Water Resources Management Plan 2024

Technical Appendix Q - Scheme Rejection Register

Contents

Tables

Introduction

Q.1 Appendix Q summarises the rejection register for our resource scheme options and demand scheme options (Section C).

Q.2 The resource option rejection register lists the generic option types that have been rejected as well as the specific resource elements on the unconstrained list that have been rejected. Reasons for rejection are provided in each case, taken from:

- WRMP19 Feasibility reports and WRMP24 Feasibility Addendums that identify the unconstrained options list then assess the options to identify the Feasible List. Not accounting for size variants, 200 options were rejected at the feasibility stage (including some options which are different size variants of the same option)
- Further option screening was completed using scenario runs in the investment model. Not accounting for size variants, ten options (including some options which are different size variants of the same option) were rejected at further option screening

Q.3 The demand scheme rejection register consists of two tables: demand options rejected through primary screening and demand options rejected through secondary screening.

- Primary screening removes demand options considered non-feasible with regard to technological, financial, environmental, risk and resilience and legal constraints. (One hundred and eight demand options were rejected through primary screening)
- Secondary screening removes demand options considered non-feasible with regard to qualitative criteria. (Eighty-seven demand options were rejected through secondary screening

Note on terminology:

At WRMP19 the terminology 'Reuse' was used, the terminology at WRMP24 has moved on to be 'Water Recycling'. The WRMP documents refer to options as recycling options however feasibility reports refer to reuse as these were drafted at WRMP19. The terms Reuse and Recycling can be considered interchangeably.

At WRMP19 the terminology Abingdon Reservoir was used, this has been further developed and is now referred to as South East Strategic Reservoir Option (SESRO). When referring to different reports and information it is necessary to refer to both these names. In reading the WRMP documents Abingdon Reservoir and SESRO are used interchangeably and refer to the same option.

Resource scheme rejection register

Q.4 This is a rejection register taken from the WRMP24 Section 7 report completed by Thames Water and Mott MacDonald as part of the WRMP24 resource option appraisal process. This rejection register provides a summary and reasoning behind the rejection of potential resource options for the WRMP24 options appraisal process.

Generic option rejection

Q.5 This section provides information on those generic options which have been rejected and therefore have not been taken forward to the feasibility stage.

Tankering of water - Sea Tankering

Q.6 A proposal by Waterlevel for tankering from sources in Norway has been considered through WRSE. Assessment at WRMP14 found tankering by sea to be excessively costly to supply our geographic area. Albion (now WaterLevel/EDRS) engaged further with us and with WRSE during preparation of WRMP24 through the stakeholder engagement process. However, the assessment of the option remains that it is infeasible excessively costly as a water resource option, for reasons of uncertainty relating to DO, utilisation, cost and carbon. Tankering has therefore not been developed as a water resources option. Option considered in generic option screening section. This option has continued to be developed by the supplier over the course of the preparation of the plan. This work will continue in the short term and over the next planning cycle in dialogue with water companies across the U.K. including Thames Water.

Q.7 It is difficult to plan road tankering options significantly in advance, as the locations of likely available resource and the location of the water shortage are not known. Nevertheless, it is an option that has been employed in previous droughts such as in Yorkshire in 1995. It is included as a potential “more before 4” measure in our Drought Plan. Tankering of water by road has therefore not been developed as a water resources option for WRSE or WRMP24.

Imports (icebergs)

Q.8 The option to import icebergs has been rejected on the basis that the techniques involved are not sufficiently advanced for commercial use and because of the high level of uncertainty around scheme yield.

Rain cloud seeding

Q.9 Rain cloud seeding has been rejected on the basis that the techniques involved are not sufficiently advanced for commercial use and because there is a high level of uncertainty that the scheme would provide significant yield.

Tidal barrage

Q.10 The option for the use of the Thames Barrage to impound fresh water has been rejected as this option would limit the navigation of the River Thames to both private and commercial traffic resulting in disproportionate social and economic costs. It would also limit the passage of aquatic life which would cause significant ecological damage. The option could also result in raising the groundwater levels in the surrounding areas which

could increase the incidence of flooding and cause damage to services and historic buildings in London.

Drought intervention – Temporary transfer

Q.11 A range of transfers have been identified as potential water resources options. In the event of a severe drought, consideration would be given as to whether there are surplus resources available from neighbouring WRZs that could be made available through other transfer pipelines. The location of these zones with available resource is not known in advance. Temporary transfers for drought intervention have therefore not been developed as a water resources option for WRSE or WRMP24.

Reclaimed water, water re-use, effluent re-use - direct

Q.12 Direct water recycling has been not been progressed as an option type as:

- Removal of barriers in a widely applied multi-barrier approach:
    - The environment buffer contributes to mitigate risks from chemical and microbial contaminants
    - Dilution of the treated wastewater by the environmental buffer will reduce contaminant concentrations
    - Removal of these contaminants will start in the environment, either by sedimentation, adsorption or photolysis
- Lack of knowledge: the UK is far behind countries such as the USA, Australia, Namibia and Singapore in terms of planned water recycling and does not have the knowledge to operate water recycling plants for potable water applications. For most of the countries cited above, water recycling started many years ago with the implementation of Non-Potable Recycling (NPR) systems. Once enough knowledge about the technology used has been gained, IPR and then DPR were implemented. In the UK, while unplanned IPR is common place, NPR plants are still rare, although there are a number of schemes now in planning.
- Reduction of reaction time: in the event of treatment failure, the reaction time to avoid contaminated water entering the drinking water supply system will be reduced.

Q.13 For those reasons, we are not promoting the implementation of a DPR scheme until the more widely practised option of IPR has been more widely practised in the UK.

Specific option rejection – London WRZ

Q.14 For generic option types that passed the generic screening stage, specific options have been identified and assessed both at the feasibility and further screening stages.

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
Raw Water Transfer (RWT)						
Although RWT options are found in the London rejection summary, some of these options also serve Swindon and Oxfordshire WRZ *(SWOX) and* Slough, Wycombe and Aylesbury WRZ *(SWA)*						
	Craig Goch Reservoir expansion	✕				
	Kielder Reservoir		✕			
	Great Spring	✕				
	Minworth STW effluent for transfer through existing canal network – STT resource	✕				
	Mythe abstraction reduction - 15 Ml/d – STT resource					✕
	Shrewsbury Redeployment – 25 Ml/d – STT resource					✕
	River Severn (independent unsupported River Severn resource option, without support options) – STT resource				✕	
	Longdon Marsh reservoir to support River Severn abstraction – 50 Mm^3 – STT resource		✕			
	Longdon Marsh reservoir to support River Severn abstraction – 89 Mm^3 – STT resource		✕			
	Longdon Marsh reservoir to support River Severn abstraction – 125 Mm^3 – STT resource		✕			
	River Wye to Deerhurst – 60.3 Ml/d – STT resource	✕				
	Use of a new Thames reservoir (as in reservoir report, if successfully promoted) to support River Severn abstraction and transfer	✕				
	Use of Farmoor Reservoir to support River Severn abstraction and transfer	✕				
	Mendips Quarry					✕
	Conveyance - Canal transfer Minworth STW to River Thames		✕			
	Conveyance - Pipeline from Kielder Reservoir		✕			
	Conveyance - Canals from Kielder Reservoir		✕			
	Conveyance - STT - Raw Water Transfer Deerhurst to Culham - 100 Ml/d		✕			
	Conveyance – STT - Deerhust to Radcot - 300 Ml/d		✕			
	Conveyance – STT - Deerhust to Radcot - 600 Ml/d		✕			

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
	Conveyance - STT - Raw Water Transfer Deerhurst to Culham - 600 Ml/d			×		
	Conveyance - STT – Raw Water Transfer Deerhurst to Lechlade - 100 Ml/d				×	
	Conveyance – STT - Cotswold Canal - 100 Ml/d			×		
	Conveyance – STT -Cotswold Canal - 300 Ml/d					×
	Reuse					
	Reuse Beckton - 380 Ml/d					×
	Abbey Mills PS Sewer Mining (Luxborough Lane) - 300 Ml/d		×			
	Abbey Mills PS Sewer Mining (Luxborough Lane) - 200 Ml/d		×			
	Abbey Mills PS Sewer Mining (Luxborough Lane) - 150 Ml/d		×			
	Abbey Mills PS Sewer Mining (Luxborough Lane) - 100 Ml/d		×			
	Abbey Mills PS Sewer Mining (Luxborough Lane) - 50 Ml/d		×			
	Abbey Mills PS Sewer Mining (Lower Hall) – 300 Ml/d			×		
	Abbey Mills PS Sewer Mining (Lower Hall) – 200 Ml/d			×		
	Abbey Mills PS Sewer Mining (Lower Hall) – 150 Ml/d			×		
	Abbey Mills PS Sewer Mining (Lower Hall) – 100 Ml/d			×		
	Abbey Mills PS Sewer Mining (Lower Hall) – 50 Ml/d			×		
	Reuse Mogden – 200 Ml/d				×	
	Mogden Reuse (Mogden STW) – 212 Ml/d			×		
	Reuse Mogden S Sewer – 50 Ml/d					×
	Deephams Reuse – 25 Ml/d			×		
	Beckton Reuse 380 Ml/d					×
	Crossness Reuse - 190 Ml/d					×
	Crossness Reuse - 150 Ml/d					×
	Crossness Reuse - 100 Ml/d					×
	Crossness Reuse - 90 Ml/d					×
	Crossness Reuse - 50 Ml/d					×
	Greenwich PS Sewer Mining (Lower Hall) - 150 Ml/d		×			
	Greenwich PS Sewer Mining (Lower Hall) – 100 Ml/d		×			
	Greenwich PS Sewer Mining (Lower Hall) – 50 Ml/d		×			

