

ITT: WRSE Regional Resilience Plan 24 Options Appraisal

Project: WRSE Regional Resilience Plan 24	To: WRSE PMB
Subject: WRSE Options Appraisal	Created by: Nick Honeyball & Meyrick Gough
Purpose: Invitation To Tender (ITT)	Version, Date: Version 2

1. Summary

The Water Resources in the South East of England is developing its next regional plan which will initially be developed by August 2021. An essential element of the development of the next regional plan is the work to develop new potential options that supplement the options already developed by companies.

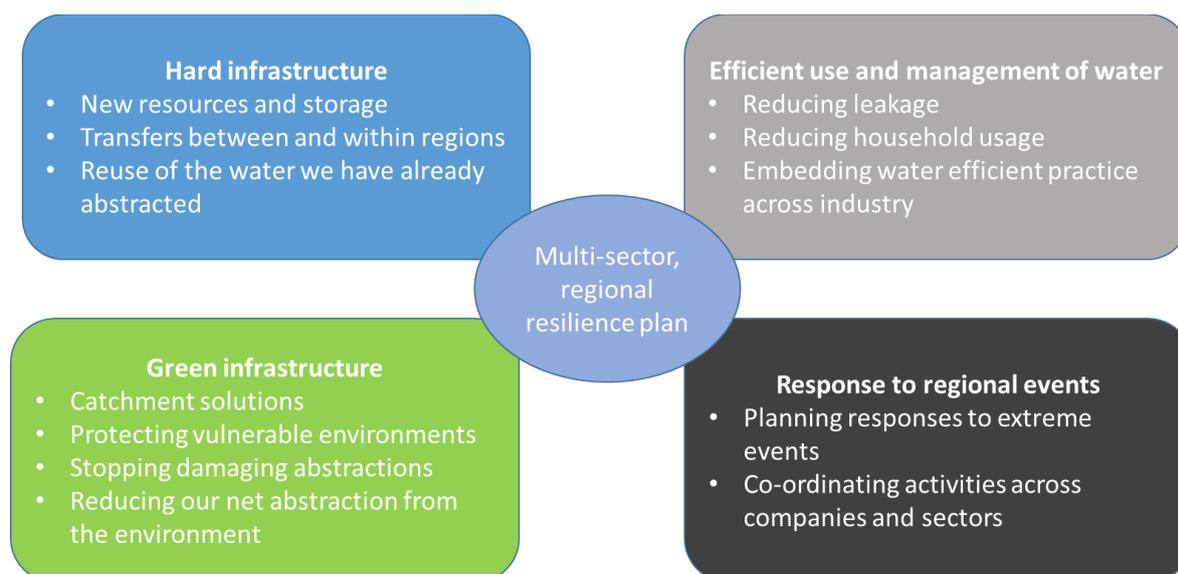
There are two strands of work to develop the next round of options for the regional plan, these being:

1. consistency of approaches; and
2. developing a range of diverse options.

This invitation is targeted at the latter, developing a range of diverse options to supplement those options which companies have developed already. This piece of work will be used to identify and scope a diverse range of feasible options that could be implemented for the benefit of the water systems in the south east of England.

The scope of this work will need to be defined and integrated into the existing processes that companies use to develop options, to ensure that it is efficient and does not duplicate effort. It will be important to review existing company processes and options first, to ensure that any new options identified and screened (referred to as the options appraisal phase) do not duplicate work that is being undertaken by the companies on options for their next WRMP.

Typically, a regional plan will contain elements of hard infrastructure and efficient water use. In the future it is hoped that the regional plan will contain solutions from all of the components set out in the figure below.



Water companies have already considered and looked at a number of unconstrained, constrained and feasible solutions in the South East of England as part of WRMP19. We now wish to add to this set of solutions by considering other option types in the South East of England from the components above (from all four boxes).

