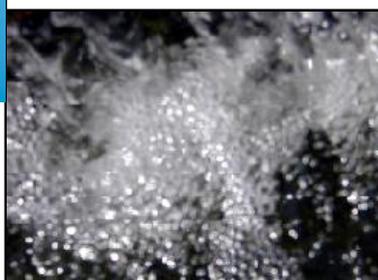


WRMP19 Options appraisal  
methodology  
WRMP19 Supporting  
Appendix 7A  
13 August 2019

**Pure know** **h<sub>2</sub>ow**



south east water



# Water Resources Management Plan 2019

## Options Appraisal Methodology

|                       | <b>Name / Position</b>                     | <b>Signature</b>    | <b>Date</b> |
|-----------------------|--|---------------------|-------------|
| <b>Originated by:</b> | Andrew Halliday<br>Options Project Manager | <i>A J Halliday</i> | 08/01/16    |
| <b>Checked by:</b>    | Helen Chapman<br>Supply / Demand Manager   | <i>H Chapman</i>    | 12/01/16    |
| <b>Reviewed by:</b>   | WRMP Working Group                         | <i>Approved</i>     | 25/01/16    |
| <b>Approved by:</b>   | Lee Dance                                  | <i>L Dance</i>      | 25/01/16    |

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## GLOSSARY OF TERMS

|            |  |
|------------|--|
| DEFRA      | Department of Environment, Food and Rural Affairs              |
| BAG        | Benefits Assessment Guidance                                   |
| CAMS       | Catchment Abstraction Management Strategies                    |
| EBSD       | Economics of Balancing Supply and Demand                       |
| EFG        | Environmental Focus Group                                      |
| WRSE       | Water Resource South East (WRSE) group                         |
| SEW        | South East Water   |
| WRMP14     | Water Resource Management Plan 2014                            |
| WRMP19     | Water Resource Management Plan 2019                            |
| SEA        | Strategic Environmental Assessment                             |
| HRA        | Habitats Regulations Assessment                                |
| WFD        | Water Framework Directive                                      |
| EIA        | Environmental Impact Assessment                                |
| AIC / AISC | Average Incremental Cost / Average Incremental and Social Cost |
| MCA        | Multi Criteria Analysis  |
| RO         | Reverse Osmosis system   |
| GIS        | Geographical Information Systems                               |
| RBMP       | River Basin Management Plan                                    |
| SSSI       | Special Sites of Scientific Interest                           |
| SPA        | Special Protection Areas                                       |
| SAC        | Special Areas of Conservation                                  |
| NNR        | National Nature Reserve  |
| SLA        | Sensitive Land Areas   |
| BAP        | Biodiversity Action Plan                                       |
| AONB       | Area of Outstanding Natural Beauty                             |
| ALC        | Agricultural Land Classification                               |
| LPA        | Local Planning Authority                                       |

## 1.0 INTRODUCTION

### 1.1 Overview

The options identification and appraisal process is an important stage in the development of the 2019 Water Resource Management Plan (WRMP19). A multi-stage process will be used; the key steps will be to:

1. Identify an extensive list of all potential options, the **Unconstrained Options List**, which either increases available water resource or reduces the water demand.
2. Coarse screening of the unconstrained options to refine the options down to a **Constrained Options List**.
3. Fine screening of the constrained options to produce a **Feasible Options List**.
4. The feasible options will then be taken forward for further economic analysis and optimisation modelling from which the **Preferred Options List** and preferred programme will be derived.

This report summarises how South East Water (SEW) proposes to undertake the options appraisal process.

### 1.2 Key Objectives

The key objectives of the options appraisal process and screening approach will be to:

- Actively involve stakeholders and customers;
- Comply with government policy and the updated Water Resources Planning Guidelines (WRPG<sup>1</sup>);
- Apply lessons learned and develop existing work from the WRMP14 process (see Appendix A);
- Meet the requirements of Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA), and Water Frameworks Directive (WFD);
- Provide a simple, transparent and fully recorded process with trackable screening decisions and key assumptions and judgments made clear and any uncertainties identified;
- Ensure a consistent approach of avoiding bias against options where less information is available (or more needed).

### 1.3 Updated Water Resources Planning Guidelines

Following a review of the updated regulatory guidelines, WRPG, the following changes affecting the options appraisal process, from WRMP14, have been identified:

---

<sup>1</sup> Water Resources Planning Guideline, May 2016, published by the Environment Agency.

- The new guidelines are more flexible and significantly shorter, early engagement with regulators, customers and interested parties is required to verify the proposed methods and approach to ensure confidence with the options appraisal process.
- There are now opportunities to move information from drought plans to WRMP's to allow consideration of more resilient solutions as part of the supply-demand options appraisal.<sup>2</sup>
- There is now an opportunity to move beyond sole reliance on Economics of Supply and Demand Balance (ESDB) to use different methods to make decisions on future solutions that can cope with the wide range of uncertainties some companies face.<sup>3</sup>

It is proposed that the changes outlined above will be incorporated in the options appraisal process for the WRMP19.

## 1.4 Consultation

Stakeholder and customer communication and engagement is considered to be an important part of screening of options and developing WRMP19.

In line with WRMP methods discussion requirement of the WRPG, SEW intend to commence early engagement with stakeholders in order to gain confidence with the proposed approach. SEW will prepare and publish a method statement explaining the methodology to be used for the options appraisal process for the WRMP19.

Ongoing consultation will be principally through the Environmental Focus Group (EFG), but also will include statutory consultees and wider consultees during the SEA and HRA process as well as members of the Customer Challenge Group and Ofwat Advisory Panel.

Early internal stakeholder engagement will be carried out by attendance at production team briefing meetings to facilitate in the identification of new options. More formal internal technical workshops will be carried out throughout the process to assist in the screening and selection of options with the relevant expert groups.

