



## Summary of the main comments received from stakeholders on the Fine Screening Report published in October 2016

Option	Stakeholder comment	Summary of consideration given	Summary of response
<b>General</b>	The Environment Agency (EA) has questioned whether the feasibility and fine screening approach adopted ensured a sufficient mix to allow a rich programme appraisal?	Reviewed query in the context of proposed approach.	The approach has been to identify the best options of each type up to a maximum of 800MI/d per option type, however in practice this has not been a significant limiting factor at feasibility stage. Following fine screening, over 1500MI/d of resource options have been carried forward onto the Constrained List for programme appraisal with options represented across all of the main resource option types considered. In addition, there will be demand management options considered alongside resource options.
<b>Desalination, Reuse and Teddington Direct River Abstraction (DRA)</b>	EA raised concerns regarding impacts of reducing freshwater flows in the tideway.	Further assessment of the impacts of reduced freshwater flows into the tideway is ongoing.	TW has commissioned Ricardo to consider the cumulative impacts of the desalination options, reuse options and Teddington DRA on salinity. This includes assessment of the mitigation measures for the brine discharges for each desalination option and more detailed salinity assessment work is underway to provide a more accurate upper limit on the desalination and re-use schemes that could be operated without adverse effects on salinity.
<b>Teddington DRA</b>	EA raised concerns regarding the impact on navigation and the environment of the Teddington DRA option.	Modelling work has been commissioned to help support the further environmental assessment of this option.	TW has commissioned HR Wallingford to carry out modelling of the river upstream and downstream of Teddington Weir, to assess the impacts on water quality and sediment movement. The EA has been involved in the specification of the modelling.
<b>Cotswold Canal</b>	The Cotswold Canal Trust (CCT) has challenged a number of different aspects of the assessment of the Cotswold Canal conveyance option	Each challenge has been reviewed and a response is provided in the stakeholder comment tracker. Further work has also been done refining costs and assessing the risk of spread of Invasive Non Native Species (INNS).	A Raw Water Transfers update paper has been prepared that provides an update on the basis for the rejection of the Cotswold Canal option including a summary of updated costs, a paper on the risk of spread of INNS by national expert Dr David Aldridge, and responses to CCT challenges on individual feasibility report assessment criteria.
<b>Unsupported transfers</b>	GARD has challenged that no quantitative analysis has been presented to evidence screening out of unsupported transfers.	Further work has been done considering resilience of 300MI/d unsupported transfer using stochastic assessment of yield under future drought scenarios.  Further work has also been done considering different combinations of support volume and transfer size. This work is summarised in an update paper on the Raw Water Transfers Feasibility Study.	The unsupported transfer will be taken through Stage 1 of the feasibility report (where it was previously screened out on resilience). It is envisaged that it will be rejected at the validation stage of the feasibility report (Stage 4) as if the resilient deployable output (DO) based upon stochastic analysis (60-70MI/d for a 300MI/d transfer) is applied then the option will become substantially more costly than the supported options.
<b>Supported transfers</b>	GARD has challenged around deployable output of supported transfers	Further work has been done considering different combinations of support volume and transfer size. This work is summarised in an update paper on the Raw Water Transfers Feasibility Study.  Further work is ongoing to assess the resilience of different combinations of support volume and transfer size using stochastic assessment of yield under future drought scenarios.	In light of the stochastic analysis on the unsupported transfers it is now proposed that the unsupported element of the DO for supported transfers should be included in the yield of the supported transfers.  TW propose to screen out Minworth and Draycot support options proposed by Severn Trent Water as further information would be required to demonstrate that they are environmentally acceptable.
<b>Severn-Thames Transfer (STT): size and discharge location</b>	GARD has challenged on discharge location for STT and questioned why a larger volume cannot be discharged further downstream?  EA requested further information on reasons for discharging at Radcot.	Further work has been done considering discharge locations following concerns expressed by the Environment Agency on the Radcot discharge location. Further consideration has also been given to sizes of transfer in-between 300 and 600MI/d.	This work is summarised in an update paper on the Raw Water Transfers Feasibility Study. It concludes that any transfer greater than 200MI/d would be difficult to promote upstream of Oxford. Transfers of 600 MI/d are considered difficult to promote on hydrology, water quality and ecology grounds in the River Thames and on ecological grounds in the River Severn. The 100 MI/d transfer to Radcot is expected to be rejected on the basis of cost effectiveness in comparison with the larger options. The remaining STT options are the 300, 400 and 500MI/d transfer options at Radcot with support from Vyrnwy and Mythe.
<b>Abingdon Reservoir</b>	GARD has challenged that Abingdon Reservoir is less resilient to severe drought than the STT	Further work has been done considering the resilience of the Abingdon 150Mm <sup>3</sup> option using stochastic assessment of yield under future drought scenarios.	The output of the stochastic assessment will be shared with stakeholders. Based upon this assessment the resilience to severe drought sub-dimension has been updated in the Fine Screening Report to reflect the conclusion that the reservoir can be considered to be resilient in terms of water resources planning, down to an extremely low frequency of return period.
<b>All options</b>	GARD has challenged that there is an urgent need for assessment of the resilience of all options to climate change and severe drought using the "stochastic drought library" produced through the recent Water UK work.	Consideration has been given as to which option types would be impacted by a stochastic assessment of yield.	Stochastic analysis has been conducted for the Severn-Thames Transfer and for the Upper Thames Reservoir. Other large options (particularly reuse and desalination) would not be expected to be impacted by a stochastic assessment as they are not dependent upon natural hydrology.



