



Water Resource Options Stakeholder Technical Meeting No. 5 6 November 2015

Minutes

Attendees

Andrea Farcomeni	Affinity Water (AfW)
Malcolm Jeffrey	Albion Water (AW)
Ken Burgin	Cotswold Canal Trust (CCT)
Sarah Wardell	Environment Agency (EA)
John Lawson	GARD
Mark Smith	United Utilities (UU)
Peter Spillett	Thames Rivers Trust (TRT)
Colin Fenn	WWF-UK
Alex Nickson	GLA
Dave Wardle	ICE
Mat Wells	Canal and Rivers Trust (CRT)
Dave Cook	Wilts and Berks Canal Trust (WBCT)

Apologies

Pat Spain	Severn Trent Water (STW)
Martin Pilbin	RWE

TW: Chris Lambert (Chair), Richard Smith, Lesley Tait, Steve Tuck, Simon Hughes, Tony Owen

Motts: Bill Hume-Smith, Paul Chadwick, Andy Kirby, Drew Quarrier

Cascade: John Sanders

1. Introduction

TW (CL) welcomed everyone to the meeting. The meeting was structured to provide an overview of the Phase 2 programme of investigations, to set out the proposed reporting and documentation and seek comments on this, and to provide an update on work underway and seek feedback from stakeholders. Prior to the meeting TW circulated the following documents:

- Phase 2 Investigations – proposed document structure
- Cotswold Canals Transfer – methodology working paper

2. Overview of the programme and documentation

Motts (BHS) provided an overview of the programme, the component studies and key milestones. Key points were as follows:

- The screening report on the small resource options has been published on TW's website www.thameswater.co.uk/wrmp. This will be updated again in 2016.
- Year 2 of the programme will involve a bottom up assessment of costs and risk and development of conceptual design reports.

BHS also described the suite of documents that would be produced with an explanation of the purpose of each report. The paper circulated prior to the meeting is provided in Appendix 1.

2.1 GARD: Will all the reports be made available? TW confirmed that they would.

2.2 GARD: Where will the assessments of deployable output (DO) be presented? TW explained that the operational strategies will consider utilisation, building on the work completed in Phase 1, and DO and yield assessments will be completed in Phase 2.

2.3 GARD: Options have been screened out in Phase 1 based on operational use. How does this information get taken into account? TW confirmed that the screening reports will be reviewed and updated, and new and updated information will feed into these reports.

2.4 GARD: For the UU & STW proposals there will be some costs associated with putting water into supply and other costs to replace DO. Where will these costs fit in? TW agreed that this is an important point and discussions are ongoing with the third party suppliers. Current working assumptions are that the costs to replace DO are included within the quoted cost of water supply.

2.5 GLA: Where is the assessment of resilience of options included in this work? TW agreed that resilience was an important aspect, and confirmed that resilience was taken into account in the Phase 1 screening assessment and will be reported in the option type feasibility reports. Work is also progressing to understand how resilient options are to future droughts through the stochastic drought generation work.

2.6 GLA: What work is underway to determine the programme of options and use of pathway strategies? TW confirmed that at this stage the work is focused on narrowing the set of options and the pathway approach will be incorporated into the development of the programmes. WWF emphasised that real options is a dynamic approach and as such options are not permanently screened out.

2.7 GARD: Where is design mitigation and iteration included in the process? TW highlighted that the Phase 1 report identified where mitigation may be required. Also the environmental assessments feed into the process with increasing level of detail.

3. Feasibility Studies

BHS presented the main outputs of the year 1 studies and an overview of the option feasibility reports. Key points from the presentation were as follows:

- Site selection on the reservoirs was completed in 2006 and reviewed in 2012, this will input to the reservoir feasibility report.
- The staged screening approach followed for the reservoirs will be applied to the other option types.
- The assessment is being undertaken in a phased way 1) identify key constraints 2) performance against a range of criteria eg legal, planning, environmental using a traffic light performance method and 3) more detailed assessment.
- TW explained that the criteria were tuned to the option types and where feasible, there was commonality in the criteria. The aim of this work is to ensure a comparable level of assessment for all options.
- The feasibility reports will include a preferred option with a range of capacities.
- There were a number of questions, as recorded below, but overall stakeholders indicated that they were comfortable with the approach proposed.

3.1 GARD: Will there be a specific document which sets out the methodology for the feasibility reports? TW explained that a draft structure of the feasibility reports will be developed and shared with stakeholders.