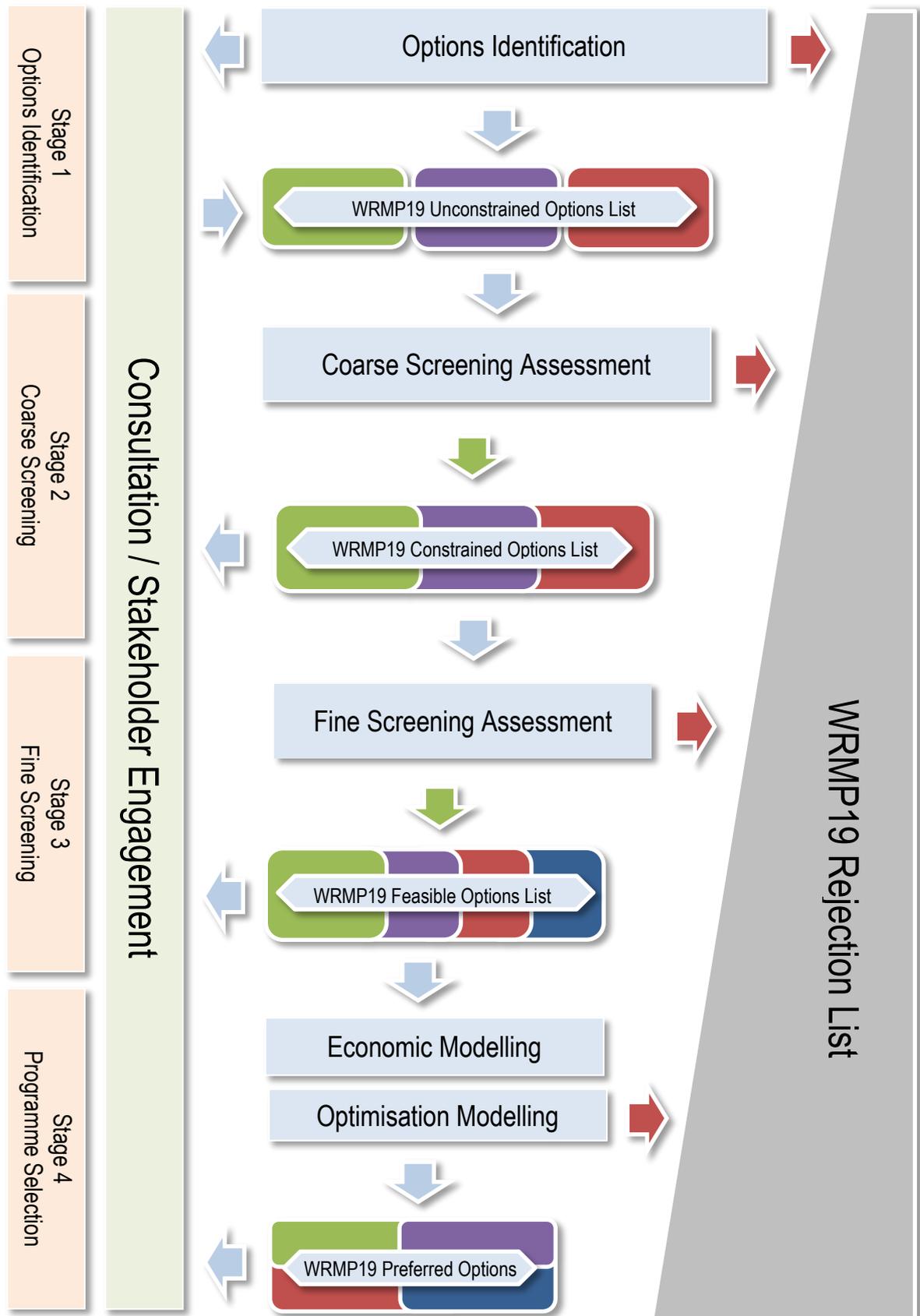
Prior to producing the final WRMP19, SEW will publish a draft version of the plan for formal public consultation.

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<sup>2</sup> Drought plan and WRMP links, published by the Environment Agency in June 2016

<sup>3</sup> WRMP19 Methods - Decision Making Process: Guidance (16/WR/02/10), published by UKWIR in 2016

### 1.5 Options Appraisal and Selection Approach



## 2.0 OPTIONS IDENTIFICATION

### 2.1 Generic Option Types

Table 2.1 below outlines the generic option types which will be considered in the WRMP. In the unconstrained options list, these option types are to be developed into more specific and defined options.