The purpose of this document is to invite bids to:

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- Identify new green infrastructure solutions across catchments in the South East of England;
- Scope and cost new transfers between zones, which have been identified through other pieces of work;
- Carry out the identification and screening of new supply and new demand options for inclusion in the regional plan, noting that these options do not duplicate those identified by companies already;
- Review current and potential new flood alleviation schemes across the region and consider if they could play a role in providing additional system resilience for the region;
- Develop a framework to classify whether schemes are specifically of benefit for a single sector or whether they could provide benefits for multiple sectors. Having developed this framework apply it to existing water company constrained options and new options, identified through this work, and categorise these into multi-sectorial solutions or single sector solutions;
- Identify and quantify potential new trading options in the South East of England for inclusion in the regional plan;
- Assess third party options that have been presented to WRSE either directly or indirectly through a referral from a water company as part of their Bid Assessment Framework process (BAF)
- Compile a regional database of all constrained and feasible options that can benefit the South East of England, recognising that some of these options could also provide benefit to other neighbouring regions and sectors. This database should provide sufficient information to allow costs to be derived and strategic environmental assessments to be derived. Scoping and creating this database but not uploading schemes into it should be included in this phase of work.

As described above this work will also need to include a review of the methodology for developing and screening options to ensure that the options developed and screened are on a consistent basis and fit for purpose for any future stakeholder engagement. It is envisaged that if options are passed through into the regional plan and selected that they will then be utilised in company WRMPs.

The options list should provide the regional group with a range of constrained feasible options that provide for a good mix of scale and type of solutions. This list will make best use of existing option data from WRMP19, whilst meeting the requirement to develop new options that could benefit both the regional and company level plans. This aspect of our work therefore requests that the successful consultant to scope out an approach that both meets current best practice and is innovative. Due to the innovative nature of the work it is suggested that bids consider including academic elements to their team.

The WRSE Regional Resilience Plan is of strategic scale and the optioneering task should be progressed at that level, e.g. catchment level interventions, water resource zone interventions on efficient water use; large schemes, etc. These schemes can be modular in scale, allowing a more flexible and appropriate scale of solution to be developed. Given the scale of the deficits that the region faces in the future we have defined the term strategic as follows:

- Supply options that provide a yield or capacity of no less than 10 MI/d,
- Catchment schemes that can contribute to the environmental net gain of the plan;
- Solutions that provide multi-sector solutions;
- Third party options which could provide a solution to more than one water company;
- Innovative solutions that could provide benefits to more than one company in the south east of England; and
- Demand options that are at policy level but which have not been identified by water companies already.

2. Introduction

The six companies in the South East of England are seeking to develop a multi-sector, resilient water supply plan for the region by 2022. The Water Resources in the South East Group (WRSE) comprises of the six south east water companies which are: Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water, and Thames Water. The WRSE is an alliance with the Environment Agency, Ofwat, Consumer Council for Water, Natural England and Defra, and together they develop long term plans for securing water supplies in the south east. To find out more about the WRSE go to <http://www.wrse.org.uk/>.

An assessment of regional need will be developed by February 2020. A high-level version of the WRSE programme is provided in the table below.

Year	Month	Work area / Activity
2019		Regional planning groups established including involvement of other sectors.
2019		Contribute to national framework, including involvement in modelling group
2019	December	National Framework published including: - Statement of water need - Expected contributions from regions
2020	February	Statement of resource position from each region (surplus/deficit)
		Development of regional plan, including modelling
2021	August	Regions present draft plans and discuss with regulators and other groups to make sure they join up and match
2021	December	Informal consultation of regional plans and pre-consultation of water resource management plans setting out how regional plans will feed in to company plans
2022	August	Publish regional plan
2022	August	Submit draft WRMP to Defra

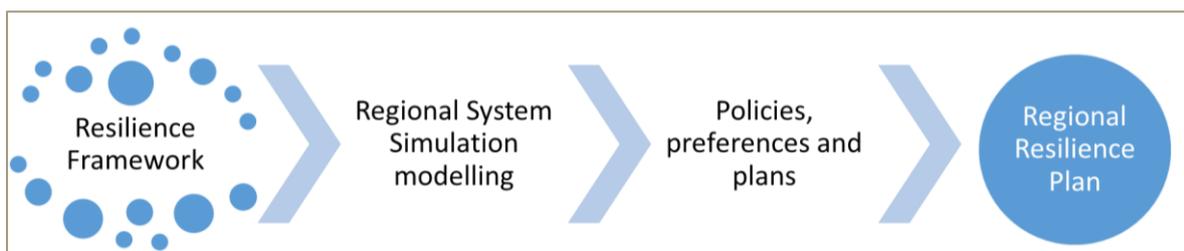
The six companies in the South East of England are seeking to develop a resilient regional water resources plan. These companies currently supply water to approximately 19 million people across 31 water resource zones which have some, but limited transfer capability, as shown in the figure below.