3.2 GARD: TW screened out the unsupported Severn Thames Transfers (UST) on the grounds of resilience, GARD disagree with this as the resilience work is not concluded and therefore GARD consider that the UST should still be part of the Phase 2 investigations. TW stated that it does not consider the UST to be resilient but in view of the ongoing work TW has identified the UST as a

small options as “to be confirmed” ie it is not screened out and investigations are continuing.

3.3 GARD: Will the reservoir feasibility report look at more than one site? TW stated that it will consider options.

3.4 TRT: What environmental assessment methods will be used and will an Ecosystem Services Assessment approach be undertaken? TW confirmed that it will complete assessments to comply with SEA, HRA and WFD requirements. TW will present further information on this topic at the January Water Resources Forum (14 January 2016).

3.5 GARD: If you are not scoring, how can you make the judgements? TW confirmed it is based on expert knowledge and criteria are not weighted.

3.6 GARD: Are you looking at multiple routes for the transfer options and where is bank side storage? TW confirmed that as part of the water quality and ecology study work that has been undertaken on discharge points to the River Thames and this will be reported in the feasibility report.

3.7 GARD: Is TW considering the potential for energy recovery from pipes? TW agreed that this was a good point and would be logged. Work has not been done on this to date.

3.8 TRT: How will WRSE and WREA affect option review and assessment, and how will the needs of these groups be taken into account? TW explained that the regional strategies, and needs of other companies, will be considered as part of the programme appraisal and that the use of more dynamic tools will facilitate the selection of a combination of options. TW also emphasised that there are opportunities for transfers between WRZs.

4. Round up

BHS provided an update on the studies underway. The presentation slides set out the studies and for each one, information was set out on the need, aim, outputs, progress and next steps, where this information is known. Key points and questions are noted below:

Water treatment requirements: TW recognise that some options eg desalination would deliver water directly into supply whilst other options would require additional treatment. TW is reviewing this to ensure comparable information.

Network reinforcements: TW is undertaking work to review the current treatment and network capacity. TW also confirmed that synergies would be identified between existing and new asset requirements as the same teams are working on these issues. This is recognised to be a complex area. A number of points were raised in these discussions.

4.1 GARD: Are you considering factors such as changes to water quality and algae growth? TW confirmed that there is a parallel workstream looking at these issues.

4.2 CCT: TW should look at opportunities to maximise existing assets eg Latton pipeline. TW agreed.

4.3 GLA: There are network constraints in East London raising issues for new growth and asked questions around the capacity of the Ring Main to accommodate forecast growth in London and timings for network reinforcement. TW stated that it needs information on future demand, spatial and temporal, from the GLA to assist in the planning.

4.4 AW: The costs needed to be considered in relation to the suite of options, the costs should not be allocated to a specific option as it will skew the assessment. The contribution of inset appointments in the future was also raised.

4.5 GARD: Will all this work will be completed in sufficient time. TW confirmed that it will use the best available information and continue to review and refine costs.



Methodology reports

4.6 GARD: Will the operational strategies be based on WARMS2 modelling. TW agreed that it needed to use the most likely utilisation range. Also that WARMS2 will provide the historic data and the stochastic modelling will provide additional information on droughts outside the reliable historic record.

4.7 TRT: Will TW use industry operational costs data applied by Ofwat. TW confirmed that it will use its own cost data for consistency with PR19 but will benchmark this data.

4.8 GARD: Will there be an opportunity to review operational cost data prior to the next version of the screening report. TW agreed.

4.9 CCT promoted a best practice approach on energy recovery. TW had not considered this to date and will look at this.

4.10 ICE: Would it be more sensible to focus on construction carbon costs only at this point in the analysis. TW responded that operational carbon is a substantial element of the carbon cost and needs consideration in the fine screening.

4.11 GARD: How will transfer schemes be costed eg will there be a volumetric charge? TW confirmed that there are ongoing discussions and will be covered later in the meeting.

E&S assessment: TW reported that work is ongoing to refine the assessment approach. The draft WRPG will be issued for consultation in November and TW will need to ensure consistency with this. TW will share this work at the January 2016 Water Resources Forum.

4.12 TRT: Will the WRPG set out how to assess climate change. TW thinks the WRPG will provide a framework and supporting methodology papers will set out the detail.

Feasibility reports - Transfers: The report will consider sources for transfer and conveyance options in Stage 1. There is a CRT collaborative study which is considering the feasibility of using existing canals (other than the Cotswold Canal) for conveyance.

4.13 GARD stated that the Oxford canal should also be included. TW agreed.

Feasibility reports - River abstraction: TW is still looking for good value solutions such as the Lower Lee and Culham. Previously there were concerns around arsenic in the sediment in the Lee however this has not been identified in the latest water quality assessment so further work is being done reviewing water quality risks and treatment options.