Table 2.1 - Definition of option types

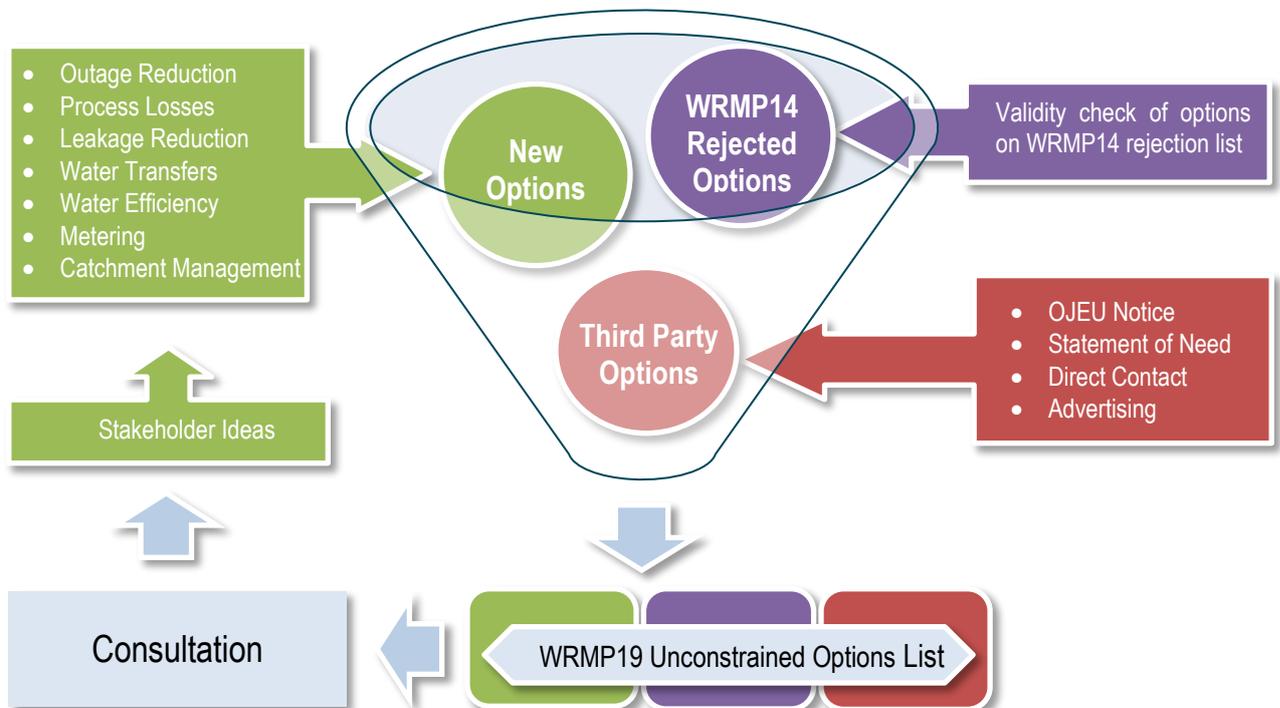
| Main Option Group                 | Option Type                        | Option Ref   | Further breakdown of option types and description  |
|-----------------------------------|------------------------------------|--|--|
| <b>Demand Management</b>          | Leakage Reduction                  | LEA  | Assessment and repair of pipelines to reduce leakage from existing network   |
|                                   | Pressure Management                |  | Pressure reduction programmes  |
|                                   | Metering                           | MET  | Installation of water meters   |
|                                   | Recycling and Re-use               | WEF  | Recycling and reuse of "grey water"  |
|                                   | Water Efficiency                   |  | Methods of reducing water wastage  |
| <b>Drought Measures</b>           | Drought Permit                     | DMP  | Use of permits or orders during drought conditions to provide additional sources of water or increase above existing abstraction licences.                     |
|                                   | Drought Order                      | DMO  |  |
| <b>Groundwater</b>                | Aquifer Storage Recharge           | ASR  | Storing of water in groundwater aquifers for extraction during increased demand periods  |
|                                   | Groundwater Enhancement            | EGW  | 'Closing the gap' - Increasing abstraction within licence by addressing an existing constraint.  |
|                                   | New Groundwater                    | NGW  | 'Beyond the licence' - extend an existing licence to allow for further abstraction (new licence required)  |
|                                   |                                    |  | New groundwater source (new licence required)  |
| Ground Water Catchment Management | CGW                                | New catchment management measures to prevent outages and reduction in D.O. |  |
| <b>Licensing</b>                  | Licence Trading                    | LIC  | Underused licences or licences no longer required by licensee – potentially available  |
| <b>Water Treatment Works</b>      | WTW Expansion                      | WTW  | Improving the water treatment works capacity to remove constraint on abstraction within licence  |
|                                   | WTW Process Losses                 | PRO  | Improving the water treatment works efficiency to reduce water losses  |
| <b>Water Transfer</b>             | Inter-company / Regional Transfers | RTR  | Transfers of water from/to outside the company on an inter-company or regional scale   |
|                                   | Company Transfers                  | CTR  | Transfers of water within the SEW company area   |
|                                   | National Transfers                 | NTR  | National bulk transfers  |
|                                   | International Import               | INT  | International importing of water   |
| <b>Effluent Reuse</b>             | Effluent Reuse                     | EFF  | Reverse Osmosis (treatment technology)   |
|                                   |                                    |  | Conventional (treatment technology)  |
| <b>Conjunctive Use</b>            | Conjunctive Use                    | CON  | Combining surface water abstraction and groundwater abstraction to allow periods for aquifer recovery and avoid surface water abstraction in low flow periods. |
| <b>Desalination</b>               | Desalination                       | DES  | Estuarine - taking estuary water   |
|                                   |                                    |  | Coastal - taking coastal water   |
|                                   |                                    |  | Brackish abstraction – BH's near the coast or estuaries  |
| <b>Reservoirs</b>                 | Reservoirs                         | RES  | Bunded - man made banks all round  |
|                                   |                                    |  | Bankside - partially bunded with natural topography  |
|                                   |                                    |  | Impoundment - dam and natural topography   |

| Main Option Group | Option Type                        | Option Ref | Further breakdown of option types and description                          |
|-------------------|------------------------------------|------------|--|
|                   |                                    |            | Existing reservoir - reservoir extension or raising                        |
| Surface Water     | New Surface Water                  | NSW        | New locations for surface water abstractions                               |
|                   | Surface Water Enhancement          | ESW        | Increasing abstraction within licence limits by removal of constraints     |
|                   | Surface Water Catchment Management | CSW        | New catchment management measures to prevent outages and reduction in D.O. |

## 2.2 Unconstrained Options List

In order to minimise the duplication of time and resources from previous work, the unconstrained options list builds on the options that were identified and appraised for WRMP14. Figure 2.1 below detailed how the unconstrained options list will be formed:

Figure 2.1 – Options Identification Process



## 2.3 New Options

A new set of potential options will be identified for inclusion within the unconstrained options list through consultation with internal and external stakeholders. A number of initial option ideas have been identified for further review and are shown in Figure 2.1 above.

## 2.4 WRMP14 Rejected Options

A review of the WRMP14 rejected options list will be undertaken to check the validity of previously rejected options due to changed or new information.

Only options rejected up to the WRMP14 fine screening stage will be validated, as the full set of WRMP14 feasible options will be inputted into the new fine screening process at a later stage.

## 2.5 Third Party Options

In 2015 SEW commissioned Frontier Economics (with technical input from Atkins) to prepare a report<sup>4</sup> to consider how greater involvement of third party options in the provision of water resources could be achieved with the aim of reducing costs, ensuring efficient allocation of available resources, and improving innovation.

The recommendations, taken from the “Water 2020” report, summarised a number of practical steps to address the main barriers identified in the report. These being, changes to regulations and guidelines; as well as the creation of a national level information exchange/marketplace. Understanding what the long term recommendations are likely to be has assisted in developing the methods and approach for third party engagement for the next WRMP to ensure alignment and “future proofing” for Water 2020. The following areas for improvement are proposed as part of the WRMP19:

### 2.5.1 Engagement

The engagement methods used for the WRMP14 process were; formal contact through the WRMP consultation programme; direct contact with neighbouring water undertakers (WRSE); and contact with other abstraction license holders in the region.

For WRMP19, the following approaches for third party engagement are proposed in order to promote to a wider audience:

- A) OJEU Notice
- B) Statement of Need
- C) Direct Contact
- D) Advertising

A communications plan, explaining the methodology behind each of these approaches is provided in Appendix B.

### 2.5.2 Assessment of Options

To facilitate consistent and robust assessment of third party options the WRSE group have agreed that companies use the template included in Appendix C to request scheme details. Although SEW will use this template, we are not intending to be too strict in ruling out options where insufficient information is provided. Instead, and where appropriate,

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<sup>4</sup> Water 2020 – water resource planning and third party options, July 2015, A discussion paper produced jointly by SEW and Frontier Economics.

more engagement with third parties will be carried in this instance to develop the shortfall in information where “proof of concept” is considered favourable.