The next regional plan will seek to improve the resilience of the South East across multiple sectors by identifying a range of interventions that help the region meet the projected growths whilst improving its overall resilience.

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To derive this plan a staged approach has been developed, as set out in the diagram below. These stages progress from identifying the key risks to water in the South East of England through to modelling these impacts, deriving regional policies and implementing national policies, ending with creating the next regional resilience plan.



This aspect of work fits in with the final stage of this process, deriving the next regional plan.

3. The options appraisal task

The figure below sets out how the works identified in this ITT fit into the wider regional optioneering task and the company level optioneering for WRMP24.

Box 1, below, shows where the task sits. Where options are developed and utilised within the regional plan modelling they may be supported by the identification of new transfer options through the modelling. These options are important as they may identify opportunities for the companies to transfer and trade water within the region. The modelling work is not within the scope of this invitation; however, there is some overlap and dependency between the two tasks to be scoped within this invitation and the invitation to tender for the modelling tasks.

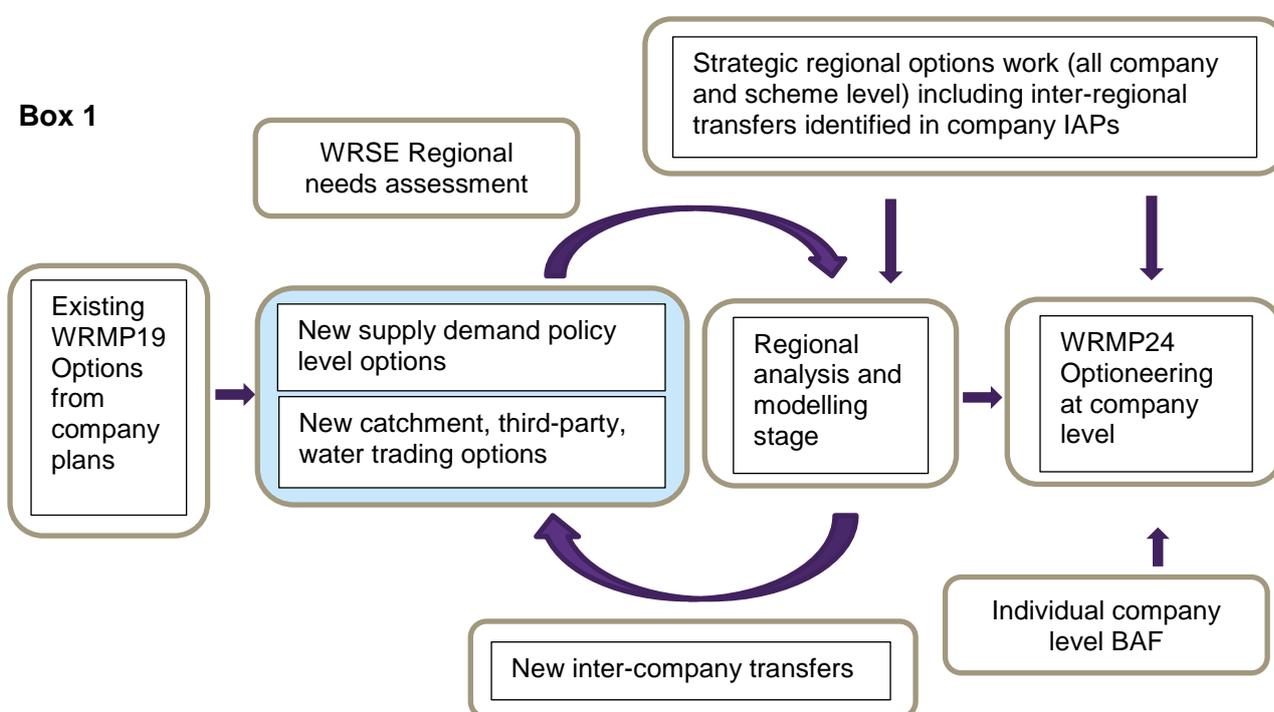
The strategic regional options identified in WRMP19 and the IAPs will be progressed outside of the WRSE work but will need to be integrated into the regional plan and the next round of WRMPs.