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
	Greenwich PS Sewer Mining (Hogsmill) – 150 Ml/d		×			
	Greenwich PS Sewer Mining (Hogsmill) – 100 Ml/d		×			
	Greenwich PS Sewer Mining (Hogsmill) – 50 Ml/d		×			
	Millbrook Road PS Sewer Mining (Hogsmill) – 100 Ml/d			×		
	Millbrook Road PS Sewer Mining (Hogsmill) – 50 Ml/d			×		
	Wandle Valley PS Sewer Mining (Hogsmill) – 17 Ml/d			×		
	Long Reach STW Final Effluent Reuse (adjacent to site) – 80 Ml/d		×			
	Long Reach STW Final Effluent Reuse (adjacent to site) – 50 Ml/d		×			
	Riverside STW Final Effluent Reuse (adjacent to site) – 38 Ml/d		×			
	Direct River Abstraction (DRA)					
	Teddington DRA – 100 Ml/d				×	
	Teddington DRA – 150 Ml/d				×	
	Teddington DRA - 300 Ml/d				×	
	Beckton effluent transfer to Teddington and new river abstraction at Teddington connecting to Thames-Lee Tunnel	×				
	Beckton effluent transfer to Teddington and new river abstraction at Teddington with transfer to Queen Mother Reservoir	×				
	Beckton effluent transfer to Teddington and new river abstraction and treatment at Teddington for direct supply	×				
	Mogden effluent transfer to Teddington and increase of existing river abstraction upstream at Surbiton	×				
	Mogden effluent transfer to Teddington and new river abstraction at Teddington with transfer to Queen Mother Reservoir			×		
	Mogden effluent transfer to Teddington and new river abstraction and treatment at Teddington for direct supply		×			
	New river abstraction on Lower River Roding	×				
	New river abstraction on River Mardyke	×				
	New river abstraction on River Rom/ Beam	×				

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
	New river abstraction on River Ingrebourne	×				
	New river abstraction from River Lee at Three Mills Lock and transfer to Lockwood Thames-Lee Tunnel Extension					×
	River Lee abstraction at Three Mills Lock, transfer to North Woolwich Road site for treatment to potable quality, followed by transfer to service reservoir		×			
	Raw Water Purchase					
	Chingford Raw Water Purchase					×
	Desalination					
	Crossness Desalination (Unblended) - 65 Ml/d				×	
	River Lee, Coppermills Water Treatment Works (WTW) (blended)		×			
	Manor Road, Erith, Honor Oak, (blended)		×			
	Crossness (Erith Southern Grazing Marshes) -150 Ml/d			×		
	Crossness (Erith Southern Grazing Marshes) – 300 Ml/d			×		
	Tripcock Ness, Thamesmead Coppermills WTW (blended) - 150 Ml/d		×			
	Tripcock Ness, Thamesmead Coppermills WTW (blended) – 300 Ml/d		×			
	Battersea- new treatment / blend site direct-to Thames Water ring Main	×				
	Reservoir					
	Site 3 - Cricklade	×				
	Site 4 - Swindon	×				
	Site 9 - Lechade	×				
	Site 13 - Uffington	×				
	Site 20 - West Hanney	×				
	Site 24 - Kidlington	×				
	Site 27 - Beckley	×				
	Site 28 - Brightwell Cum Sotwell	×				
	Site 29 - Ambrosden	×				
	Site 31 - Wheatley	×				
	Site 32 - Benson	×				
	Site 34 – Bicester	×				
	Site 44 - Stone	×				
	Site 45 - Whitchurch	×				
	Site 46 - Stewkley	×				
	Site 47 - Bierton	×				
	Site 48 - Wingrave	×				
	Site 51 - Burghfield	×				
	Site 53 - Wokingham	×				

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
	Site 55 - Maidenhead	✕				
	Site 1 - Minety		✕			
	Site 2 - Leigh		✕			
	Site 5 - Broad Blunsdon		✕			
	Site 6 - Highworth		✕			
	Site 8 - Bishopstone		✕			
	Site 10 - Shriveham		✕			
	Site 11 - Clanfield		✕			
	Site 12 - Faringdon		✕			
	Site 14 - Brize Norton		✕			
	Site 15 - Brampton		✕			
	Site 16 - Witney		✕			
	Site 17 - Stanford in the Vale		✕			
	Site 18 - Longworth		✕			
	Site 19 - South Leigh		✕			
	Site 21 - Stanton Harcourt		✕			
	Site 23 - Wantage		✕			
	Site 25 - Oxford		✕			
	Site 26 - Didcot		✕			
	Site 30 - Drayton St Leonard		✕			
	Site 33 - Chalgrove		✕			
	Site 35 - Chargrove Airport		✕			
	Site 38 - Great Haseley		✕			
	Site 39 - Quainton		✕			
	Site 49 - Cheddington		✕			
	Site 50 - Kintbury		✕			
	Site 52 - Beech Hill		✕			
	Site 7 - Wanborough			✕		
	Site 40 - Postcombe			✕		
	Site 54 - Bracknell			✕		
	Site 22 SESRO / Abingdon Reservoir – 50 Mm^3					✕
	Site 22 SESRO / Abingdon Reservoir – 30 Mm^3					✕
	Site 36 - Marsh Gibbon Reservoir - 100 Mm^3				✕	
	Site 41 - Chinnor Reservoir – 75 Mm^3			✕		
	Site 41 - Chinnor Reservoir – 50 Mm^3				✕	
	Site 43 - Aylesbury -75 Mm^3			✕		
	Site 43 - Aylesbury - 50 Mm^3					✕
	Site 43 - Aylesbury - 30 Mm^3					✕
	Site 37 - Ludgershall - 50 Mm^3					✕
	Site 37 - Ludgershall - 30 Mm^3					✕
	Site 42 - Haddenham - 30 Mm^3					✕
Groundwater						

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
	GW – Epsom	✕				
	Nonsuch Increase DO	✕				
	North London Licence Trading	✕				
	Shortlands		✕			
	London confined Chalk (north-east)		✕			
	Removal of DO Constraints					
	Epsom Removal of Constraints				✕	
	Inter-company Transfers					
	Cheam to Merton - 30Ml/d	✕				
	Cheam to Merton - 50Ml/d	✕				
	Cheam to Merton – 100Ml/d	✕				
	Cheam to Merton - 200Ml/d	✕				

Table Q-1: London rejection summary

Option Type/Name	Rejection Reasoning
Raw Water Transfer.[1]	
Craig Goch Reservoir expansion	Rejected due the presence of nationally / internationally designated nature conservation sites. Site contained within Elenydd - Mallaen Special Protection Area (SPA), Coetiroedd Cwm Elan / Elan Valley Woodlands Special Area of Conservation (SAC) and Elenydd Site of Special Scientific Interest (SSSI). Raising of the reservoir would directly result in loss of designated land and is considered unlikely to be acceptable from Habitats Directive perspective since other alternative options are available that do not impact Natura 2000 sites. Demonstrating over-riding Public Interest is unlikely to be successful.
Use of a new Thames Reservoir (if successfully promoted) to support River Severn abstraction	Water Resources Management System 2 (WARMS2) modelling has shown that there is minimal DO benefit in discharging a Severn Thames Transfer (STT) pipeline directly to a new Thames Water reservoir, rather than considering separate STT and reservoir options. Therefore, it is considered appropriate to assess the two options separately at Feasibility / Further Screening stage and consider the combination of options through the Programme Appraisal process. The option is rejected on the grounds that there is negligible increase in water availability with a combined option compared with separate STT and reservoir options. Modelling has not been conducted to confirm whether a benefit exists if modelled using stochastically generated drought series.[2]
Use of Farmoor Reservoir to enable additional benefit from a River Severn transfer	Water would be transferred directly to Farmoor, the River Severn and River Thames catchments would not be linked, abstraction would cease at Farmoor and previously abstracted water would remain in the river for abstraction at the London intakes. This option has potential ecological benefits from leaving more water in the upper River Thames during low flows. However, it provides no appreciable DO benefit over discharging straight to the river. Droughts in the lower and upper Thames are not coincident, so when water is most needed for London, Farmoor may be full or nearly full (as in the 1933/34 drought). The benefits would then be, at maximum, the demands on Farmoor (130/140 Ml/d) and, depending on the current drought operating regime and natural recession in the Thames, may be much less. The ability to abstract water for London is also impacted by the way the water is sourced. Water input direct to the Thames is available for re-abstraction downstream, whereas water not abstracted at Farmoor is likely to be considered differently and less likely to be available for abstraction at the London intakes under drought conditions. This option is failed on the basis of water availability. In the context of potential Water Framework Directive (WFD) compliance concerns around the impact of the existing Farmoor abstractions, discussions with the Environment Agency have been held which have included the possibility of providing a tee to Farmoor on the Deerhurst-Culham pipeline allowing water currently abstracted for Farmoor to continue downstream.
Great Spring	Rejected as it was not included as part of Welsh Water's offer at WRMP19, which has now been withdrawn. It has not been offered by Network Rail, who own the abstraction licence, in response to our BAF notice. Also concerns on water quality including risk of Cryptosporidium.