### **2.5.3 Types of Third Party Schemes**

In addition to the third party schemes necessary to meet a shortfall in demand, consideration will also be given to third party schemes that may replace existing ones when efficiency gains are possible.

SEW will avoid focussing on specific services, such as bulk supply or raw or treated water to ensure a mix of third party options.

SEW will adopt a Totex approach within the appraisal process to avoid Capex bias and the favouring of “build” over “buy” decisions.

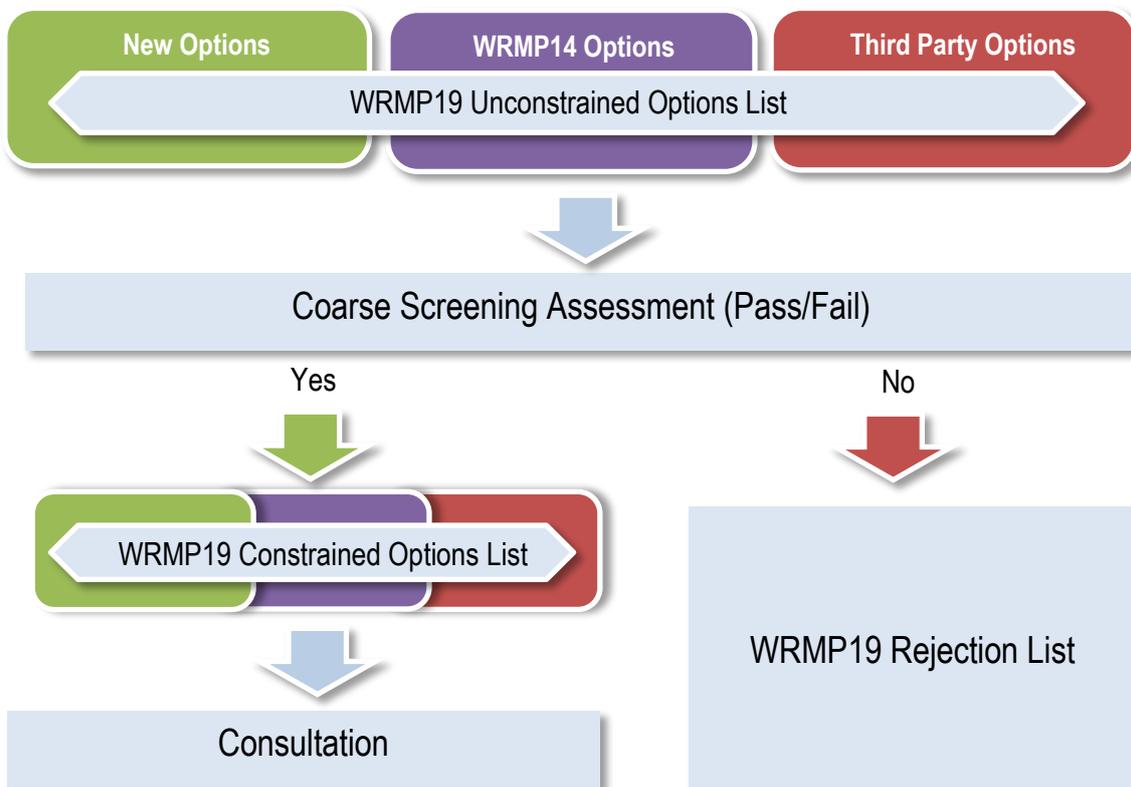
### 3.0 COARSE SCREENING OF OPTIONS

#### 3.1 Principles for Coarse Screening

Coarse screening involves refining the Unconstrained Option list to a manageable set of the more promising options for further consideration (the Constrained Option list). The over-arching principles to be considered for all options taken forward are:

- **Resilience;**
- **Deliverability;**
- **Promotability;** and
- **Environmental and Social Acceptability.**

Figure 3.1 – Coarse Screening Process



#### 3.2 Coarse Screening Methodology

‘Show stoppers’ will be identified to exclude options where it can clearly be demonstrated that they will not meet these over-arching principles. The assessment questions will be answered in a “Pass”/“Fail” format, if an option fails any question then it will be rejected.

### 3.3 Coarse Screening Assessment Criteria

The coarse screening criteria, detailed below, has been developed from WRMP14, from the guidance provided in the Water Resources Planning Tools 2012<sup>5</sup> and the Final WRPG<sup>6</sup>, into a general set of criteria questions appropriate to span across all the option types.

It is intended that this will ensure a consistent and efficient approach to the short-listing process given the number, and potential for limited information available for new options.

#### 3.3.1 Resilience

QU 1 - Does the option fail to address the supply-demand problem?

*Points to Consider:*

- *Delivers no benefit in deployable output during a critical period?*
- *If there is no deployable output benefit does the option provide added resilience against water availability issues?*
- *Vulnerable to hazards, drought, climate change?*

#### 3.3.2 Deliverability

QU 2 - Are any of the risks and uncertainties unacceptable and likely to result in failure of the option?

QU 3 - Is the option technically unfeasible?

*Points to Consider:*

- *Unknown or unreliable technologies?*
- *Land availability, ownership and tenure?*
- *Is the land contaminated?*
- *Dependencies on other assets or third parties?*

#### 3.3.3 Promotability

QU 4 - Is the option likely to result in overwhelming public and/or planning resistance?

QU 5 - Does the option contravene national policy objectives?

*Points to Consider:*

- *Customer acceptability?*
- *Social benefits vs risk?*
- *Could planning issues jeopardise the delivery of the option?*
- *Regulatory acceptability, new consents?*
- *Other interested parties that could influence outcome?*
- *Conflicts with other water resource zones?*

#### 3.3.4 Environmental and Social Acceptability

<sup>5</sup> UKWIR Report 12/WR/27/6, 2012

<sup>6</sup> Final Water Resources Planning Guideline, Environment Agency and Natural Resources Wales, May 2016

QU 6 - Is the option incompatible with high level environmental constraints?

QU 7 - Are there unacceptable impacts on internationally/nationally designated sites, irreplaceable habitats and/or WFD objectives?