Companies will also be working on options outside of the WRSE optioneering task; that work is not shown to be fed back into WRSE at this stage, but is shown on the figure below as WRMP24 optioneering. It should be noted that Ofwat is expecting companies to publish their Bid Assessment Frameworks in July 2019. Potentially therefore third-party options will be

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identified by individual companies through that route. The scoping phase will therefore need to recommend how to address the need to take account of this part of the process at regional level and opportunities to incorporate such options.

The current WRSE model makes use of existing water company options that are a mix of company and third-party options that have been developed by the companies and included within their own WRMP19s. These options are referred to as 'feasible options' that have been screened by the companies as part of their own WRMPs and the current WRSE model does not incorporate any of the unconstrained options. For the current WRSE work no new options were developed or appraised to augment company WRMPs as part of WRSE. Where new options are identified by WRSE these options will require screening for the regional plan.



To help provide the consultant with access to additional information that might help with the bids see also **Appendix A: Drivers for the work and further background information on option types**.

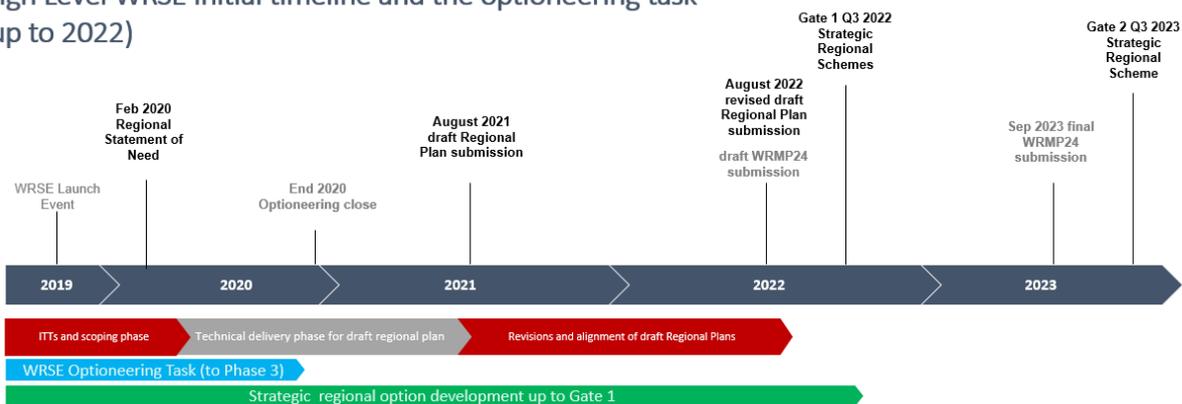
We suggest that a phased approach to the task be developed, due to the interactions with other options development and screening activities outside of the regional modelling scope.

That is why the overall options appraisal task will be split into a scoping phase and an option identification, development and screening phase (referred to here as the options appraisal phase):

- **Phase 1 Scoping and reporting (this ITT)**
- Phase 2 Options Appraisal and reporting
- Phase 3 Option updates and final reporting

The following figure provides an indicative timing of the proposed phased approach aligned with the high level WRSE programme.

High Level WRSE Initial timeline and the optioneering task (up to 2022)



Optioneering Task: Milestones

- ITT and scoping phase: Phase 1 award 31st July 2019. Phase 1 completion Autumn 2019
- Phase 2: Start Autumn 2019 and completion Summer 2020
- Phase 3: Completion End 2020

4. Timescales and Requirements

A timescale for the production of the next regional plan is still evolving but it is anticipated that the draft version of the WRSE Regional Resilience Plan 24 will be produced by **August 2021**, and a revised draft submission will then be produced for **August 2022** in line with draft WRMP24 submissions.

