The pipeline will be buried during operation so should not have any significant negative effects in the medium to long-term.	The detailed feasibility study to be carried out in the next five year business planning period will explore the environmental impacts of the proposed scheme in more detail. This study will be used to identify and inform the optimal design and the detailed mitigation measures required to minimise any potential effect. The SEA recommends that prior to construction, a landscape mitigation strategy should be developed and integrated into construction method statements to minimise the adverse effects of the construction phase to the protected landscape and historic environment. The strategy will include details such as locating construction facilities sensitively; the location of existing and any proposed planting, the import and storage of equipment and materials, and the nature of post-construction hard and soft landscaping works. Good construction practice will be employed to minimise the potential visual disturbance and impacts.
SESW-NGW-N5: New Lower Mole Abstraction source	There is an Ancient Woodland within the identified area of search for the borehole. There is potential for negative effects if Ancient Woodland is removed or damaged.	The detailed feasibility study to be carried out in the next five year business planning period will explore the environmental impacts of the proposed scheme in more detail. This should ensure that the Ancient Woodland is avoided during construction and not significantly impacted by the scheme.
	The construction phase could create short term negative effects on population and communities through noise, dust and disruption to traffic. There are also likely to be related short term negative effects on designated recreational facilities. In the long term no change to the baseline is predicted as the pipeline will be buried.	The detailed feasibility study to be carried out in the next five year business planning period will explore the impacts of the proposed scheme in more detail. This study will be used to identify and inform the optimal design and the detailed mitigation measures required to minimise any potential effect. Good construction practices should also help to ensure that there is no significant residual effect.
	The assessment identifies the potential for construction impacts on predominantly local transport routes. However, there is also the	Good construction practices should ensure that there is no significant residual effect.

Scheme	Potential impact	Mitigation / further investigation
	potential for construction impacts to the A25 which links to the A22 and Junction 6 of the M25. It is assumed that there will be no disturbance to the M25.	
SESW-NGW-R5: New borehole (Mole Valley Chalk) - Fetcham Springs	There is the potential for temporary impacts during construction such as noise and dust which may have a minor short term negative effect on local communities and disrupt public footpaths which run close to the option.	The detailed feasibility study to be carried out in the next five year business planning period will explore the impacts of the proposed scheme in more detail. This study will be used to identify and inform the optimal design and the detailed mitigation measures required to minimise any potential effect. Good construction practices should also help to ensure that there is no significant residual effect.
	The abstraction associated with the option may also have minor negative effects over the short term, and moderate negative effects over the medium to long term on fisheries through reductions in springflow to the River Mole. This reduction in springflow will also have moderate negative effects in the medium to long term on the water flow and water quality of the River Mole.	Further investigation into the hydrological effects of the option is required to quantify the potential effect and to determine the appropriate mitigation in the form of the timing and volume of abstraction. Please refer to Section 6.2.4 for information relating to the WFD.

## 5.4 Cumulative effects

It is a requirement for the SEA to also consider potential interactions between the proposed dWRMP19 schemes as well as with other plans and programmes, which could result in cumulative effects.

Intra-plan refers to the potential cumulative effects arising as a result of interactions between schemes proposed within SES Water's dWRMP19. The supply-side schemes are not within 5km so there is no risk of interactions during construction. The schemes do not fall within any of the same high value receptors.

There is a potential risk for three of the supply-side resilience options to interact as they fall within the same WFD catchment. SESW-NGW-N5 (New Lower Mole Abstraction source), SESW-NGW-N4 (Leatherhead licence increase) and SESW-NGW-R5 (New borehole (Mole Valley Chalk) - Fetcham Springs).

SESW-NGW-N4 (Leatherhead licence increase) proposes to increase the Leatherhead licence by 2 Ml/d in order to take water available at least 50% of the time in the CAMS policy. The water will be treated at Elmer as per the existing source where there is existing capacity. SESW-NGW-N5 (New Lower Mole Abstraction source) will make use of available water (excludes summer period) in the licensing policy, so while there is the potential for a cumulative effect on the river flow lower down from all the abstraction upstream (Fetcham), the recent actual flows must be above environmental flow for at least half the year to make the water available. Furthermore, SESW-NGW-R5 (New borehole (Mole Valley Chalk) - Fetcham Springs) includes the installation of a collector well and radiating horizontal boreholes to intercept natural springflow, and minimise drawdown, thereby reducing the environmental impact on natural groundwater flow to the River Mole.