Feasibility reports - Reservoirs: Site selection was undertaken in 2006 and reviewed in 2012 and is considered to still be relevant but it will be reviewed.

Feasibility reports - Reuse: Reuse on the non-tidal Thames has been ruled out due to the consequential impact on resources. TW is investigating the advantages and risks of direct and indirect reuse, the practical limits and the most feasible site. TW also confirmed that the Independent Expert Reuse Panel was still in place.

4.14 GLA questioned why Riverside and Crossness have been ruled out. **Action TW to respond.**

4.15 GLA raised the high levels of leakage in the context of the need for new resource development and specifically how demand management costs compare to the new resource development. TW explained that there was a lot of work going on to understand leakage, and metering will help this enormously. In determining the programme of leakage, TW use whole life costs adopting the sustainable economic level of leakage. GLA also provided an outline of work being led by themselves on Integrated Water Management Plans in areas forecast to have high levels of growth.

5. Transfer options

BHS provided an update on option cost data. Cost data has now been provided on the STW options. The STW Lower Severn option is comparable in terms of cost to the UU option. The Mid Severn option would currently be screened out on cost grounds.

5.1 UU queried the yield used for the UU scheme. TW confirmed that this was estimated using WARMS. The same exercise is required for the STW options to ensure the options are compared consistently.

Cotswold Canal – Andy Kirby, Motts

Motts has undertaken a site visit, reviewed historic studies and data and is now developing solutions for example pumping arrangements, pipeline requirements and routes, discharge points. There are a number of complexities to overcome not least Sapperton Tunnel. TW previously looked at two capacities of 50 & 100 MI/d. Based on additional work completed to date Motts now consider there is potential for a larger transfer taking account of constraints such as navigation velocity, canal hydraulics and reasonable construction demands. Further work is required on the environmental assessment and planning. Motts suggested ~ 300 MI/d might be possible but needed to undertake the work to confirm this estimate.

5.2 GARD sought clarification that 100 and 300MI/d represent the lower and upper limits. TW confirmed that this is the case and further work will be carried out to look at other factors.

5.3 GARD questioned whether the flow from the River Frome has been considered as they believe that there is resource available. CCT stated that the resource would be constrained in drought but could aid from a water quality viewpoint. TW confirmed that it is being considered but Bristol Water had already highlighted potential derogation issues.

5.4 GARD asked if the study was looking at hydrological, water quality and DO benefits. TW confirmed the water quality and ecology studies are progressing in parallel.

AK explained that the build-up of the costs is being undertaken according to the type of works. Pumps and pipeline costs will be built up from standard costing database; tunnelling and hydraulic structure are unlikely to be standard rates so Motts will use their expertise; and elements of scheme not essential for the water transfer, but for navigation, will need to be costed.

5.5 WWF asked for information on the basis of costing and whether TW would fund all works or it would be arranged through a commercial agreement. TW confirmed that it wants to understand costs of pipeline as a starting point.

5.6 GLA asked if there is opportunity to develop a wetland area. CCT stated that the route passes disused gravel pits and Cotswold water park so there is considerable space and opportunity.

5.7 GARD queried that if Bristol Water is managing issues around metaldehyde by changing the abstraction regime, could TW adopt a similar approach? TW understood the point and will consider this.

5.8 CRT highlighted that additional dredging of silt would need to be included in the costs.

Third party option development – Drew Quarrier

DQ presented an overview on work to explore third party options. Proposals for transfers from STW and UU have been taken forwards for further investigation. DQ provided an overview of the proposals, which in summary are:

1. Lower Severn: Minworth STWs treated effluent would be transferred via a new pipeline to the River Avon and on to the River Severn. TW would then provide the assets to transfer water from the lower Severn catchment to the Thames catchment either via canal or

pipeline. Issues to be resolved will be how STW optimise their reservoirs, is there potential for abstraction by other parties enroute and any implications of reduced effluent.

2. Middle Severn: This option relies on treated effluent transferred from Minworth STW into the River Avon plus a new intake on the River Severn at Ombersley and pipeline to Eathorpe Pumping Station to support storage at Draycote Reservoir (which would be expanded). A new pipeline would then transfer water from Eathorpe to Farmoor. This option is more costly and is therefore expected to be excluded in its current form.
3. United Utilities: Lake Vyrnwy is an existing reservoir developed to supply North West England. The dam is owned by STW. Under this option UU would release more water into the Severn and would develop alternative resources to compensate for the loss of water.