In order to achieve these timescales and leave sufficient time to undertake the investment modelling work, scheme costing and multi-sectorial engagement, **all of the optioneering work must be completed by September 2020**. A more detailed phased programme will be developed with the wider programme team to determine when the identification of new options and validation and sign off for use in the WRSE Regional Resilience Plan development and modelling phase will be required.

The timescale for this work: The WRSE 'Optioneering Scoping Phase' is as follows:

- Invitation to bid issued 15th July 2019;
- Tenders received by 9nd August 2019;
- Phase 1 award by 31st August 2019; and
- Phase 1 completion through submission of the Final Scoping Report (detailed, agreed specification for Phase 2 work) by 31st October 2019.

All bids will be assessed on quality of the bid submission, quality of the proposal, experience and the ability to stick to deadlines.

In the bid please set out the approaches that will be used to scope the option set, including the requirement for workshops and interviews with the WRSE companies in order to both carry out the gap analysis on existing options and to identify new options.

The following approaches should be considered:

- 1) How the scoping phase will address the requirement for an options gap analysis, that identifies the schemes from the companies' plans (categorised according to the four option categories).
- 2) How the scoping phase will explore and undertake a review of the flood risk resilience options and whether they can contribute to the overall resilience of the South East of England.



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- 3) How the scoping phase will include an element of engagement with other sectors to establish the scope of other sector options (such as smart efficiency options and the Norway tankering option). The scoping phase will need to explore whether these types of options are more effectively developed in one study as opposed to engagement with all the companies.
- 4) What type of approach will be considered in relation to green infrastructure and engagement with the river groups. These types of options will need to be scoped to support long term environmental ambition and net gain, and it is important that it is understood how the scoping phase will develop that approach.

The scoping phase reporting deliverables should be clearly provided in the bid along with:

- 1) A considered view of a forward work plan to execute the recommended pathway, given the timescales that need to be achieved; and
- 2) The risks and potential mitigation measures required to develop the recommended pathway.

Useful sources of information such as the option lists, optioneering reports and bid assessment framework documentation will be made available to the successful bidder for the scoping phase.

There will also be a requirement for successful shortlisted bids to present to the PMB which is likely to be in the week leading up to the Phase 1 award.

5. Invitation

Please send your bid for this work by midnight on the 9th August to:
Meyrick.Gough@wrse.org.uk

Your submissions should include:

- 1) a description of the proposed technical work;
- 2) the staff / project team;
- 3) the cost for the proposed work;
- 4) previous experience (staff and project level);
- 5) dates for any communication with WRSE members;
- 6) a programme of work including dates for deliverables; and
- 7) a quality assurance plan;
- 8) risk and assumptions (including mitigation measures)

Appendix A: Drivers for the work and further background information on option types.

This appendix provides a list of some of the drivers for this task and also a summary of additional areas of option identification to help stimulate innovation around this task scope.

A.1 Regional plans, drivers and how this task will help to address the drivers

The regional plan will seek to meet the criteria set out by the EA as shown here:

Regional Plans Must:	Regional Plans Should:	Regional Plans Could:
<ul style="list-style-type: none"> Take account of the National Framework outputs and set out the region's contribution to the national need Forecast supply and demand over at least 25 years and set out solutions to any deficits Be a single plan with one preferred solution and set of options Include the water needs of other sectors Look beyond regional boundaries and use technical approaches consistent with other regions Consider enhanced environmental improvements and demand management Consider resilience to events other than drought Open to market mechanisms Take into account growth ambition Be reflected in WRMPs 	<ul style="list-style-type: none"> Engage widely Set out how the region will respond to drought and agree common scenarios for drought actions Look ahead 50 years or more Prepare a SEA 	<ul style="list-style-type: none"> Be a full WRMP Be a full drought plan

The optioneering scope of work will address areas of these requirements as follows:

- Will provide solutions to any forecast deficits to augment existing solutions provided by companies through WRMP19 and alongside the work by companies on strategic regional solutions
- Will explore the potential for co-creation of new options with other sectors and third parties
- Will include a scope that looks at options beyond the WRSE regional boundary and incorporates inter-regional options
- Will explore opportunities for new entrants to the water market and ensure that the options appraisal phase finds ways to stimulate new water trading opportunities for the region and company WRMP24s
- Will produce options and results that will be reflected and incorporated within company WRMP24s
- Will support the evidence for engaging widely through engaging with new water trading and third parties