Taking the above into account it is considered that there is a low risk for cumulative effects on the Mole WFD catchment. Despite this, it is recommended that there should be further investigation and a more detailed assessment should be carried out, if necessary, and that there should also be discussions with the Environment Agency to ensure compliance with the WFD.

WRSE carried out a study to identify potential cumulative effects arising as a result of interactions between schemes being proposed through emerging dWRMPs (2019) within their area.<sup>5</sup> The initial findings of this work were delivered to SES Water in October 2017. The study identified that none of the schemes proposed in the dWRMP19 are likely to interact with schemes proposed in other WRMPs to have a cumulative effect.

The assessment found that there is no to low risk for cumulative negative effects (inter-plan) arising as a result of interactions with other, plans, programmes and projects.

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<sup>5</sup> WRSE (2017) Environmental information to inform Water Company SEAs - Identification of potential for cumulative effects between water companies for WRMP19 SEAs. Prepared by Ricardo.

## 6. SEA of the Final WRMP19

### 6.1 Introduction

The draft WRMP19 was published for consultation in March 2018 and was accompanied by the Environmental Report. A number of responses were received and these were reviewed and further work carried out to inform the identification of preferred schemes for inclusion in the final WRMP19. The Environmental Report and this NTS has been updated to reflect consultation responses received as well as revisions to the WRMP. This Chapter provides a brief summary of the further work carried out and how this influenced the final WRMP, it also sets out the assessment of the final WRMP19.

### 6.2 The final WRMP19

SES Water has developed additional demand side options since the dWRMP consultation ended. Further EBSD modelling work was carried out to try and maximise demand side schemes and attempt to not need new supply side schemes, reflecting stakeholder preferences.

The preferred programme of options that comprise the final WRMP19 are set out in **Table 4** below.

**Table 4: Final WRMP19 schemes**

Name	Delivery Year
<b>Worst drought on historic record (WDHR)</b>	
SESW-LEA-900: Leakage bundle 1	2020
SESW-WEF-700b-ph1: PR19 Option 1b (phase 1)	2020
SESW-MET-600: Compulsory metering AMI – enhanced higher meter penetration	2020
SESW-TAR-800b: Tariffs (scenario b)	2045
SESW-WEF-700b-ph2: PR19 Option 1b (phase 1)	2045
<b>1 in 200 year drought</b>	
SESW-LEA-900: Leakage bundle 1	2020
SESW-WEF-700b-ph1: PR19 Option 1b (phase 1)	2020
SESW-MET-600: Compulsory metering AMI – enhanced higher meter penetration	2020
SESW-TAR-800b: Tariffs (scenario b)	2045
SESW-WEF-700b-ph2: PR19 Option 1b (phase 1)	2045

The supply-side options identified in Chapter 5 relating to the dWRMP and selected in some of the EBSD model scenarios remain as the preferred supply-side options when these become necessary, hence they represent resilience options. SES Water opted to retain these supply schemes in order to enhance the resilience of the final WRMP19 to the following:

- Non-drought risks at source and production sites, including flooding, pollution and emergency incidents;
- Network risks including major bursts and freeze-thaw impacts;
- Population growth beyond that planned for; and
- Climate change impacts greater than those planned for.

The resilience options are selected beyond 2040 and SES Water intend to carry out detailed feasibility studies in the next five year business planning period, in particular to assess environmental impacts and refine cost estimates.

The resilience options are SESW-RTR-N8 (Pipeline linking Pains Hill, Duckpit Wood and Chalk Pit Lane to existing treatment works at Westwood and Godstone), SESW-NGW-N5 (New Lower Mole Abstraction source), SESW-NGW-N4 (Leatherhead licence increase) and SESW-NGW-R5 (New borehole (Mole Valley Chalk) - Fetcham Springs).

