

# WRMP19 Resource Option Development

## Fine Screening Update Note

November 2017

### Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
01	14 November 2017	B Hume Smith J Sanders	W Kilmurray A Mortimore	B Hume Smith	Issue for stakeholders

### Information class: Standard

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## 1 Purpose of note

The purpose of this note is to provide stakeholders with an update on the status of the fine screening of water resource options for Thames Water's 2019 Water Resources Management Plan in advance of the Water Resources Forum being held on Tuesday 21 November 2017. The Fine Screening Report was last published for stakeholder comment in April 2017. This note summarises the key changes to option assessments that have taken place since April as well as other changes that have been made to help address questions and comments raised by stakeholders.

## 2 Changes to option assessment

### 2.1 Oxford Canal

In the April 2017 issue of the Fine Screening Report the feasibility assessment for the Oxford Canal resource option was shown as still to be confirmed (TBC). Feasibility assessment on the Oxford Canal option has since been conducted and the option has been included on the Feasible List. The option, proposed by the Canal and River Trust, transfers 15Ml/d of surplus resource from the Birmingham Canal Navigation to the Oxford Canal. The resource can then either flow into the River Thames for downstream abstraction to supply the London or SWA Water Resource Zones (WRZs). Alternatively, the resource can be transferred by pipeline to the River Thames upstream of the Farmoor Reservoir intakes for abstraction into Farmoor Reservoir and supply to the SWOX WRZ. The option has provisionally passed the fine screening assessment and is included in the Constrained List. Stochastic assessment of the drought resilience of the option has still to be conducted.

Information has been received from the Canal and River Trust on a potential 75Ml/d option to transfer water from either Minworth Sewage Treatment Works<sup>1</sup> or from the River Trent through the canal network to the Oxford Canal. Further engagement is required to refine these proposals and to complete the feasibility assessment. Work is ongoing with a view to completing this for the revised draft Water Resources Management Plan in 2018.

### 2.2 Lower Lee Direct River Abstraction

In the April 2017 issue of the Fine Screening Report the Lower Lee Direct River Abstraction resource option was shown as rejected at stage 3 of the Feasibility Report. Following further work, the option to abstract water at Three Mills Lock for supply to the Lockwood shaft has been assessed as passing the stage 3 feasibility assessment and is now included on the Feasible List. However, assessment of the volumes available for abstraction taking account of severe drought conditions, conservative Deephams dry weather flow assumptions<sup>2</sup>, operation of the Hoddesdon transfer scheme and system constraints (including requirements for pass through flow at Three Mills Lock) found an annual average volume available for abstraction of approximately 35Ml/d. With a lower potential yield for the Lower Lee option it is now rejected at the fine screening stage in preference for the Deephams reuse option, to which it is mutually exclusive. The Deephams reuse option performs better than the Lower Lee option in a number of respects including having a higher deployable output, lower cost and better operability. The operability concerns for the Lower Lee options relate to the raw water quality risks that arise from contaminated land adjacent to the Lower Lee and the potential for contaminated groundwater to impact on river water quality under certain hydrogeological

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<sup>1</sup> The option to transfer Minworth STW effluent to the River Thames via the Oxford Canal is mutually exclusive of the option to transfer the effluent via the Severn-Thames Transfer (Deerhurst pipeline).

<sup>2</sup> Deephams dry weather flow assumptions assumed for the Lower Lee option were consistent with those assumed for the Deephams reuse option.

conditions. The Lower Lee Direct River Abstraction option has therefore been rejected and has not been included in the Constrained List.

### 2.3 Deephams reuse

The April 2017 Fine Screening Report estimated a deployable output for Deephams of 60MI/d. Following further modelling by Atkins of the Lower Lee Direct River Abstraction option, the deployable output for Deephams reuse has been reduced to 45MI/d, taking account of requirements for pass through flow at Three Mills Lock and assuming operation of the existing Hoddeston transfer scheme.