There are various sources of information relating to the needs and drivers for new regional, cross sector and water trading solutions and explanations of the need for new water infrastructure some links are provided as follows:

- National Infrastructure Commission report <https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf>
- Draft National Policy Statement on Water Resources Infrastructure https://consult.defra.gov.uk/water/draft-national-policy-statement/supporting_documents/draftnpswaterresourcesinfrastructure.pdf and <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvfru/1978/1978.pdf>
- The Ofwat call for information on bilateral markets and third party bidding <https://www.ofwat.gov.uk/wp-content/uploads/2019/06/Bilateral-Markets-Call-for-Information.pdf>

A.2 Further background information on option types

The following is a short summary list of areas of new option identification for consideration for the scoping phase.

New entrants and bi-lateral collaboration – a conceptual example

Trading Water Company plc have developed a proposal to work with housing developers to incorporate dual pipe systems and water efficiency systems in new builds. There is the potential to engage with this company to develop options that might benefit household and / or non household demand. The option might be bi-lateral between the company and a given wholesaler (or number of water companies within the region). In order for the option to be developed it will need to be progressed to a consistent level with other options and will require costing that can be economically modelled and capable of resulting in savings in demand (PCC).

Alternatives to engineered solutions through ‘green infrastructure’ options

There is a strong desire that companies explore catchment scale and focused options to help deliver multiple benefits across catchments. The Government has defined a catchment management approach as ‘looking at the water environment in terms of all the ecosystem services connected to a healthy catchment and aiming for better integration of planning and activities to deliver multiple benefits’. Water Resources East are exploring ways to store water in the landscape through the ‘Environmental Land Management (ELM)’ trials being tested by DEFRA; the bidder may wish to explore that approach with WRSE.

Some examples:

A) There may be wetland locations across the region where new options could be identified as potential ‘**absorbents**’ of flood or surplus diversion receptors that could retain water for release down catchment at times of low flows when the surplus could be used to provide additional resilience for catchments that might be vulnerable to peak and summer abstraction

B) Similar to example A, there may also be potential to explore opportunities for **soil retention** of shallow sub-surface water retention in catchments that might be vulnerable to run off and flash flooding. This could also improve soil integrity and catchment resilience.

C) **Catchment schemes.** Most companies have developed catchment scale options through their own water quality and WINEP work. These types of options are not generally capable of producing deployable output in a traditional sense as they do not provide a new yield or potential saving such as other supply and demand options. However, there is scope to explore ways to develop these types of schemes into options that will help to improve flows in catchments which may allow for more flexible ways to use drought orders and permits. In that sense they could be seen as a type of option that will improve catchment resilience to the extent that short term drought schemes are used in a variety of different ways.

D) **Low Carbon Schemes.** Options that might offer carbon neutral or lesser comparative carbon emissions can also be considered. An example of which might be to utilise existing watercourses to move and transfer water across and between catchments from areas where a surplus may exist or a source option could be developed.

E) **Catchment re-use options.** Solutions that support upstream augmentation of river systems which improve the catchment resilience could form part of the option set. This might also include catchment recycling where future demand and growth ‘hot spots’ will trigger increases in discharges that could be utilised at a catchment level by transfers back up catchment (with the net effect of reducing the need of either local new abstractions or larger scale regional transfers), thus also reducing overall net cost, supporting catchment resilience and reducing the potential carbon impact from new transfers into catchments.

River Basin Management Plans (RBMPs)

The WRMP guidance sets out the requirement to explore ways to support the aims of the RBMPs, this includes the WFD objective to improve catchment status. Scoping examples of options that might improve WFD status and proving a link between these options and that improvement could be highly beneficial for the WRSE regional plan and the next round of company WRMPs.

Community facilities and local engagement as part of the option development

When considering a range of options it is important to ensure that their contribution to infrastructure green infrastructure requirements should be considered to ensure all of the likely costs and benefits of

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a scheme are captured and costed correctly. For example, the bankside storage facility on the River Test also included an education centre for the local schools as well as new pathways around the centre for the local communities to use.