[1] Mott MacDonald/Cascade, Raw Water Transfers Feasibility Report prepared for Thames Water, updated September 2018

[2] SESRO SRO has modelled the potential DO benefit that could be achieve by providing a link between SESRO and STT, this is reported against SESRO / STT interconnector - Conjunctive Use Benefit under Inter-Company Transfers.

Option Type/Name	Rejection Reasoning
Mendips Quarry	Mendips Quarry SRO has the potential to supply water from West Country to the WRSE region, including Thames Water's Kennet Valley and London WRZs. The regional reconciliation has ruled out this transfer in all scenarios, except scenarios of extreme demand and high climate change, as the water is required to meet the West Country regional demands. It is therefore rejected as an option to supply Thames Water.
Minworth STW effluent transfer through existing canal network	Initial assessment of the 75 Ml/d canal transfer proposed by CRT (which would transfer tertiary treated final effluent from Minworth STW through the canal network and River Cherwell to the River Thames at Isis Lock in Oxford) indicates that the River Cherwell would be affected by the full volume of flow in low flow conditions, with an unacceptable impact on the flow regime, water quality and consequently the ecology. It is also assessed that transfer of the full 75 Ml/d to the River Thames at Isis Lock or Duke's Cut would have significant effects on ecology in low flow conditions due to the likely poor water quality and different water chemistry of the canal water / final effluent. Due to the assessed environmental impact and water quality concerns, it is considered unlikely that the Environment Agency would support the option. It is also noted that if the option were to go forward further discussions would be required with Severn Trent Water to confirm the availability of water from Minworth STW. The option is rejected on the grounds of Water Rights and Source Water Quality (Treatability).
Longdon Marsh reservoir to support River Severn transfer	Rejected because of comparatively poor performance against other resource / support elements on several criteria. In the RAG assessment, this scored "red" against estimated land acquisition cost, floodplain encroachment, impact on residential dwellings and archaeology and the historic environment. The floodplain encroachment was of particular concern (over 50% of the site sits in Flood zones 2 and 3) and was the only option that scored "red" against this criterion in the RWT feasibility assessment.
River Wye to Deerhurst – 60.3 Ml/d	Option is rejected as Welsh Water have confirmed that water was no longer available.
Kielder Reservoir	Rejected because it is associated with conveyance elements that fail Stage 2 assessment, the Water UK study concluded that the water from Kielder reservoir is likely to be required by neighbouring areas and there hasn't been a response from Northumbrian Water to our OJEU notice.
Pipeline from Kielder Reservoir	Rejected because of comparatively poor performance against other conveyance elements on several criteria. Total pipeline conveyance length (a proxy for cost) has a red assessment and is significantly longer than other conveyance elements considered in the RWT feasibility study (total length is over 390km). Also performs poorly (with red assessments) against landscape character sensitivity, nature conservation and biodiversity, archaeology and historic environment, impact on recreation, pumping head, construction complexity and operational complexity.
Canals from Kielder Reservoir	Rejected because this would be an excessively long and operationally complex transfer for the DO available. The capacity would be limited by existing canal capacity (to 45 Ml/d) and the total conveyance length (a proxy for cost) has a red assessment and is the longest considered in the RWT feasibility study (total length is over 440km, although length of new pipeline is estimated to be 40km). The operational complexity associated with this conveyance would be disproportionate to the DO benefit that could be achieved, and the option is likely to require some complex construction around historical canal assets (although the detail of this has not been investigated at Stage 2 of the feasibility assessment).
Deerhurst to Culham 100	Rejected as mutually exclusive and significantly longer (73km) and therefore higher in cost than the Deerhurst to Lechlade 100 Ml/d conveyance element (50km).

Option Type/Name	Rejection Reasoning
Deerhurst to Radcot 300	Rejected as mutually exclusive and less promotable on water quality and environmental grounds than the Deerhurst to Culham 300 Ml/d element.
Deerhurst to Radcot 600	Rejected as mutually exclusive and less promotable on water quality and environmental grounds than the Deerhurst to Culham 600 Ml/d element. The Deerhurst to Culham element is rejected at Stage 3 against the 'Nature Conservation and Biodiversity' and 'Water Resources and Water Quality' criteria due to the risk of adverse impact on water quality and ecology. The volume of flow would change the flow regime in the river and have an adverse impact on ecology.
Deerhurst to Culham 600	Rejected against the 'Nature Conservation and Biodiversity' and 'Water Resources and Water Quality' criteria due to the risk of adverse impact on water quality and ecology. The volume of flow would change the flow regime in the river and have an adverse impact on ecology. The option is also comparatively higher in normalised cost than other capacity options.
Deerhurst to Lechlade 100	Rejected as being less cost effective than transfers with greater levels of support, particularly when account is taken of stochastic yields that recognise the impact of climate change and other abstractors utilising licensed amounts.
Cotswold Canal 100 Ml/d Cotswold Canal 300 Ml/d	At WRMP19 both 100 Ml/d and 300 Ml/d the Cotswold Canal STT was rejected by comparison with the Deerhurst Pipeline STT option for the following reasons: • Higher Normalised Cost • Greater operational complexity • Greater construction complexity • Higher risk of spread of non-native invasive species than the pipeline For the RAPID Gate-2 design stage, a study was undertaken by STT SRO to identify a preferred Interconnector option which would provide 'best value' to water company customers when considering environmental and social impacts and benefits, resilience and cost. The study assessed a range of site and route options including direct pipeline options and other options utilising reconstructed sections of the Cotswold Canals supplemented with pipeline to create alternative route options. The assessment identified a preferred interconnector option, based on the information available at Gate 2 and subject to further engagement and public consultation, that would transfer water from the River Severn to the River Thames through a direct pipeline from Deerhurst to Culham (see STT SRO Gate 2 submission for more information). The study recognised that options that utilised reconstructed sections of the Cotswold Canals could provide opportunities for enhancement of tourism and recreation. However, it was concluded that selecting a canal-based option for water transfer would not provide best value, when compared with a direct pipeline option as the pipeline was shown to: • Perform better overall against a range of environmental and resilience criteria • Have the lowest Net Present Cost (including monetised social, natural capital and carbon impacts and benefits), being approximately 25% cheaper than other options A further assessment was also undertaken to assess the potential opportunities for tourism and recreation that could be realised with the full restoration of the canal. This concluded that the additional benefits gained by integrating canal restoration with a water transfer are outweighed by the impacts and costs.

Option Type/Name	Rejection Reasoning
	To test this conclusion, across a range of different planning scenarios, the Cotswold Canal has been included in WRSE investment model. The investment model consistently selects the pipeline interconnector in preference to the canal interconnector. Furthermore, the draft WRSE best value regional plan selected a 400 or 500 Ml/d capacity pipeline transfer in many scenarios, including the WRSE preferred plan (options incorporating sections of canal would be limited to 300 Ml/d maximum capacity). The Cotswold Canal is therefore rejected at Further Screening. Whilst this reflects the assessment and findings for Gate 2 and WRMP24, before any final decisions are made and as part of any future phases of the STT development, the preferred option and other alternatives considered would be subject to further engagement and consultation with stakeholders and also reaffirmation/back checking.
Mythe abstraction reduction - 15 Ml/d – STT resource	The regional reconciliation has demonstrated that Shrewsbury and Mythe (STT resource options) are required by the Water Resources West Region. Through the backchecking processes it was identified that these options would no longer be available to supply WRSE, these options are therefore rejected at Further Screening.
Shrewsbury Redeployment – 25 Ml/d – STT resource	The regional reconciliation has demonstrated that Shrewsbury and Mythe (STT resource options) are required by the Water Resources West Region. Through the backchecking processes it was identified that these options would no longer be available to supply WRSE, these options are therefore rejected at Further Screening.
River Severn (independent unsupported River Severn resource option, without support options)	The independent unsupported River Severn resource option, without support options was rejected at feasibility stage and is not included in the Constrained List; however unsupported River Severn water will be abstracted for transfer in the Deerhurst pipeline when available. This option was rejected at the WRMP19 validation stage after passing Feasibility Stage 3. During Stage 1-3, resource and conveyance elements were reviewed independently, so for the validation elements were grouped into potential combinations to create complete Raw Water Transfer combined options. WARMS2 and Stochastic modelling for each combined option was completed to inform costing and AIC calculations. The AICs for the fully unsupported options perform comparatively poorly across the 300, 400 and 500 Ml/d transfers. Rejected as being less cost effective than transfers with greater levels of support, particularly when account is taken of stochastic yields that recognise the impact of climate change and other abstractors utilising licensed amounts. The Unsupported River Severn has therefore been rejected on cost, but the benefits of the unsupported option are accounted for in all the other supported options.
Reuse[3]	
Reuse Beckton - 380 Ml/d	Investigations at WRMP19 identified that the cumulative impact of developing multiple water reuse, desalination and DRA schemes could increase salinity in the Thames Tideway, resulting in moderate, probably reversible impacts on potentially sensitive ecological receptors as a result of disruption of communities. To mitigate this the decrease in freshwater inputs to the Tideway should be limited to no more than 275-366 Ml/d. The total additional capacity of water reuse and desalination options, that remove fresh water from the Thames Tideway, has therefore been limited to a maximum of 366 Ml/d in the regional water resources plan.