## 6.3 SEA of the final WRMP19

In terms of the SEA there are no significant differences between the draft and final WRMP. As per the dWRMP the final WRMP19 is comprised predominantly of demand management schemes. The assessment of demand options (see Chapter 4) found that they not likely to have any significant positive or negative effects against SEA Objectives. A summary of the findings is presented in Chapter 5 of this NTS and are not repeated here. The demand management schemes will help to reduce demand and therefore reduce pressure on water resources.

As stated above, there are also four supply schemes retained as resilience options beyond 2040. These four schemes were considered as part of the SEA of the dWRMP in Chapter 6 of this Report. A summary of the findings is presented in Chapter 5 of this NTS and are not repeated here.

Table 3 in Chapter 5 summarises proposed key mitigation as well as areas for further investigation/assessment relating to any potential moderate and/or major negative effects. Further studies and environmental assessments will be required at the project level once detailed planning and design has been carried out. These will be able to set out detailed mitigation measures to avoid and/or reduce the significance of any negative effects.

## 6.4 Cumulative effects

Cumulative effects can arise as a result of interactions from schemes proposed within the WRMP19 itself (intra-plan) as well as interactions with other plans and programmes (inter-plan), including other WRMPs.

A regional approach to cumulative effects assessment was explored by Water Resources South East (WRSE) group in response to some short comings in the SEAs of WRMPs produced in 2014 identified by consultees and also with the aim of supporting an improved approach for the next round of WRMPs (2019). The study published in early 2017, sets out a systematic procedure for identifying and evaluating the risk of cumulative effects.<sup>6</sup> Following consultation on the dWRMPs, the cumulative effects work was updated to reflect the options being considered through the emerging revised plans. The revised findings were delivered to SES Water in August 2018.

The final WRMP19 includes demand management schemes. These are non-site specific and the assessment (see Chapter 5) found that they are unlikely to result in a significant negative effect. Overall they are more likely to have a significant cumulative positive effect with the supply side options by helping to balance the supply demand deficit and reduce water use. This approach is supported through the WRSE work on cumulative effects and there is recognition that there is the potential at a regional scale for beneficial cumulative effects arising as a result of demand management options.

As for the dWRMP the final WRMP19 includes four supply-side schemes as resilience options after 2040. These four schemes were considered as part of the cumulative effects assessment for the dWRMP in Chapter 5. The summary findings of this work are presented in Chapter 5 of this NTS and are not repeated here. The revised cumulative effects work carried out by WRSE in 2018 does not change the findings of the previous work.

Taking the above into account, it is concluded that the final WRMP19 is not likely to result in any significant negative (intra or inter-plan) cumulative effects.

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<sup>6</sup> WRSE (2017) Environmental Information to inform Water Company SEAs - Cumulative Effects Assessment in WRMP SEAs.

## 7. Next steps and monitoring

### 7.1 Next Steps

As soon as reasonably practicable after the adoption of the final WRMP, the SEA Regulations require that the WRMP, Environmental Report and SEA Post Adoption Statement are made publicly available.

The SEA Post Adoption Statement must include:

- How environmental considerations have been integrated into the WRMP;
- How the Environmental Report has been taken into account during preparation of the WRMP;
- The reasons for choosing the WRMP as adopted, in the light of the other reasonable alternatives dealt with;
- How the opinions expressed by the public and consultation bodies during consultation on the WRMP and Environmental Report have been taken into account; and
- The measures that are to be taken to monitor the significant effects identified for the WRMP.

### 7.2 Monitoring

At the current time, there is a need only to present 'measures envisaged concerning monitoring'. The SEA Regulations expect monitoring and mitigation to be linked, and that the focus should be on any significant negative effects identified through the assessment. The UKWIR SEA guidance recommends that existing arrangements for monitoring should be used where possible to avoid duplication of effort.

Based on the findings of the SEA at this stage, the following monitoring measures are proposed:

- Groundwater levels, surface water levels and WFD status for waterbodies in the Mole catchment (already monitored by the Environment Agency).