Efficient use and management of water: demand management policy options and stimulating new innovative solutions

We see the regional policy options as an integral precursor to how companies will develop their next set of demand management options for their WRMP24s. Case studies could be proposed that incorporate behavioural change and water efficiency opportunities (e.g. labelling of white goods). This might stimulate future market activity to develop new ways of delivering water efficiency; another example could be exploring ways to stimulate innovation in new techniques to deliver ambitious leakage targets. We are not looking to develop the actual options as part of this work, but to set in motion ways to trigger innovation as part of the policy targets that we will be modelling at a regional scale.

Responding to regional events: Flood Alleviation Schemes

One area of the regional plan will be to explore responses to extreme events. There may be opportunities to develop new flood alleviation schemes across the region, where flood risk from flows are mitigated by diverting flood waters to storage locations for abstraction at times of low flows.

Hard infrastructure: Rationalising desalination schemes

There are a number of existing desalination schemes proposed as feasible options by the companies as part of WRMP19. There may be opportunities to rationalise these schemes into multi-company options that could support customers across multiple company boundaries.

Hard infrastructure: Inter-regional transfers and regional water resource options

The companies will be working on a short list of strategic regional options through their work on these schemes in PR19. Alongside this group of options other schemes of strategic regional scale may also offer the potential to become strategic regional schemes in the future. These schemes might include inter-regional opportunities and a review of the potential for such schemes should be included (see A3.3 below).

A.3 Other background information

- 1. Company options and reporting:** Each company in the South East will have produced optioneering documentation to support WRMP19 submissions. This information will be made available to the successful bidder to carry out the scoping phase. However, to support the bids the applicants are encouraged to make use of the current publicly available on water company websites. That information will be available in the revised draft WRMPs and any supporting information that the company decided to publish alongside the WRMP.
- 2. Strategic regional options:** Affinity Water, Southern Water and Thames Water received direction from Ofwat through their Initial Assessment of Business Plans (IAPs) to further develop strategic options of regional significance. These options will be developed through the companies working together and will be developed alongside any regional or company level option development. The applicants can find out more about these options on company websites where the companies will have provided access to the IAP and on Ofwat's website where Ofwat have published the IAP information that was sent to companies in January 2019.
- 3. Inter-regional options:** There will be activities undertaken within neighbouring regions that may result in potential new inter-regional options and transfers. WRSE have undertaken a review of these options to date and these will be provided to the successful bidder for the scoping phase. At this time the bidder should assume time to review these options and outline how such options could be incorporated into the scope at a time in the programme.
- 4. Option types, the guidance and best practice:** It is expected that all applicants are familiar with the WRMP guidance (2017) on options appraisal and the UKWIR guidance (2002) as updated in the Decision-Making Process: Guidance (2016) on options appraisal.

The consultant will be expected to provide **2 summary examples** of company plan optioneering where the applicant has delivered to best practice.

- 5. Demand management options:** The scope for the potential for demand management options as part of the regional study should be limited to policy level only. The new WRSE approach will not attempt to model the numerous demand management options that

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companies develop for their own WRMPs. It will be for the companies to continue that work as part of their WRMP24; however, the regional policy options should be developed so as they can be linked to how companies deliver the policies