[3] Mott MacDonald/Cascade, Water Reuse Feasibility Report prepared for Thames Water, updated September 2018 and Water Reuse Addendum Prepared for Thames Water, September 2022

Option Type/Name	Rejection Reasoning
	The London Effluent Reuse SRO has therefore considered options up to 300 Ml/d for Beckton Reuse, however at WRMP19 a maximum capacity of 380 Ml/d was assessed as feasible. The 380 Ml/d option remains on the Feasible List, but has been rejected at Further Screening, while further work is ongoing to review the cumulative impact of options on the Middle Tideway salinity.
Abbey Mills PS sewer mining and treatment at Lower Hall	Rejected in preference to Beckton STW option for the following reasons: • The Beckton catchment options are mutually exclusive. Option type capacity combinations are possible for flows <200 Ml/d • Higher treatment cost • Reverse Osmosis (RO) waste stream (75 Ml/d) to be returned to Beckton catchment for treatment due to treatment capacity limitation at Deephams and mitigating risk of increasing chloride concentration in the Deephams discharge • Planning designations, consents and requirements are likely to more onerous at the Abbey Mills PS site / Lower Hall site than at Beckton STW / Gascoigne Way • Effects on heritage assets at the Abbey Mills PS site • Restricted land opportunity for expansion at the Abbey Mills PS abstraction site • Nature conservation and biodiversity importance affected • Greater flood plain encroachment at the Lower Hall site
Abbey Mills PS sewer mining and treatment at Luxborough Lane	Rejected in preference to the Abbey Mills PS (Lower Hall) option for the following reasons: • Options are mutually exclusive – Option type capacity combinations are possible for flows < 200 Ml/d • The land area available at Luxborough Lane offers less scope for expansion / additional treatment processes than at Lower Hall • RO waste stream (75 Ml/d) to be returned to Beckton catchment for treatment due to treatment capacity limitation at Deephams and mitigating risk of increasing chloride concentration in the Deephams discharge • Longer conveyance route (almost twice as long 21km verses 12.8km) • Additional major crossing and conveyance route complexity • There is less potential to mitigate non-traffic impacts upon local properties Abbey Mills PS (Lower Hall) has subsequently been rejected (see those options), with Beckton STW seen as preferable, but the above reasoning still applies with regards to Beckton, and therefore the option is still rejected.
Greenwich PS Sewer Mining (Lower Hall)	The two Greenwich PS options have been rejected at Stage 2 in favour the better performing Millbrook Road and Wandle Valley options. The main / differentiating reasons being: • The assumed limit for reuse in the Crossness catchment is 190 Ml/d • The Crossness catchment options are mutually exclusive • Other options available with shorter conveyance • Visually sensitive viewpoints affected • Heritage assets affected • Lower Hall site is allocated for use as flood compensation storage

Option Type/Name	Rejection Reasoning
Greenwich PS Sewer Mining (Hogsmill)	All the Crossness catchment options (five sets) are mutually exclusive. The two Greenwich PS options (treatment within Deephams treatment works, previously at Lower Hall or at Hogsmill) have been rejected in favour of the better performing Millbrook Road and Wandle Valley options. The main differentiating reasons being: • Greater length of conveyance for the same option type capacity • Visually sensitive viewpoints affected by proposed water reuse treatment works for the Greenwich options • Heritage assets affected The Greenwich PS options also perform less well than the Crossness STW site option due to higher costs, including the need for larger pre-treatment storage (during night flow)
Millbrook Road PS Sewer Mining (Hogsmill)	The Crossness Millbrook Road PS to Hogsmill STW options have been screened out in preference to the better-performing, mutually exclusive Crossness STW site options for the following reasons: • The AIC (average incremental cost) £/m3 for corresponding capacity options is higher • Capacity 50 Ml/d - Millbrook Road is 10% higher than Crossness STW • Capacity 100 Ml/d - Millbrook Road is 13% higher than Crossness STW • More impacts on visual sensitivity particularly at the PS location • Fewer opportunities for biodiversity enhancement at the abstraction site • Potentially restricted land opportunity for expansion at Millbrook Road PS abstraction location • Larger pre-treatment storage (during night flow) required than for the corresponding Crossness STW option at the same capacity • Less potential to mitigate non-traffic impacts upon local properties (site locations and conveyance routes)
Wandle Valley PS Sewer Mining (Hogsmill)	The Crossness Wandle Valley PS option is screened out in preference to the better performing, mutually exclusive Crossness STW site options for the following reasons: • The option has similar conveyance length as the Crossness STW option but lower capacity (only 17 Ml/d) • No potential to expand the option • Average incremental cost (AIC) £/m3 is higher than similar comparable options e.g. 17 Ml/d Wandle Valley PS is 10% higher than 100 Ml/d Millbrook Road PS
Long Reach STW Final Effluent Reuse (adjacent to site) Riverside STW Final Effluent Reuse (adjacent to site)	The reasons for rejecting the Long Reach and Riverside STW options are as follows: • Significant conveyance lengths (>25km) for minimal option capacity: • Long Reach option capacity of 90 or 50 Ml/d - length of conveyance 31.4km • Riverside option capacity of 38 Ml/d - length of conveyance 25.8km • Conveyance complexity due to length and number / type of pipeline crossings for the options. If the limits on potential reuse and desalination options are substantially increased and the volume of reuse resource available from Beckton, Crossness and Mogden is considered insufficient then the Long Reach and Riverside STW reuse options should be reconsidered

Option Type/Name	Rejection Reasoning
Deephams STW Final Effluent Reuse 25 Ml/d	For small capacity options, the upper capacity limit provides better value due to economies of scale. For the Deephams Reuse options the lower and upper capacity bands were established through work undertaken in WRMP14. Deephams Reuse 25 Ml/d is therefore rejected as cost inefficient in comparison to larger options.
Reuse Mogden – 200 Ml/d	Environmental investigations show a significant risk from a 200 Ml/d scheme breaching EA thermal plume characteristics where the extent of the 2°c temperature change from a discharge extends greater than a 25% cross sectional area of the river. The constraint on maximum scheme size for Mogden Reuse is therefore driven by the potential environmental impacts rather than the available final effluent. For future scheme investigations the maximum capacity of a Mogden water recycling scheme is therefore capped at 150 Ml/d and the 200 Ml/d option is rejected. For more information see the London Recycling SRO Gate 2 submission[4].
Mogden Reuse (Mogden STW) – 212 Ml/d	The Mogden STW 212 Ml/d option includes redevelopment of part of the existing Mogden STW Works site to accommodate the necessary reuse treatment, followed by conveyance of the reuse water to connect into the existing TLT. The option is screened out in preference to the option with treatment at a site near Kempton which discharges the reuse water upstream of Walton. The principal reasons for this decision are as follows: • The two options are mutually exclusive • This option involving redevelopment of part of Mogden STW is expected to be more challenging with regards to: o space constraints at the site and the need to potentially build upwards could have visual impacts for the sensitive (exclusively residential) surrounding area o strict planning policy constraints at the site o the lack of opportunity for biodiversity enhancement • The option with reuse treatment at a site near Kempton offers greater flexibility as it discharges upstream of Walton intake, allowing the reuse water to be abstracted for treatment at several different treatment works in west London or in east London (using the TLT). • There is little difference in the Average Incremental Costs (AIC) between the option with treatment at Mogden STW and the option with treatment at a site near Kempton.
Reuse Mogden S Sewer – 50Ml/d	As part of the London Water Recycling SRO Gate 2 investigations, the source flow of the Mogden South Sewer scheme (i.e., raw sewage from South Sewer near Kempton WTW) was monitored at 2-minute intervals from March 2021 through to 2022. The results of this monitoring show a dry weather flow in the sewer ranging between 33 and 36 Ml/d which is substantially below the flow required to support a 50 Ml/d scheme. The maximum size a Mogden South Sewer scheme could support would therefore be ~ 25 Ml/d based on this evidence. The 50 Ml/d Mogden South Sewer option is therefore rejected on the basis of insufficient flow in the sewer.
Beckton Reuse 380 Ml/d	Investigations at WRMP19 identified a cumulative impact of developing multiple water reuse, desalination and DRA schemes could increase salinity in the Thames Tideway, resulting in moderate, probably reversible impacts on potentially sensitive