5.9 WBCT asked why TW is not considering using the Oxford Canal instead of pipeline and that this work should also take account of the HS2 corridor. TW agreed with these points.

5.10 GARD: Who is responsible for looking at options and funding them? Motts explained that this is still a point of discussion.

5.11 GARD: Based on an assumed 180 MI/d of resource (158 MI/d DO), UU would effectively not use Vyrnwy for supply for its own customers and would need to develop new assets. UU confirmed that it has over 500 MI/d of feasible options available so there are options to facilitate trade and it has based the costs for the option on the loss of DO.

5.12 GARD asked how the DO of 158 MI/d had been determined. TW confirmed this was from WARMS and agreed that further work was needed, including stochastic modelling, to understand utilisation.

5.13 WWF asked how STW would be involved in the commercial arrangement considering Vyrnwy is managed by STW. TW confirmed that UU has provided the indicative pricings at this stage and again this is work in progress. Ofwat also need to be engaged in discussions on agreements. In 2013 there was some work on bulk supply principles but these were not developed with this sort of agreement in mind.

DQ explained that there are a number of complexities with these options which need exploration:

- Silk commission flagged that Wales has lots of natural resources and these provide an opportunity to generate revenue. The water is already exported but is this considered to be a change of use.
- Competition law could rule that long duration contracts as anti-competitive.
- Parties need to agree common terms to enable ongoing discussion – contract term, notice periods, pricing principles to get reasonable return on capital, where third parties are building pipelines or resources do they need incentives, coincidental droughts.
- The EA stated that increasing flow at one end of the system may not yield benefit for TW and that any amendment to the River Severn regulatory system may need a legislative change.
- NRW are currently undertaking a study to draw down Vyrnwy in winter for flood protection. UU stated that it does not think this work will impact on DO.

TW confirmed the next steps are as follows:

- A meeting has been arranged with the EA and NRW to discuss the regulatory issues associated with these options.
- The stochastic work will be progressed to inform utilisation profiles
- Further work will be undertaken on the contracts



5.13 GARD questioned that if the scheme involves introduction of resource what are the regulatory issues? Following the '76 drought flows specified control at Bewdley. TW confirmed that it is meeting with the EA and NRW to discuss these issues and TW will update stakeholders after this.

6. 3 month look ahead and wider discussion

BHS presented the focus of work over the next 3 months. TW plan to set up a follow up technical meeting in early spring 2016.

6.1 AW: AW summarised proposals that had been submitted to TW to use tankers from Scandinavia and Northern Europe but these options had been rejected based on cost. AW believes that costs will change if the international market for water tankering grows and stated that he would inform TW if better value propositions materialised. AW stated that it was raising bulk tankering and mobile desalination with Water UK for the forthcoming national study and wanted to raise awareness of this with the attendees.

6.2 GLA raised concerns that the current drought plans don't go far enough and potentially a more extreme drought plan is required and as such the option to tanker water should not be ruled out.