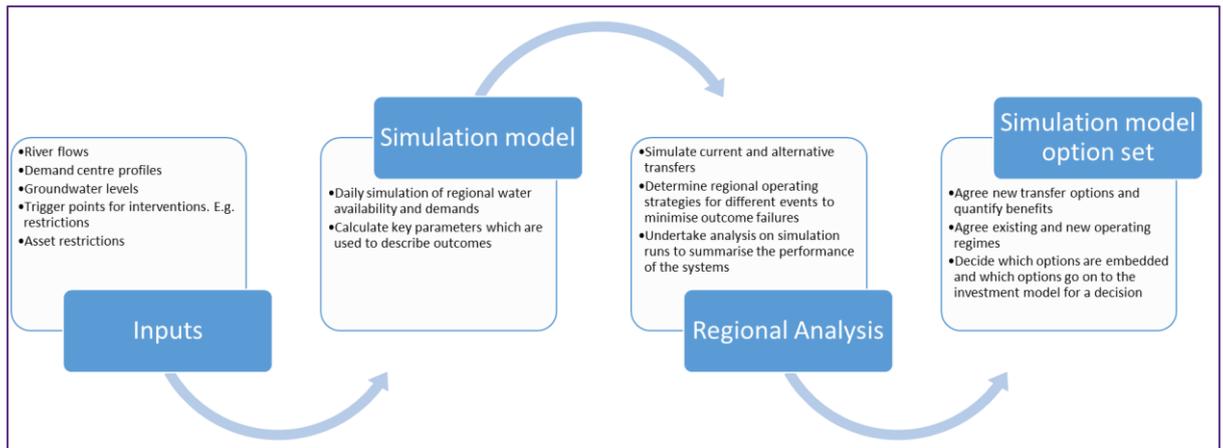
- 6. Water trading and third-party options:** Water companies have identified new third parties through their WRMP19 development work. These options will have been identified either directly from third parties or in response to notices such as statements of need and reaching out to new entrants in other ways such as via OJUE notices and/or Bid Assessment Frameworks. As part of the WRSE regional plan development the group requires a regional approach to this task. As part of the development of the regional plan numerous statements of needs will be produced. It is hoped that these will generate more market place options which WRSE will then evaluate, if the option could benefit many companies or direct the enquiry to the company if it is only of benefit to them.
- 7. Cross sector options:** One such example of water trading might involve developing new options that achieve benefits from cross sector activities and trades. Some WRMPs already contain such options and the bidder should review the available information in the company WRMPs and suggest new examples of potential cross sector optioneering activities for the regional scoping phase. The bidders should be aware that the regional plan will be exploring ways to incorporate multi sector needs within its scope and therefore there is an overlap with that activity that needs to be understood for any potential cross sector optioneering.
- 8. Third-party and cross sector option collaboration:** Where new options are identified it will be necessary to liaise and collaborate with potential new entrants to develop the options. The scoping phase should outline how the bidder will account for the time required to carry out this work and what that scope will involve. The scope for this aspect of the work will also need to account for the reporting and auditing of any discussions, meetings and liaison to support the evidence base to show that the task was thorough.
- 9. Real options and adaptive planning:** The use of the term option is deliberate and can refer to a range of activities. Typically, option construction and later use will have several stages at which decisions are reviewed as how to proceed (or not). For example, as the future progresses, real option decisions may include deferral, abandonment, mothballing, continuation, expansion or downsizing.

For the investment modelling purpose these stages can be considered as dependent/ phased options, as later stages can only proceed after a preceding stage has been completed. This approach has also been used in Ofwat's "gated process" in order to progress schemes going forward. In this context the term scheme is a programme of work which develops a large-scale systematic plan or arrangement for attaining some particular benefit to meet the overall objective of the plan.

It is intended that the options that are put into the investment model are made up of dependent phased feasible options to allow the full benefit of the real options approach to be utilised. One aspect of the modelling work is to appraise and assess options to produce an optimal solution for tackling the complex planning problem in the South East.

- 10. Further innovation:** Outside of those areas of innovation provided within this ITT the successful bidder is expected to provide additional areas where innovation for option identification and development could be considered as part of the scoping phase.
- 11. The WRSE approach for WRMP24:** The results of the options appraisal work will be used within the regional plan development and will likely also identify new physical infrastructure to improve the overall resilience of the region. The new WRSE approach is set out in the diagram below and provided for reference.

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- 12. Option screening, development and reporting:** Once the identification phase of new regional options has been completed, the options will need to be screened in accordance with a screening methodology. That methodology will be proposed on a consistent basis that will be applied to all the options. The bidder should be aware that this work may overlap in timing with those activities and an interim solution proposed that will allow for any subsequent updates. Each new option will require full documentation to support its inclusion within the regional modelling, which includes its economic, social and environmental assessment up to dossier level.
- 13. Phase reporting:** Reporting will be required to summarise each phase of the work and will provide the group and stakeholders with the opportunity to comment on the proposed work and the results.