[4] https://www.thameswater.co.uk/about-us/regulation/strategic-water-resource-solutions/water-recycling-reuse-schemes-in-london

Option Type/Name	Rejection Reasoning
	ecological receptors as a result of disruption of communities. To mitigate this the decrease in freshwater inputs to the Tideway should be limited to no more than 275-366 Ml/d. The total additional capacity of water reuse and desalination options, that remove fresh water from the Thames Tideway, has therefore been limited to a maximum of 366 Ml/d in the regional water resources plan. The London Effluent Reuse SRO has therefore considered options up to 300 Ml/d for Beckton Reuse, however at WRMP19 a maximum capacity of 380 Ml/d was assessed as feasible. The 380 Ml/d option remains on the Feasible List while further work is ongoing to review the cumulative impact of options on the Middle Tideway salinity.
Crossness Final Effluent Reuse	Investigations at WRMP19 identified that the cumulative impact of developing multiple water reuse, desalination and DRA schemes could increase salinity in the Thames Tideway, resulting in moderate, probably reversible impacts on potentially sensitive ecological receptors as a result of disruption of communities. To mitigate this the decrease in freshwater inputs to the Tideway should be limited to no more than 275-366 Ml/d. The total additional capacity of water reuse and desalination options, that remove fresh water from the Thames Tideway, has therefore been limited to a maximum of 366 Ml/d in the regional water resources plan. Beckton, Crossness and Deephams indirect reuse options would all convey treated water to the same discharge location on the River Lee upstream of the intake to King George V reservoir. It is envisaged that indirect reuse at Beckton would require the construction of a conveyance tunnel from Beckton to Lockwood Shaft on the TLT Extension, while direct reuse would require a tunnel from Beckton to Coppermills WTW for blending. The water conveyance distance, whether to Lockwood Shaft or to Coppermills WTW is greater from Crossness than it is from Beckton and it is envisaged that the Crossness reuse treated water would be conveyed to Beckton STW from where it would utilise the same conveyance as Beckton Reuse. Deephams reuse could also utilise the Beckton reuse conveyance as it is expected to pass close to the Deephams site. The combined maximum capacity of Beckton and Deephams reuse options exceeds the 366 Ml/d combined limit. Crossness reuse has been rejected on the basis that there are more water reuse options than could reasonably be required and it is the least favourable reuse option measured against the cost dimension on the Feasible List.
DRA[5]	
Beckton effluent transfer to Teddington and increased abstraction upstream	The option for transfer of Beckton treated effluent to Teddington Weir to support additional DRA was rejected at Stage 1 in WRMP19 on the basis of proximity to abstraction points. The option had been considered as the transfer route could have been potentially negotiated within the Thames Tideway Tunnel (TTT). However, it would have impacted on the design of the tunnel, increasing its diameter by approximately 200mm, causing issues with maintenance and potentially adding treatment requirements for the effluent prior to transfer. As construction of TTT is not substantially complete, there is no opportunity to combine this option with TTT. Without utilisation of the TTT, the transfer tunnel required between Beckton and Teddington Weir is 20km. Alternative options for effluent transfer from Mogden STW have been developed to replace it.

[5] Mott MacDonald/Cascade, Direct River Abstraction Feasibility Report prepared for Thames Water, updated September 2018

Option Type/Name	Rejection Reasoning
	The largest Mogden effluent transfer options have been rejected due to potential ecological impacts arising from water temperature increases associated with the discharge. Further information is provided in the Rejection Register entry for the Mogden DRA (Teddington DRA) option that discharges to the TLT. Similar issues would also prevent the Beckton effluent transfer option from being included on the Feasible List.
Mogden effluent transfer to Teddington and increase of existing river abstraction upstream at Surbiton	This option comprised of increasing an existing river abstraction upstream of Teddington Weir which would require a 300 Ml/d transfer of effluent from Mogden STW to Teddington Weir to maintain Teddington Target Flows. Increasing the abstraction at Surbiton was deemed to have the least impact on the River Thames as it is closest to Teddington Weir. However, the existing intake could not be rehabilitated to deliver the full potential flow of the option and so duplication would be required. This option has been rejected due to the additional conveyance length in comparison with the Teddington DRA option which transfers flow to the TLT. The larger Mogden effluent transfer options discharging to the TLT (Teddington DRA) have been rejected due to potential ecological impacts arising from water temperature increases associated with the discharge. Further information is provided in the Rejection Register entry for the Mogden DRA option (Teddington DRA) that discharges to the TLT. Similar issues would also prevent the Mogden effluent transfer option with abstraction at Surbiton from being included on the Feasible List.
Mogden effluent transfer to Teddington and river abstraction to Queen Mother Reservoir	The option comprises transfer of 300 Ml/d from Mogden STW to Teddington Weir, allowing additional abstraction upstream of Teddington Weir with flows transferred to Queen Mother Reservoir. This option has been rejected due to the additional conveyance length and additional associated cost from the transfer to Queen Mother Reservoir, in comparison to the Teddington DRA option which transfers flow to the TLT. The larger Mogden effluent transfer options discharging to the TLT (Teddington DRA) have been rejected due to potential ecological impacts arising from water temperature increases associated with the discharge. Further information is provided in the Rejection Register entry for the Mogden DRA option that discharges to the TLT. Similar issues would also prevent the Mogden effluent transfer option with abstraction and transfer to Queen Mother Reservoir from being included on the Feasible List.
Mogden effluent transfer to Teddington and river abstraction at Teddington for direct supply	The option comprises transfer of 300 Ml/d from Mogden STW to Teddington Weir, allowing additional abstraction upstream of Teddington Weir with flows treated and put directly into supply. This option is located upstream of the Teddington DRA abstraction location. It is further away from the transfer location and will cause more detriment to river flows. There are also issues with this location due to the high land costs and the number of lease holders on this site. In addition, it is anticipated that the water mains are at capacity and will need significant network reinforcement to utilise the potable water treated at this site. It has therefore been rejected in favour of the Teddington DRA option which transfers flow to the TLT. The larger Mogden effluent transfer options discharging to the TLT (Teddington DRA) have been rejected due to potential ecological impacts arising from water temperature increases associated with the discharge. Further information is provided in the Rejection Register entry for the Mogden DRA option that discharges to the TLT (Teddington DRA). Similar issues would also prevent the Mogden effluent transfer option with abstraction, treatment and direct supply from being included on the Feasible List.
Teddington DRA:	Progression of further studies and modelling by Thames Water has shown marginal increased environmental risks associated with the 100Ml/d option compared to the 75Ml/d option. Overall these have been shown to be minimal in the work undertaken to date.

Option Type/Name	Rejection Reasoning
Mogden effluent transfer to Teddington and new river abstraction at Teddington with direct transfer to TLT. Option capacities above 75 Ml/d	The Environment Agency requires that any option minimises the level of detriment to the river Thames at this location, even beyond the required expectations and policy. It has indicated that scheme sizes greater than 75Ml/d would not be environmental promotable. Taking account of these points, as well as feedback received through the public consultation expressing concerns around the environment, health and recreation in relation to the scheme, we have made the decision that the maximum size of Teddington DRA to be included in the revised WRMP and progressed to Gate 3 should be 75Ml/d. The 100 Ml/d Teddington option is therefore rejected.
Beckton effluent transfer to Teddington and new river abstraction at Teddington connecting to Thames-Lee Tunnel Beckton effluent transfer to Teddington and new river abstraction at Teddington with transfer to Queen Mother Reservoir Beckton effluent transfer to Teddington and new river abstraction and treatment at Teddington for direct supply	Remote from abstraction meaning high length of conveyance and associated cost compared with equivalent Mogden option. The option for transfer of Beckton treated effluent to Teddington Weir to support additional direct river abstraction has been rejected on the basis of proximity to abstraction points. The option had been considered for review through coarse screening as the transfer route could be potentially negotiated within the Thames Tideway Tunnel. However, it would have impacted on the design of the tunnel, increasing its diameter by approximately 200mm, causing issues with maintenance and potentially adding treatment requirements for the effluent prior to transfer. As the tunnel is now under construction, the option could not be implemented without negatively impacting effectiveness of the Thames Tideway scheme. Without utilisation of the Thames Tideway Tunnel, the transfer tunnel required between Beckton and Teddington Weir is 20km. Alternative options for effluent transfer from Mogden STW have been developed to replace it.
New river abstraction on Lower River Roding	This option combines the flows from the Lower Roding and Seven Kings assessment points, for which it was estimated that the volumes available were 17.3 Ml/d and 3.9 Ml/d with a reliability of supply of 70% of the year, and transfer to Lee Valley Reservoirs, or full treatment and put into direct supply. The Environment Agency has identified that abstraction would not be allowed to reduce flows below 29.1 Ml/d, a hands off flow condition. From a review of the long-term flow record (1950-2015) at the Environment Agency's Roding at Redbridge flow gauge, this hands-off flow condition would protect flows less than Q90 and abstraction would not reduce these low flows. At moderately low flows, abstraction would be constrained to less than 3 Ml/d to comply with the hands-off flow condition. A further review of the long-term flow record identified that, in drought conditions, it is improbable that the scheme would provide any significant DO benefit as there would be very little flow available above the hands-off flow at times when the resource is most needed. For example, in the severe 1976 drought between the months of May to September, abstraction would only have been possible on 42 days with abstraction of 17.3 Ml/d on only 18 days (12% of the period). Abstraction over the May to September 1976 period would have yielded only a total of about 484 Ml across the full