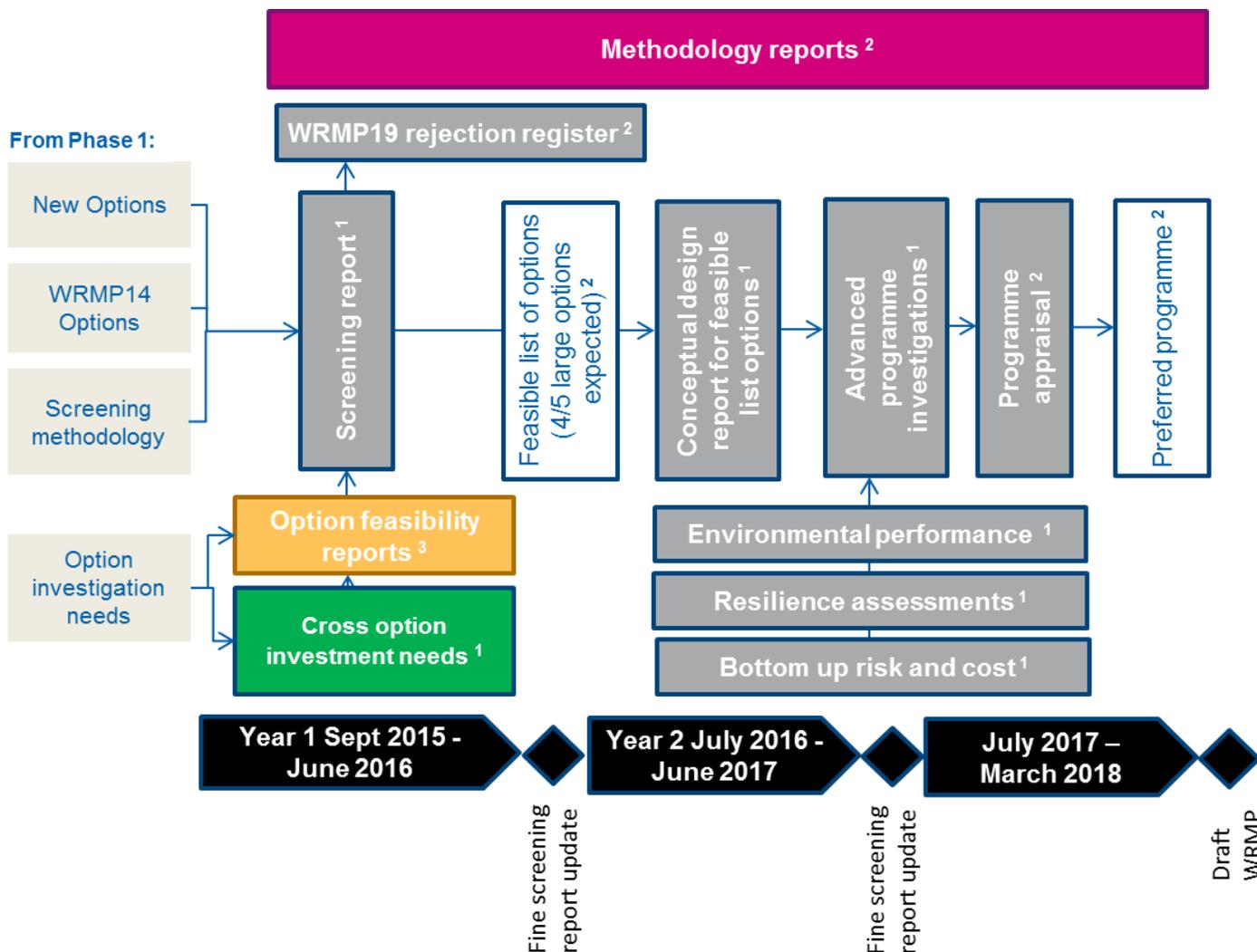
Future meetings

A follow up technical meeting on resource options will be arranged in spring 2016. If stakeholders have specific topics that they would like to cover or questions they would like to raise in advance of the meeting please email Lesley Tait Lesley.tait@thameswater.co.uk

END

Appendix 1

Paper 1: Phase 2 Investigation proposed document structure



Key

1 New report

2 Updated from WRMP14 report/chapter

3 New report developed using WRMP14 scheme dossiers and Phase 2 investigations

Description of the reports



Methodology reports: These reports set out the rationale for the assessments undertaken as part of supply option development. This is particularly important if there is more than one way to carry out an assessment. For example, how the whole life cost assessment, risk assessment, environmental assessment and carbon cost assessment will be undertaken for every option.

Cross option investment needs reports: These reports focus on investment needs that are needed for a number of different options. In particular investigation into the additional treatment and network reinforcement costs that are missing from some of the options. These reports may set out different investment needs dependent on the water resource option selected which can then be reflected in the feasibility/screening reports and programme appraisal.

Option feasibility reports: These will review all the possible locations and variations for each of the option types identified from Phase 1 (e.g. reuse, desalination, transfers, reservoirs, ground water, inter-zonal transfers) and assess the feasibility of each. This has advantage of combining a number of reports into one place and demonstrating that all options have been considered. The feasibility reports will be supported by option dossiers, environmental, cost and risk assessments developed for WRMP14 and specific investigations identified in Phase 1. For example, the capacity and costs of restoring the Cotswolds canal as a potential route for a Severn-Thames transfer. The feasibility reports will identify the preferred option(s) within each option type.

Screening report: Building on the Phase 1 screening report using the same methodology agreed with stakeholders. This is an umbrella report which provides information on how all options have been developed and fed into the water resources planning process. The feasibility reports and methodology reports are appendices to the screening report. Given the London supply deficit, the report is separated into options above 50MI/d and less than 50MI/d.

The screening report will be republished in June 2016 with the aim of having 4/5 large options (greater than 50MI/d) in a range of option types to take forward to advanced investigations which will support the final programme selection.

There will be an opportunity to republish in 2017 to allow for any significant changes/advancement in knowledge that could affect option screening and the preferred option selected for each option type.

TW, November 2015