*Points to Consider:*

- *Is water available for abstraction?*
- *Impact on European sites?*
- *Impact on SSSIs?*
- *Impact on priority habitats?*
- *Archaeological impact?*
- *Landscape impact?*
- *Can the environmental impact be mitigated or offset?*
- *If impacts are not acceptable, can they be agreed with key stakeholders (EA, NE, EFG, etc) as justifiable for screening out?*

### **3.3.5 Cost**

To avoid the risk of unconstrained options being screened out too early against a cost criteria (due to the lack of information available at this stage of the screening process to derive sufficiently accurate option costs), the cost criteria for the coarse screening assessment will not be considered.

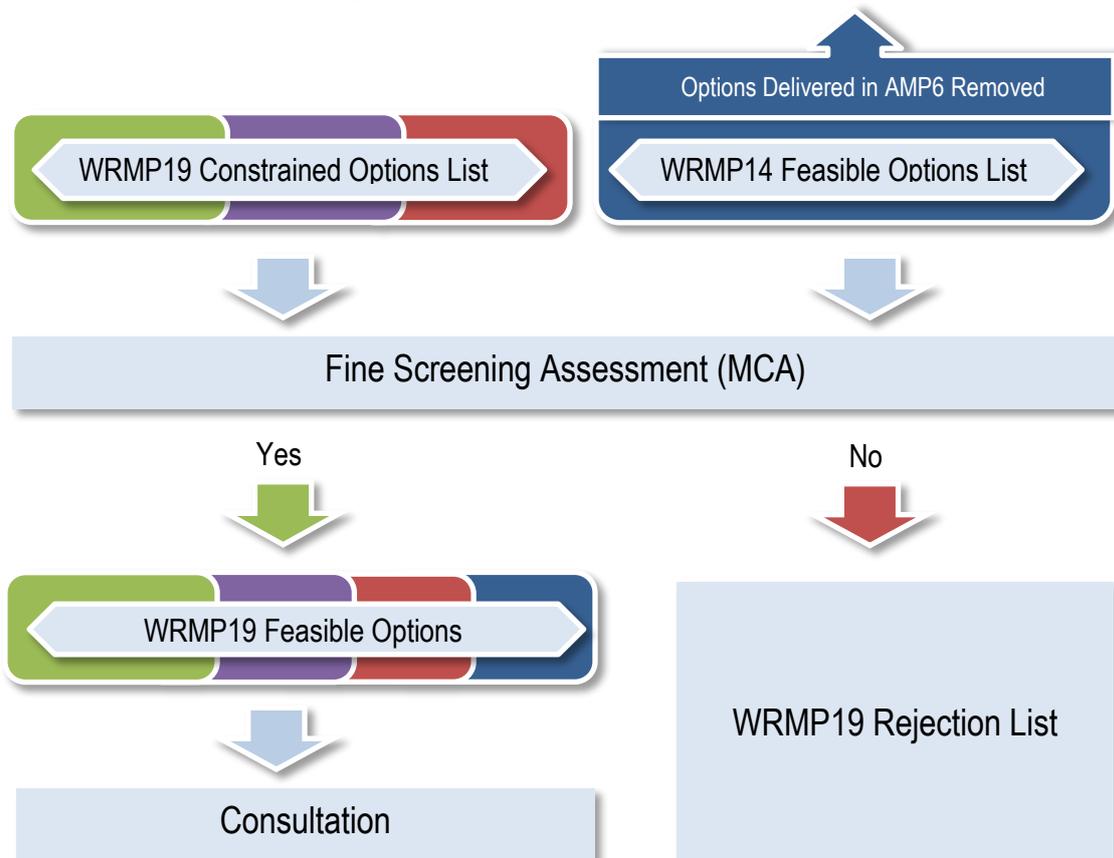
## 4.0 FINE SCREENING OF OPTIONS

### 4.1 Principles for Fine Screening

Fine screening involves further analysis of the Constrained Options list against a range of issues or criteria, to identify a shorter Feasible list of options for more detailed studies to reduce uncertainty. In addition to the new and revisited options that have passed through the coarse screening process, the feasible options from WRMP14 will also be included in the fine screening assessment.

The same set of over-arching principles as used for coarse screening will be applied to the fine screening process, i.e. cost, resilience; feasibility / flexibility, promotability and environmentally / social acceptability. However, this screening process will use a more refined form of analysis that will move beyond the basic “Pass”/“Fail” method, and present a balanced view of the qualitative and quantitative analysis based on the greater level of detail available.

Figure 4.1 – Fine Screening Process



## 4.2 Fine Screening Methodology

The fine screening methodology will be based on a Multi-Criteria Analysis (MCA). The MCA methodology is an established approach which allows options to be measured across a combination of objectives with openness in the decision making process and the removal of subjectivity as far as possible. This can then help to indicate if an option is likely to be less or more environmental acceptable, promotable or feasible etc., when compared to other options.

The topics, sub-topics and objectives used for measuring option performance are shown in Table 4.2.

**Table 4.1 – Assessment Impact Level Indicators**

| Symbol  | Colour      | Key | Significance of Impact (Qualitative) |
|---|-------------|-----|--------------------------------------|
|    | Dark Green  | ++  | Major Beneficial                     |
|    | Light Green | +   | Minor Beneficial                     |
|   | Blue        | 0   | Neutral / No Impact                  |
|  | Orange      | -   | Minor Adverse                        |
|  | Red         | --  | Major Adverse                        |
|  | Grey        | ?   | Uncertain                            |

## 4.3 Qualitative Assessment Criteria

The qualitative assessment process requires assessing the impact level of each option against each objective, within each topic, then recording the decisions within a performance matrix using the indicators in Table 4.1 above, along with a narrative as to how the decision was arrived at.

To provide an assessment summary, the indicators which the highest beneficial impact and highest adverse impact will be displayed for each topic.

### 4.3.1 Environmental & Social Acceptability

As recommended in the UKWIR Guidance<sup>7</sup> on SEA and HRA's for WRMP's, objectives led approach will be used for conducting a qualitative assessment of SEA, HRA and WFD of the constrained options list.

<sup>7</sup> Strategic Environmental Assessment and Habitats Assessment – Guidance for Water Resources Management and Drought Plans, 12/WR/02/7, 2012.

As part of the SEA, an assessment framework will be used to record the performance of each option against each objective, and will clearly document, as a narrative, as to how each assessment of impact has been arrived at.

The assessment will also consider WFD and HRA issues and risk as well as any cumulative effects between combinations of options which might combine to create a greater effect than the sum of the parts.