Option Type/Name	Rejection Reasoning
	period (an average of 3 Ml/d during the drought critical period driving the DO assessment). In addition, this source is not anticipated to be resilient with climate change.
New river abstraction on River Mardyke	This option comprised of a new intake on the River Mardyke, abstraction at 3.7 Ml/d with full treatment and distribution of flows directly into supply. Based on historical data there is insufficient flow at this location for use as a reliable resource. In addition, this source is not anticipated to be resilient with climate change. The Environment Agency has identified that abstraction would not be allowed to reduce flows below 4.41 Ml/d, a hands-off flow condition. Abstraction would therefore be constrained to less than 2 Ml/d to comply at moderately low flows. From review of the long-term flow record (1950-2015) at the Environment Agency's Mardyke at Stifford flow gauge, this hands-off flow condition would protect flows less than Q90 and abstraction would not reduce these low flows. At moderately low flows, abstraction would be constrained to less than 2 Ml/d to comply with the hands-off flow condition. A further review of the long-term flow record identified that in drought conditions it is improbable that the scheme would provide any significant DO benefit in drought conditions as there would be very little flow available above the hands-off flow when the resource is most needed. For example, in the severe 1976 drought, between the months of May to September, abstraction would only have been possible on 65 days with abstraction of 3.7 Ml/d on only 26 days (17% of the period). Abstraction over the May to September 1976 period would have only yielded a total of about 160 Ml/d (an average of just over 1 Ml/d during the drought critical period driving the DO assessment).
New river abstraction on River Rom/ Beam	This option comprised a new intake on the River Rom/Beam, abstraction at 7.2 Ml/d with full treatment and distribution of flows directly into supply. Based on historical data there is insufficient flow at this location for use as a reliable resource. In addition, this source is not anticipated to be resilient with climate change. The top-down review of resource availability included in Appendix A of the Feasibility Report identified a potential new option for abstraction from the River Rom/Beam of up to 7.2 Ml/d with a reliability of 70% of the year. A potential option is to abstract flows from the River Rom/Beam, then treat and supply directly, as the Lee Valley Reservoirs (the nearest raw water reservoirs) are over 15km away. The Environment Agency has identified that abstraction would not be allowed to reduce flows below 8.8 Ml/d, a hands-off flow condition. From a review of the long-term flow record (1965-2015) at the Environment Agency's Beam at Bretons Farm flow gauge, this hands-off flow condition would protect flows less than about Q85 (the flow of a river which is exceeded on average for 85% of the time). Abstraction would however be constrained at moderately low flows between Q85 and about Q65 to less than 1 Ml/d with this hands-off flow condition at moderately low flows. Based on the historical record, it is improbable that the scheme would provide any significant (DO) benefit in drought conditions as there would be very little flow available above the hands off-flow when the resource is most needed. For example, in the severe 1976 drought during the months of May to September, abstraction would only have been possible on 25 days (16% of the period) with abstraction of 7.2 Ml/d only possible on 19 days. Abstraction over the May to September 1976 period would have yielded only a total of about 629 Ml (an average of 4.1 Ml/d during the drought critical period driving DO assessment).
New river abstraction on River Ingrebourne	This option comprised of a new intake on the River Ingrebourne, abstraction at 4.2 Ml/d with full treatment and distribution of flows directly into supply. Based on historical data there is insufficient flow at this location for use as a reliable resource. In addition, this source is not anticipated to be resilient with climate change. The Environment Agency has identified that abstraction would not be allowed to reduce flows below 11.5 Ml/d near to the tidal limit, a hands-off flow condition. Abstraction would be

Option Type/Name	Rejection Reasoning
	constrained to be less than 2 Ml/d to comply with this hands-off flow condition at moderately low flows. Based on the historical record, it is improbable that the scheme would provide any significant DO benefit in drought conditions as there would be very little flow available above the hands off-flow when the resource is most needed. For example, in the severe 1976 drought between May and September, abstraction would only have been possible on 45 days (30% of the period) with abstraction of 4.2 Ml/d only possible on 16 days. Abstraction over the May to September 1976 period would have yielded only a total of about 206 Ml (an average of 1.3 Ml/d during the drought critical period driving DO assessment). From a review of the long-term flow record (1970-2015) at the Environment Agency's Ingrebourne at Gaynes Park flow gauge (located upstream of the hands-off flow point), this hands-off flow condition would protect flows less than about Q90. Abstraction would however be constrained at moderately low flows between Q90 and about Q70 to less than 2 Ml/d to comply with the hands-off flow condition.
New river abstraction from River Lee at Three Mills Lock, transfer to North Woolwich Road site for treatment to potable quality, followed by transfer to service reservoir	This option included abstraction at Three Mills Lock, transfer to seven day bankside storage and treatment location south of North Woolwich Road, followed by conveyance to Woolwich Common Service Reservoir south of the River Thames. Reservoir storage equivalent to seven days throughput has been provided to help manage and mitigate the risks associated with pollution in the River Lee and to allow the abstraction regime to be better controlled. In particular these pollution risks relate to pollution from contaminated land around the Olympic Park area. A number of constraints were found including: construction complexity, pumping head, ownership of site and archaeology and historic environment criteria. This option is mutually exclusive with the indirect option to abstract at Three Mills Lock which involves partially treating flows at the abstraction location and transfer to the Lee Valley reservoirs. The transfer to the existing River Lee reservoirs provides greater dilution and retention time between abstraction and supply allowing more time to respond to a pollution incident and reducing the potential impact. The indirect option is therefore considered to be a lower drinking water safety plan risk to drinking water safety, compared to the direct option. Additionally, in comparison to the indirect option the direct option found more constraints during the assessment. The option for DRA and supply to Woolwich Common Service Reservoir has therefore been rejected in comparison with the indirect option to the Lee Valley Reservoirs. Lee Valley Reservoirs have been rejected in favour Deephams Reuse. Rejection remains valid.
New river abstraction from River Lee at Three Mills Lock and transfer to Lockwood Thames-Lee Tunnel Extension	The Lower Lee DRA option has been rejected in comparison with the Deephams reuse option to which it is mutually exclusive. The Deephams option performs better than the Lower Lee option in a number of respects including having a higher DO, lower cost and better operability. The operability concerns for the Lower Lee options arise from 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 conditions. Following completion of the further studies by Thames Water, a joint review of the findings with the Environment Agency has established that a Deephams STW Reuse option and the Lower Lee DRA are incompatible with the environmental ambition flow targets that the Environment Agency is seeking to deliver for the Lower River Lee through WRSE and the Environment Agency's Environmental Destination work, in the absence of measures to deliver compensatory flows. Deephams Reuse and the Lower Lee DRA can therefore only be considered for implementation after 2060 following delivery of other water resources options which provide these flows. The rejection of the Lower Lee DRA in comparison with Deephams Reuse remains valid.
Raw Water Purchase	