### 2.4 Catchment management

The April 2017 issue of the Fine Screening Report included a number of catchment management options on the Constrained List. Following further review of the deployable output benefits of these options by Thames Water all of the catchment management options have now been rejected at stage 3 of the Feasibility Report, primarily because there are significant uncertainties surrounding achievement of the estimated deployable output benefits. Thames Water will however be progressing catchment management schemes which contribute to increasing the resilience of water sources and reduce the risk of reductions to deployable output and/or an increase in outage due to water quality deterioration (for example due to increased nitrate or pesticide application on water source catchments). Thames Water is proposing six pilot projects which will be set out in the PR19 Business Plan.

### 2.5 Resource options for SWA

The April 2017 issue of the Fine Screening Report included a planning horizon for SWA of 2045. Thames Water has subsequently reviewed its assessment of the planning horizon for SWA and extended it to 2100 so that the plan takes account of the substantial increase in the deficit forecast for the second half of the 21<sup>st</sup> century– aligning the SWA planning horizon with that for SWOX and London. The baseline deficit at 2100 is forecast to be 77MI/d. To address this deficit new system elements have been developed to supply SWA using new resources from either Abingdon reservoir, the Oxford Canal or the Severn Thames Transfer. The new system elements would supply SWA either through a treated water pipeline from Culham (for Abingdon or STT resources) or through a new River Thames intake and treatment works near Medmenham (for Abingdon, STT or Oxford Canal resources).

### 2.6 Severn-Thames Transfer

The Severn-Thames Transfer (STT) requires support from water resources in the River Severn catchment at times when flows are below the hands-off flow requirement at Deerhurst. The April 2017 Fine Screening Report included redeployment of Lake Vyrnwy and transfer of the Mythe licence as options on the Constrained List to support the STT. Other support options have been proposed including:

- Welsh Water: transfer of surplus resource from Wales to Deerhurst to support the STT.
- Severn Trent: transfer of effluent from Minworth Sewage Treatment Works (STW) and enlargement of Draycote Reservoir to support flows in the River Avon (a tributary to the River Severn)
- Severn Trent: transfer of effluent from Netheridge and Hayden STWs to Deerhurst.
- United Utilities (UU) / Severn Trent (ST) joint offer: supplying Shrewsbury with UU's Vyrnwy resources treated at Oswestry WTW, leaving existing ST abstractions (that currently supply Shrewsbury from the River Severn) available for abstraction at Deerhurst for the STT.

The UU/ST joint offer is a variant of the existing Vyrnwy option, with the necessary infrastructure to provide the resource in the River Severn being the responsibility of ST and UU. The joint option can be developed at either 18MI/d or 30MI/d. Both options have been included in the Constrained List.

Information has also been received on the Welsh Water option and on the other Severn Trent options, but further engagement is required to refine these options and to complete the feasibility assessment for the support elements. Work is ongoing with a view to completing this for the revised draft Water Resources Management Plan in 2018.

## 2.7 Inter-company transfers

In the April 2017 issue of the Fine Screening Report the inter-company imports from Wessex Water to SWOX and from South East Water to Guildford were shown as requiring further information on bulk supply charges. The wholesale water charges published by the companies have since been used to provide this information and both inter-company imports have since been included on the Constrained List.

## 3 Other key changes

Other key changes since the April 2017 issue of the Fine Screening report include:

- A Rejection Register has been developed compiling the reasons for rejection of resource options set out in the different feasibility reports and the Fine Screening Report
- Back-checking has been conducted to establish whether new information obtained on Constrained List options that have been further developed in terms of scope, cost and risk during Phase 3 has an impact on screening decisions. A back checking log is included to summarise the new information, assessment of its impact and conclusions.
- The reasons for changes in the Average Incremental Costs are summarised, comparing the AIC charts presented in the September 2016 issue of the Fine Screening Report and the updated charts that take account of the latest information on option costs.

The updated Feasibility Reports and Fine Screening Reports will be published for stakeholder comment.