Option	Stakeholder comment	Summary of consideration given	Summary of response
<b>Lower Lee DRA</b>	<p>GARD has challenged around the potential DO available in the Lower Lee operating in conjunction with the Lee valley reservoirs.</p> <p>Chris Binnie challenged screening out of the indirect Teddington DRA option at feasibility stage.</p>	<p>Screening decisions for the Lower Lee DRA option have been reviewed including a review of the water quality risk associated with the direct supply option by Professor Jeni Colbourne.</p> <p>Further work is being done to review the potential DO of the Lower Lee option.</p>	<p>The review of water quality risk with Professor Jeni Colbourne confirmed that bank side storage would be needed for the direct option. No site has been identified for this storage and so it is expected that the indirect option will be carried forward to fine screening instead.</p> <p>TW has commissioned analysis by Atkins as part of Lower Lee investigations on the potential yield of the Lower Lee option for a scheme sized between 50 and 200MI/d. Pending this information, a sensitivity analysis has been conducted for an indirect option sized for 150MI/d with DO ranging between 49 and 138MI/d. This has found that the DO would need to be towards the top end of this range for the option to be cost effective.</p>
<b>Teddington DRA</b>	<p>Chris Binnie has challenged around whether a larger scheme is possible.</p>	<p>TW has reviewed assumptions around the reliability of effluent volumes in a drought, and in the lead up to it.</p>	<p>While the Dry Weather Flow for Mogden is in the region of 500MI/d a substantial proportion of this relates to infiltration and trade flows. When infiltration and trade flows are excluded Thames Water's forecast of the minimum projected discharge reduces to 305MI/d. Infiltration flows have been excluded as no information has been available on the how sewer infiltration in the Mogden catchment has been affected under historical drought conditions (e.g. 1975/76) and it is not practicable to model the impacts of severe drought on infiltration in the catchment with any certainty. We have also not taken account of the fact that demand restrictions and a non-essential use ban would be expected to reduce domestic and some commercial flows.</p> <p>Furthermore, the Environment Agency has requested that Thames Water ensure that some flow from the existing Mogden outfall is retained so that it will not go from "off" to "on" suddenly, which could result in a first flush of pollutants to the river.</p>
<b>Deephams reuse</b>	<p>Chris Binnie has noted the dependency between the Lower Lee DRA option and the size of the Deephams reuse option.</p> <p>EA also commented on the interdependency of the River Lee DRA and Deephams reuse</p>	<p>As part of the further work underway to assess the DO of the Lower Lee option, the implications for the size of Deephams reuse are also being assessed.</p>	<p>The 60MI/d Deephams option is being retained until results of further work are available on constraints to its size.</p>
<b>Crossness Reuse</b>	<p>Chris Binnie / GARD have challenged Thames Water around potential for lower average cost of a phased Beckton reuse followed by Crossness reuse using a shared tunnel</p>	<p>Thames Water has reviewed the risk to deployable output in the event of unavailability or ramp-up delays to membrane plants.</p>	<p>This challenge has not considered the cumulative environmental impact of all of the options on the ecology of the Tideway in the vicinity of Beckton and Crossness. Work by Ricardo has shown a detrimental impact associated with salinity levels.</p> <p>The rejection reasoning has been updated. This sets out that if both the desalination and reuse options at both Beckton and Crossness were developed then this would lead to it having an excessive proportion of its Deployable Output being based upon membrane treatment processes. The experience at the Gateway Desalination plant has shown that, such processes can be unreliable and be subject to ramp-up delays, which would impact on the effectiveness of the options if they occurred during a drought. The Crossness reuse option has not therefore been carried forward to the constrained list.</p>
<b>Battersea Desalination</b>	<p>Chris Binnie has suggested an additional option for a desalination plant at the Heathwall Combined Sewer Overflow (CSO) site near to the Battersea ring main shaft.</p>	<p>Consideration has been given to land availability in the vicinity.</p>	<p>The Heathwall CSO site is small and restricted, with no sufficient land available for desalination treatment and raw water storage, or reuse treatment and land required for blending. Consideration is being given to determine whether other brownfield land is potentially available within the vicinity of the Heathwall CSO / Battersea TW Ring Main shaft. Brownfield sites near to the CSO and TWRM shaft are consented for development with several under construction or constructed.</p> <p>Again, this challenge has not considered the cumulative environmental effects of these Tideway based options on the ecology of the Tideway.</p>