#### **4.3.2 Promotability**

The promotability topic considers issues and risk that could result in an option being rejected at an early stage in its lifecycle. The objectives that will be considered in the qualitative assessment will include acceptability to customers, local planning and regulators as well as synergies with other WRZ's and water companies.

#### **4.3.3 Deliverability**

The feasibility aspect of this topic considers issues and risk associated with the delivery of the option from design through construction, commissioning and operation. The objectives that will be considered in the qualitative assessment will include South East Water's experience in delivering similar solutions, constructability, CDM, operability, dependencies on existing assets and the quality of data being used.

The flexibility aspect of this topic considers issues and risks associated with the delivery and operational flexibility of an option. The objectives that will be considered in the qualitative assessment will include the lead time and phasing of delivery and the adaptability and ramp-up time once built.

#### **4.3.4 Resilience**

The resilience topic considers issues and risks associated with the vulnerability of the option to provide the stated deployable output with the required water quality throughout its operational life. The objectives that will be considered in the qualitative assessment will include the vulnerability due to outages, financial uncertainty, regulatory changes and climate change.

### **4.4 Quantitative Assessment Criteria**

#### **4.4.1 Cost**

Costings for the constrained options will be derived from SEW's Unit Cost Database (UCDB) application v4.28. This will generate the following cost data to be used for a quantitative AIC + Carbon comparison of options against the least cost option.

- Capital Expenditure (CAPEX)
- Operational Expenditure (OPEX)
- Carbon Emissions (embodied and operational) and Costs

This cost data will be used to calculate a Total NPV cost (CAPEX + OPEX + Carbon) for each option over a period of 80 years using the PR14 wholesale weighted average cost of capital as the discount rate.

At this stage in the screening process, social and environmental costs are not proposed to be considered within the cost assessment, for the following reasons:

- Potential for large number of options requiring time and effort to be assessed using Benefits Assessment Guidance (BAG),
- The validity and complexity of the BAG<sup>8</sup>,
- The negligible effect the social and environmental cost may have on the total NPV for an option.

A capacity based approach will be used for calculating the AIC for the constrained options, rather than a utilisation approach as it is unlikely at this stage that sufficient demand information will be available to determine accurate utilisation figures. Therefore, the NPV of the maximum capacity output for each option will be used.

**Table 4.2 – Fine Screening Criteria**

| Topic   | Sub Topic   | Objectives  |
|---|---|---|
| Environmental & Social Acceptability  | Strategic Environmental Assessment  | Biodiversity and Fisheries<br>Protect and enhance aquatic and terrestrial biodiversity including statutory and non-statutory sites, protected species and fisheries and priority habitats.<br>No loss of ancient woodland |
|   |   | Landscape and Visual Amenity<br>Protect and enhance valued landscapes and visual amenity.   |
|   |   | Materials Assets and Resource Use<br>Contribute to improved sustainable energy use and reduced carbon emissions and sustainable use of materials<br>Protect property, agricultural land and strategic assets              |
|   |   |   |
|   |   | Geology and Soils<br>Protect and enhance geology and soils  |
|   |   | Air Quality<br>Protect air quality and minimise greenhouse gas emissions.   |
|   |   | Cultural Heritage and Archaeology<br>Protect and enhance cultural heritage and archaeological interests.  |
|   |   | Human Health & Well Being<br>Protect public health and promote well being<br>Protect and enhance recreational amenity and public access.<br>Contribute to raising awareness of water conservation                         |
|   | Water Framework Directive<br>Avoid conflict with and contribute to meeting Water Framework Directive objectives                                     |   |
|   | Habitat Regulations Assessment<br>Potential for "Likely Significant Effects".   |   |
|   | Cumulative Effects<br>Potential incompatibility and unacceptable environmental impacts if developed and operated in combination with other options. |   |
|   | Promotability   | Customer Preference<br>Deliver outcomes that are acceptable to the customer and gain support of challenge groups  |
| Acceptability<br>No major local planning issues that could change the scope or put at risk the successful delivery of the option.<br>No major issues with regulatory consents or permissions that could change the scope or put at risk the successful delivery of the option |   |   |
|   |   | Synergies<br>Synergies with other WRZ's, other water companies in the South East or third parties   |
| Deliverability  | Flexibility   | Benefits due to short lead time to deliver option   |
|   |   | Phased or incremental delivery of the option  |
|   |   | Possible to adapt the option once delivered to meet any future changes  |

<sup>8</sup> Environmental and Social Costs: Developing Guidance on Environmental Valuation for Water Environment Planning. Etec Report for the Environment Agency, June 2015.

| Topic      | Sub Topic             | Objectives   |
|------------|-----------------------|--|
|            | Feasibility           | Benefits due to a short ramp-up time for the option to deliver potable water into supply   |
|            |                       | Experience in delivering similar solutions (technology or construction methodology known to South East Water)                                    |
|            |                       | Construction uncertainty due to land availability or contamination risk  |
|            |                       | Dependency on existing assets for successful delivery  |
|            |                       | No major issues with CDM that could change the scope or put at risk the successful delivery of the option  |
|            |                       | Technology tried and tested with operations department   |
|            |                       | Quality and confidence of design information   |
| Resilience | Outages               | Vulnerability due to failure/outages caused by flooding, pollution, damage, loss of power supply etc.  |
|            |                       | Provision of additional resilience (from new option) to outage events at existing sources  |
|            | Financial Uncertainty | Vulnerability due to increasing energy or commodity prices such as power and chemical costs.   |
|            | Regulatory Changes    | Vulnerability to future regulatory and legislation changes such as uncertainty around abstraction reform and changes to water quality standards. |
|            | Climate Change        | Improve resilience of South East Water due to climate change and / or drought conditions   |

Expert groups will carry out a first draft of the MCA assessment and ranking so that they can be listed in terms of their relative overall performance (i.e. best to worst). The ranked list will provide the basis for producing the best set of options for each option group / WR zone / etc. The aim will be to reach a consensus on the results and ensure that they are robust and repeatable. As part of this, the results of the MCA ranking will be presented to the EFG and other stakeholders for their consideration and input.

## 5.0 PROGRAMME SELECTION

### 5.1 Feasible Options List

The feasible options are a subset of the constrained option list that have passed the fine screening, and are a set of options suitable to take forward for assessment as part of the preferred programme of options.