Option Type/Name	Rejection Reasoning
Chingford Raw Water Purchase	Option rejected as the third party now requires the full flow of the agreement and is unable to continue receiving the reduced transfer due to Environmental Destination needs.
Desalination[6]	
River Lee, Coppermills WTW (blended)	Significant compensation would be required to relocate well developed commercial and industrial businesses as part of land purchase agreements. This option also lies furthest from the River Thames, requiring a longer abstraction pipeline through third party land or public highways, including a number of major transport link crossings, industrial and residential properties. A recognised viewpoint lies within 5km of the proposed site which could be affected by this option. This option also has the most residential properties within 350m of the site boundary, with over 1500 properties identified that would be affected by construction impacts. This option is directly comparable to Estuary North, Beckton which performs better due to its flexibility regarding potential land availability at Beckton STW, has fewer residential properties around the site and offers the potential resilience benefit of improving distribution from the existing Thames Gateway Desalination Plant. Although this option would require a shorter tunnelled conveyance, both treated water tunnel conveyances would be complex but the River Lee conveyance would cross significant infrastructure of the Olympic Park. Estuary North, River Lee is therefore rejected in favour of Estuary North, Beckton which also has the potential to facilitate future expansion of desalination capacity at Crossness. It is noted that Option 1b would require a shorter tunnel to convey the treated water to Coppermills WTW, however, for both options the tunnels will be complex and be required to cross significant infrastructure and Option 1a would offer the potential benefit of allowing the existing Thames Gateway Desalination Plant to be connected and thus improve its distribution to the water supply network and thus its resilience. Direct comparison of these two options highlights that Option 1a is preferable to Option 1b and therefore Option 1b will not be progressed to Stage 3.
Manor Road, Erith, Honor Oak, (blended)	There is no Thames Water owned land in the vicinity, with land purchase required and the added risk that a portion of the site is Crown land. This option is also located furthest east, requiring a longer tunnel to convey treated water to Honor Oak or Coppermills for blending into the potable network. The land is un-developed, greenfield land entirely within the zone 2 or 3 floodplain, so some degree of compensatory land may be required. This option has been rejected in favour of Estuary South, Waldrist Way which requires a significantly shorter tunnel, has better existing access to the road network and is not located within a flood zone 2 or 3. Estuary South, Waldrist Way offers the potential resilience benefit of improving distribution from the existing Thames Gateway Desalination Plant.
Tripcock Ness, Thamesmead Coppermills WTW (blended)	The Stage 2 assessment identified that the land that had been chosen for the Thamesmead treatment site is not feasible as it is allocated in the Local Plan as Metropolitan Open Land (MOL) 20+6 hectares, with mixed use land (including 2,000 residential housing and commercial use) 27.5 hectares and a proposed primary school site 1.9 hectares. An alternative site in the vicinity has therefore been identified south of Erith Marshes on Waldrist Way, which is designated as a different option. This option is rejected as site is deemed unviable due to large planned residential development (outline planning permission granted) and other land being designated Metropolitan Open Land.

[6] Desalination Feasibility Report prepared for Thames Water by Mott MacDonald/Cascade, updated June 2017

Option Type/Name	Rejection Reasoning
Crossness (Erith Southern Grazing Marshes)	The Stage 3 assessment identified marginal difference in the normalised cost of all Crossness blended desalination options. This option lies on greenfield marsh land which is less preferable than comparable options on brownfield sites and is located furthest from the point of distribution, requiring the longest conveyance with the most infrastructure crossings. This option has been rejected in favour of Estuary South, Waldrist Way which is on a mixed greenfield and brownfield site. The normalised costs are similar, however the Estuary South, Waldrist Way option has better scope for biodiversity improvement and is preferable for preservation of water quality. It also offers the potential resilience benefit of improving distribution from the existing Thames Gateway Desalination Plant and would allow desalination capacity to be introduced in a phased approach, with the potential for two 150 Ml/d plants to be constructed at Beckton and south of Crossness using the same conveyance. The 150 Ml/d option rejected as less environmental impact at Waldrist Way site but should be revisited if this site proves unavailable. The 300 Ml/d option rejected at Stage 3 due to environmental sensitivity of potential site and size of site would reduce potential for on-site environmental mitigation.
Crossness Desalination (Unblended) - 65 Ml/d - Option 3A	This option would continuously supply Northumberland Heath service reservoir with desalinated water. It has been rejected due to substantial dis-benefits against the promotability, deliverability and resilience dimensions at WRMP19 fine screening. This was reviewed at WRMP24 and the rejection reasoning was found to still be valid. Desalination plant outage events would result in changes in water quality as the supply would need to revert to water supplied from the ring main via Honor Oak. Our experience is that these changes in water quality would lead to a significant increase in customer water quality complaints. This is a substantial disbenefit associated with the customer acceptability sub-dimension of promotability. Operation of the Crossness plant without water for blending would mean that the full capacity of the plant may not generally be utilised, as the Crossness plant is less suitable than conventional water resources for supplying other zones (due to the impact of changing water quality). The assumed DO is based upon forecast annual average demand on Northumberland Heath in 2070 of 65 Ml/d, but the current average demand on Northumberland Heath is only 50 Ml/d meaning that up to 15 Ml/d may be unutilised in the short-medium term. This is a substantial disbenefit when assessed against the operability sub-dimension of deliverability. Desalination resources contribute less to system resilience than surface water resources which can be treated at alternative conventional WTW in the event of a treatment outage. Furthermore, for the unblended Crossness desalination option, the works could not be used to support outage at another works without a change in water quality and the resolution of likely consequential customer complaints. This is a substantial disbenefit measured against the system outage sub-dimension of resilience.
Battersea- new treatment / blend site direct-to Thames Water Ring Main – Option 4	Land availability search radius of 5km from TWRM shaft – yields no viable site. Option is therefore rejected due to no suitable land areas being available.
Groundwater[7]	
GW - Epsom	Disaggregation of the licence would allow abstraction to be increased from the Chalk aquifer as it would remove constraints within the existing individual components of the group licence. Only very minor engineering works would be required. The Environment

[7] Mott MacDonald/Cascade, Groundwater Feasibility Report prepared for Thames Water, updated September 2018

Option Type/Name	Rejection Reasoning
	Agency will not support the proposed licence disaggregation due to concerns about the impact of the increased abstraction on flows in the River Hogsmill. This option was therefore rejected due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS[8] status)
Nonsuch Increase DO	Option was rejected as further developed showed it to be a duplicate of Epsom GW option.
North London Licence Trading/ Transfer	Attempts to engage with third party supplier have not been successful. Rejected at Stage 1 on the basis of there not being a realistic prospect of an abstraction licence.
Shortlands	Shortlands is rejected due to uncertainties regarding the impact of the abstraction on groundwater levels in the Chalk aquifer, flows in the River Ravensbourne, reduction in DO at nearby Thames Water abstractions and the stability of the Thanet Sands Formation. Results from the groundwater modelling were inconclusive, however, the increase in abstraction is likely to lead to a reduction in groundwater levels at TWUL abstractions in the Ravensbourne catchment, such as Deptford. This simulated reduction in groundwater levels may result in a reduction in DO at the source, therefore reducing the potential DO benefit of the proposed option. There is a known issue with Thanet Formation stability in the wider area, with ground collapses occurring to the southeast. An increase in abstraction at Shortlands will increase the risk of instability and collapse of the Thanet Formation nearby. This is a potential health and safety issue. This therefore rejected due to hydrogeological suitability and water source and availability.
London confined Chalk (north-east)	A review of data from the British Geological Survey BGS, Environment Agency and Essex and Suffolk Water indicate that there is unlikely to be sufficient yield within the identified area to provide any DO benefit for the London WRZ or justify further investigation. This therefore failed due to hydrogeological suitability and water source and availability issues.
Removal of DO Constraints	
Epsom Removal of Constraints	Rejected following Environment Agency consultation (Refer to letter from Environment Agency to regulatory contacts in water companies in England, 15 November 2021, Information Letter EA/11/2021). The Environment Agency are carrying out a review of groundwater abstraction licences in comparison to recent actual abstraction rates. To avoid future growth in abstraction and resultant environmental damage or deterioration the Environment Agency are expecting to reduce the quantities on abstraction licences where this risk is considered significant. Risk will be determined through deterioration risk investigations being conducted as part of the Water Industry National Environment Programme (WINEP). Our investigations indicate that there is a potential risk of Epsom causing environmental damage or deterioration, on the basis of this the option has been rejected.

[8] Catchment abstraction management strategy

Option Type/Name		Rejection Reasoning
Reservoir[9]		
Site 13 Uffington	Site 34 Bicester	These options failed due to insufficient clay thickness of less than 10 metres. Any reservoir site will require a sufficient depth of clay to provide an impermeable base. The depth of this layer would be determined by site-specific factors, however a depth of at least 10m will be required for lining purposes to ensure that there is no leakage into the groundwater and to contribute to the construction of embankments. Sites with insufficient clay thickness are rejected due to significant environmental impacts external to the site to import large volumes of clay.
Site 20 West Hanney	Site 45 Whitchurch	
Site 47 Bierton	Site 48 Wingrave	
Site 46 Stewkley	Site 55 Maidenhead	
Site 29 Ambrosden		
Site 3 Cricklade	Site 32 Benson	These options failed due to statutory heritage designations which include World Heritage Sites, Scheduled Monuments and Grade I Listed Buildings. The National Planning Policy Framework (NPPF) identifies these designations amongst those heritage assets of the highest significance, which should be preserved from development. These constraints are considered to be of such importance, and with respect to Listed Buildings of such a site-specific nature, that their presence within a proposed site area was considered sufficient at Stage 1 of the screening process to render it unsuitable for reservoir development.
Site 9 Lechlade on Thames	Site 44 Stone	
Site 28 Brightwell Cum Sotwell	Site 53 Wokingham	
Site 24 Kidlington		
Site 27 Beckley	Site 46 Stewkley	
Site 24 Kidlington		These options failed due to statutory nature conservation designations due to Ramsar, Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Sites of Special Scientific Interest (SSSI) designated conservation sites. These designations are regarded as the UK's best wildlife habitats and as such should be protected from development. SPA, SAC and Ramsar sites are protected under European Directives. The NPPF identifies all these designations as being of importance when determining planning applications. As part of the screening process the identification of any of these designated sites within a proposed site area was considered sufficient to reject that option.
Site 27 Beckley		
Site 31 Wheatley		