The assessment and ranking of options during the fine screening will be undertaken so as to ensure a balance in the feasible option list between having a manageable number of options and having the greatest choice for assessment. The feasible option list will also include sufficient options and flexibility to allow real choices when assessing the preferred programme.

For each feasible option, a dossier will be produced which will include the following information:

- a description of the option including (for supply options) an appropriate schematic map and/or conceptual diagram showing the source of supply, the main operational features, the areas over which the option is to be implemented, and any links or dependencies to other options
- a description of how the option being described differs from baseline activities (for leakage reduction, water efficiency or metering options)
- an assessment of customers' support for the option
- an estimate of the time needed to investigate and implement the option, including the earliest start date
- an assessment of the risks and uncertainty associated with the option, including the likelihood and impact of reduced yield due to climate change, environmental constraints or customer behaviour (for demand options)
- an assessment of the flexibility of the option to adapt to future uncertainty
- an explanation of whether the option depends on an existing scheme or a proposed option, or is mutually exclusive with another option
- a description of how the option will be utilised and impact on costs
- an assessment of the environmental impacts of the option, including the impacts on RBMP objectives
- a Habitats Regulations Assessment (HRA) if an option could affect any designated European site
- any factors or constraints specific to the option

Including the following cost and benefit information:

- a profile of the yield (based on the capacity of the solution) or water saved over 80 years
- a profile of the costs over 80 years, split into capital (including maintenance and replacement costs); operating (both fixed and variable costs), and financing costs.
- financing costs calculated as a stream of annual costs over the life of the option using an assumed 3.6% average cost of capital (the "vanilla" real wholesale WACC).
- NPV of all costs calculated using the Treasury Tet Discount rate as set out in the HM Treasury "Green Book":
  - 3.5% for years 0-30 of the appraisal period

- 3.0% for years 31-75
- 2.5% for years 76-125
- the AISC and AIC of the option based on the NPV of maximum capacity costs and outputs
- the environmental and social impacts of an option. Providing either a profile of monetised environmental and social (including carbon) costs and benefits and the AISC, or an assessment of non-monetised environmental and social impacts, or both. Including both costs and benefits/negative and positive impacts (such as improved resilience).
- any supplementary costs required to distribute the new supply (for supply options) – this might include new or upgraded mains and associated assets (e.g. service reservoirs and/or pumping stations) but excluding local infrastructure enhancements.
- an assessment of whole life costs of treatment, pumping, storage, networks, maintenance and operation.

## 5.2 Environmental and Social Costing

The approach to be adopted by South East Water for calculating environmental and social costs is provided in Appendix 7G of the WRMP19 report.

## APPENDIX A – FEEDBACK FROM WRMP14 PROCESS

| Feedback from WRMP14 Options Appraisal   | Opportunities for Improvement / Efficiency in WRMP19  |
|--|---|
| Need to influence the regulators about simplifying the process for next time.  | <ul style="list-style-type: none"> <li>Water company feedback has led to the draft 2015 guidelines being flexible and shorter to encourage innovation and use of methods that are more appropriate for each company.</li> <li>Early “process verification” consultation with the EA to gain acceptance of the chosen approach and methodology.</li> </ul> |
| Identification of new options – need to engage with internal stakeholders and third parties more widely.   | <ul style="list-style-type: none"> <li>Wider third party engagement through OJEU notice.</li> <li>Early engagement with production staff at team briefings.</li> </ul>  |
| The methodology of screening approach for WRMP14 was good and rigorous, which gave an outcome that was readily accepted by the stakeholders and regulators.  | <ul style="list-style-type: none"> <li>Retain the same philosophy for screening process with four stage approach for WRMP19, but with a more consistent screening approach across all option types.</li> <li>Build on previous consultation to maintain positive levels of engagement with stakeholders and regulators.</li> </ul>                        |
| The assessment of options internally needs to be more robust with a clear view across the whole company of what options are progressed/ruled out by linking with Engineering, Assets and Production. | <ul style="list-style-type: none"> <li>Options appraisal process will be engineering led for WRMP19.</li> <li>Formal technical workshops with Engineering, Assets and Production at appropriate stages of the process.</li> </ul>   |
| WRMP14 produced a good set of feasible option dossiers. The format of which was popular with stakeholders (i.e. Natural England).  | <ul style="list-style-type: none"> <li>Build on existing dossiers to improve scope and reduce uncertainty i.e. costings already available within UCDB for preferred options.</li> <li>Ensure dossiers are updated as information improves. Ensure back-up information is available to inform the preparation of PID's.</li> </ul>                         |
| The SEA requirements need to link earlier into the options appraisal process to ensure a fully integrated SEA approach.  | <ul style="list-style-type: none"> <li>Ensure SEA requirements are considered at earliest possible stage in the process to minimise the risk of options being ruled out at a late stage due to environmental constraints.</li> </ul>  |
| WRSE EBSD model created difficulties as it was not held in house and did not produce outputs required by the EA.   | <ul style="list-style-type: none"> <li>Work is on-going to identify, develop and procure an alternative model to use in house to select the preferred programme for WRMP19.</li> </ul>  |
| Issue around a possible lack of quality checks, project management and who had the ultimate control of the screening process potentially caused by the outsourcing of the process.                   | <ul style="list-style-type: none"> <li>Project management for WRMP19 will be led in house with ultimate control of the process, quality checks and decisions surrounding selection and rejection of options.</li> </ul>   |
| Options database developed and held outside of SEW and not easy or intuitive to navigate or extract data.  | <ul style="list-style-type: none"> <li>Database to be held within SEW and a new more user friendly “front end” added. Consider linkage to other databases such as the UCDB, supply / demand balance, EBSD.</li> </ul>   |

## **APPENDIX B – COMMUNICATIONS PLAN FOR 3<sup>RD</sup> PARTY OPTIONS**

### **Communication Plan for Third Party Options**

For WRMP19, the following approaches for third party engagement are proposed. A summary of the types of options expected for each engagement approach is included in the table below.

#### **A) OJEU Notice**

The Programme Management Board (PMB) of the WRSE proposes that water companies adopt a consistent process for the assessment of independent third party options to the same timetable and using the same process e.g. OJEU.

It is therefore proposed that South East Water will publish an OJEU notice for large scale options to identify services for - **The supply and/or delivery of raw or treated water in bulk to South East Water.**

A reference to the “Need and Availability of Water” statement will be provided within the OJEU notice in order to provide potential third parties with more information that will assist them in understanding our water resource problem and need.

To raise awareness of the notice, consideration will be given to advertising its issue within an appropriate publication or on-line, e.g. [waterbriefing.org](http://waterbriefing.org).

#### **B) Statement of Need**

It is proposed that a “Need and Availability of Water” statement will be published on the South East Water website summarising the indicative supply / demand balances and the location / area for each of the Water Resource Zones (WRZ), highlighting deficits that we might experience over the next 25 years during “dry years”. It is intended that this approach will invite potential third parties to submit proposals for all types and sizes of schemes that could be include in the options screening process as well as potential options for our drought planning.

#### **C) Direct Contact**

Letters will be sent out to each of our neighbouring water companies to notify them that a “Need and Availability of Water” statement has been published, and inviting them to contact us to discuss the development of potential supplies to our WRZ’s. A similar, but less formal approach will be taken by the discussions that take place to assess the feasibility of inter-company transfers at the regular WRSE meetings.

Letters will be sent out to large abstraction license holders within the South East Water region inviting them to consider the trading of some or all of their existing abstraction licence, as well as to potential nationwide suppliers of technologies and services (identified using a vendor database such as Achilles).

In addition, the Environmental Focus Group (EFG) meetings will provide a forum for face-to-face engagement with stakeholders including regulators, local authorities and environmental groups to identify and put forward potential third party options.

## D) Advertising

The final approach for engagement, expected to capture the smaller scale options, will be to advertise our “need” using local press releases or by other forms of media. An advertising plan / campaign aimed at reaching the potential smaller third party suppliers described in Annex A will be discussed and agreed with the communications team.

### Types of Options Expected for each Engagement Approach

| Option Type   | A<br>OJEU | B<br>Statement of<br>Need | C<br>Direct Contact | D<br>Advertising |
|---|-----------|---------------------------|---------------------|------------------|
| Existing licensed abstractors within South East Water’s area. These may be industrial or agricultural users that already abstract water to support their main activities and / or hold licences that they only partly or no longer use.   | ✓         | ✓                         | ✓                   |                  |
| Existing licensed abstractors in neighbouring areas, including other licensed water undertakers.  | ✓         | ✓                         | ✓                   |                  |
| Potential new abstractors. These may be parties that could obtain an abstraction licence and who are prepared to invest in alternative supply schemes. This could involve a third party with access to, or plans to develop a storage resource (e.g. land suitable for a reservoir) in order to provide a year round source of supply |           | ✓                         |                     | ✓                |
| Suppliers of new water treatment technology. For example, companies that can offer water re-use technologies and facilities.  |           | ✓                         |                     | ✓                |
| Improvements in catchment management measures which could offer benefits in terms of reduced outage, reduced treatment requirements or risk and reduced customer impact.  |           | ✓                         |                     | ✓                |
| Developers of new technologies for reducing water demand. For example, the development of water efficient devices.  |           | ✓                         |                     | ✓                |
| Companies that install water efficient technologies or retro-fit properties in order to reduce consumption or water losses.   |           | ✓                         |                     | ✓                |
| Companies that offer other demand management activities such as customer education or water audits.   |           | ✓                         |                     | ✓                |
| Companies that offer innovation in leakage, pressure and network management.  |           | ✓                         |                     | ✓                |
| Bulk supply of raw or treated water via road or shipping tankers.   | ✓         | ✓                         |                     |                  |
| “Insurance style” service offers, providing additional water when and where needed, i.e. tanker-based desalination and/or effluent recycling plants or shore-side storage facilities.   | ✓         | ✓                         |                     |                  |

## APPENDIX C – 3<sup>RD</sup> PARTY SCREENING CRITERIA

| Screening dimension      | Pre-requisite information required to inform assessment  |
|--------------------------|--|
| Scheme information       | <ul style="list-style-type: none"> <li>- Description of the main scheme elements</li> <li>- Identification of the point where the option makes water available</li> <li>- Identification of other companies and WRZs that could potentially be supplied by the scheme</li> </ul>   |
| Environmental and social | <ul style="list-style-type: none"> <li>- Identification of any material positive or negative aspects associated with the option identified through SEA, HRA and WFD impact assessment</li> </ul>   |
| Cost                     | <ul style="list-style-type: none"> <li>- Capital cost estimate including profiled capital maintenance over 80 years</li> <li>- Risk and uncertainty allowance based on scheme complexity and previous company delivery experience – this may be a range (e.g. 90% confidence interval)</li> <li>- Fixed and variable operating costs assuming full utilisation</li> <li>- Minimum and maximum utilisation envelope that can be applied to variable costs and operational carbon</li> <li>- Embodied and Operational Carbon cost</li> <li>- Reliable source yield</li> </ul>  |
| Promotability            | <ul style="list-style-type: none"> <li>- Opportunities to supply alternative zones</li> <li>- Customer acceptability view from CCG and PR14 work</li> <li>- Local planning risk</li> <li>- Regulatory acceptability</li> <li>- Local council/ wider stakeholder concerns</li> </ul>  |
| Deliverability           | <ul style="list-style-type: none"> <li>- Construction risks (e.g. land availability, use of novel technologies)</li> <li>- Operability risks (e.g. experience of operation, use in water supply around the world)</li> <li>- Dependencies on third party suppliers and other schemes being built to deliver benefit</li> <li>- Level of confidence in data used to populate risk assessments and yield assumptions</li> </ul>  |
| Flexibility              | <ul style="list-style-type: none"> <li>- Lead time from WRMP approval to benefit realisation including an indication of planning allowance and commissioning time</li> <li>- Opportunities for long term phasing including incremental construction, twinning of pipelines, over-sizing of scheme elements</li> <li>- Adaptability of option to future scenarios e.g. ability to supply different zones in operation, or potential to store water from a range of other sources in future</li> <li>- Ramp-up time for option to supply water once scheme is operational</li> </ul>   |
| Resilience               | <ul style="list-style-type: none"> <li>- Assessment of source yield robustness to climate change and severe drought occurrence outside historical record (using climate change wetter winters, drier summer scenarios and dependent on source type and local conditions for some options e.g. groundwater)</li> <li>- Vulnerability of option type to other 'failure modes' (e.g. power failure, flooding, vandalism)</li> <li>- Net contribution to system outage resilience and future resource predictability</li> <li>- Vulnerability of option type to regulatory changes (e.g. abstraction reform, drinking water standard changes)</li> </ul> |

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