[9] Mott MacDonald/Cascade, Reservoirs Feasibility Report prepared for Thames Water, updated June 2017

Option Type/Name	Rejection Reasoning
Site 4 Swindon	Rejected due to the presence of built development on the site
Site 51 Burghfield	
Site 1 Minety	Site rejected because it contains Grade II Listed Buildings, would cause the loss of over 10 residential dwellings and is distant both from an intake / outfall point and from people who would potentially benefit from access to a recreational resource.
Site 2 Leigh	A disused airfield which covers a large proportion of the Leigh site is now owned and managed as a Wiltshire Wildlife Trust reserve and is a County Wildlife Site, which is open to the public. The majority of this reserve would be lost should the site be selected for reservoir development. The site is also located distant from a potential intake/outfall point and has large topographical variation across the site.
Site 5 Broad Blunsdon	Rejected due to poor performance across many criteria including presence of Ancient Woodland and distance from potential intake/outfall points.
Site 6 Highworth	The site boundary includes two Grade II Listed Buildings and a national recreational resource – Thames Path National Route, plus other public rights of way including local footpaths and a bridleway. It is located distant from potentially suitable intake / outfall points and there is high topographical variation across the site.
Site 7 Wanborough	Rejected due to poor performance in many assessment criteria including planning, cost and flood risk.
Site 8 Bishopstone	This site is located near to a national designated landscape, with the North Wessex Downs Area of Outstanding Natural Beauty (AONB) being only 300m away. The site is also distant from a potential intake / outfall location and has a high degree of topographic variation.
Site 10 Shrivenham	The site contains Ancient Woodland, considered to be irreplaceable, as well as Listed Buildings and comprises high value agricultural land. It is close to the North Wessex Downs AONB, is remote from people who could benefit from access to a new recreational facility and access requires use of local roads that passes through built up areas.
Site 11 Clanfield	The site comprises of mainly high value agricultural land and construction access would be via B roads and through Farringdon. There is also a high level of topographic variation (25m difference) and significant difficulties to achieve rail access - 11km from an operational railway line, with requirement for many structures, although can make use of disused railway line for some of the route.
Site 12 Faringdon	The site contains several woodlands designated as Ancient Woodland as well as Listed Buildings. It also contains a high number of residential properties that would be lost and has a large variation in topography.
Site 14 Brize Norton	The site contains Ancient Woodland and predominately high value agricultural land. There is a high level of topographical change across the site and access requires use of local roads through built up areas. It would also involve the loss of a high number of residential dwellings.
Site 15 Brampton	The site contains sites of archaeological interest, including Grade II Listed Buildings and comprises mainly high value agricultural land. In addition, more than 50% of the site sits within flood zones 2 or 3.
Site 16 Witney	The site contains Grade I and Grade II Listed Buildings, and comprises mostly high value agricultural land. The site contains 25-50% within flood zones 2 or 3, and contains a high number of residential dwellings which would be lost.
Site 17 Stanford in the Vale	The site does contain Grade I and Grade II Listed Buildings and a high number of residential properties would be lost. Access to the site also requires use of local roads that pass through built up areas.

Option Type/Name	Rejection Reasoning
Site 18 Longworth	This site contains Ancient Woodland which is considered to be irreplaceable and would be difficult to avoid through boundary revisions. Furthermore, part of the site is included within/abuts the Conservation Area of Longworth and is remote from suitable rail access.
Site 19 South Leigh	This site contains Ancient Woodland which would not be possible to replace and Listed Buildings which would be lost through reservoir construction. Significant difficulties to achieve rail access – more than 5km from an operational railway line, with requirement for upgrade of many structures, although potential to use disused railway line South of Eynsham and Cassington.
Site 21 Stanton Harcourt	Over 50% of the site sits within flood zones 2 and 3, presenting a high risk of flooding to the site. Furthermore, recreational resource of national importance would be affected - Thames Path National Trail, plus public rights of way including two footpaths, and a bridleway.
Site 22 Abingdon (30Mm^3 and 50Mm^3)	Development of a small reservoir on the site would potentially "sterilise" the site preventing a large reservoir from being constructed at a later date. It is therefore recommended that if small reservoirs are required then they should be designed so as to allow future expansion. The following small single-phase reservoir sizes have been screened out on the grounds that their development would prevent a large reservoir from being developed on the site. • Abingdon Reservoir single phase 30Mm^3 • Abingdon Reservoir single phase 50Mm^3 Should a small reservoir be required (e.g. to supply the SWOX WRZ) then the first 30 Mm^3 phase of the two phase 30Mm^3 + 100 Mm^3 would be more appropriate as it would not preclude subsequent expansion.
Site 23 Wantage	This site performed poorly against many of the performance measures and contains Ancient Woodland, considered to be irreplaceable, a Grade II Listed Building and is within 100m of an AONB. Land use is mainly high grade agricultural land, topographic variations are high and a high number of residential dwellings would be lost as a result of development.
Site 25 Oxford	The site contains a number of nationally designated assets including Ancient Woodland, two Grade II listed buildings, part of a Registered Park and Garden and a national trail. Also performs poorly in terms of flood risk.
Site 26 Didcot	The site lies within an Area of Outstanding Natural Beauty, comprises mostly high value agricultural land and construction traffic would make use of local roads that pass through built up areas.
Site 30 Drayton St Leonard	This site is distant from an operational railway, contains predominately high value agricultural land and performs poorly in terms of the high number of people that would likely be affected by construction.
Site 33 Chalgrove	Rejected due to poor performance across many criteria including construction traffic and topographical variation.
Site 35 Chargrove Airport	The site performs poorly against many of the performance measures. It contains Grade II Listed Buildings, part of a Registered Historic Battlefield, recreational resources of national/regional importance and high value agricultural land. Land acquisition costs are likely to be high. A large number of residents are likely to be impacted by construction activities and construction traffic would pass through built up areas.
Site 36 Marsh Gibbon 100Mm³	Further development of the conceptual ground model for the site, and subsequent review of the earthworks cut fill balance, showed that it is not possible to obtain a storage capacity of 100Mm³ within the identified potential site.

Option Type/Name	Rejection Reasoning
	The geotechnical review indicated that the clay volume that would be won from the borrow pit was significantly smaller than that assumed in WRMP19. This was due to shallower borrow pit excavation than originally assumed, therefore a larger footprint reservoir is required to achieve the same storage volume leading to more clay required for construction of the longer reservoir embankments. As a result, the Marsh Gibbon 100 Mm³ option would not fit within the site boundary and is therefore rejected.
Site 38 Great Haseley	The site contains Ancient Woodland which is considered to be irreplaceable. It is distant from an operational railway line, has high topographical variation and construction traffic would need to pass through a built-up area.
Site 39 Quainton	The site does contain Ancient Woodland and a number of Listed Buildings, which would be lost as a result of development. There is also high topographical variation across the site.
Site 40 Postcombe	Rejected due to insufficient storage capacity.
Site 54 Bracknell	
Site 41 Chinnor 50Mm^3	Further development of the conceptual ground model for the site, and subsequent geotechnical review indicated that the clay volume that would be won from the borrow pit was significantly smaller than that assumed in WRMP19. This was due to shallower borrow pit excavation than originally assumed, therefore a larger footprint reservoir is required to achieve the same storage volume leading to more clay required for construction of the longer reservoir embankments. As a result, the updated Chinnor 50 Mm³ option now has a footprint that is similar to that assumed for the Chinnor 75 Mm³ option at WRMP19 and is therefore rejected for the same reason as Chinnor 75 Mm³.
Site 41 Chinnor 75Mm^3	Chinnor performed poorly across a number of the assessment criteria including cost, effects on archaeology and the historic environment and floodplain encroachment. In consequence, this site was rejected for a 75Mm^3 capacity reservoir.
Site 43 Aylesbury 75Mm^3	Aylesbury 75 Mm^3 was rejected due to the proximity of new housing developments immediately to the south of the site and potential for impacts on visual amenity and construction complexity.
Site 49 Cheddington	Acquisition costs are likely to be moderate due to the presence of a golf course within the site boundaries and there is a moderate variation in topographic levels across the site. The site contains Listed Buildings and includes part of a registered Park and Garden. Furthermore the site is located distant from potential intake / outfall point which would impact its cost and its carbon emissions.
Site 50 Kintbury	This site performs poorly against a number of measures. The site is situated within an AONB, contains Ancient Woodland and Listed Buildings. It is also a significant distance from an intake/outfall, and has high topographic variation. In addition, construction traffic would need to pass through small settlements and a high number of residential dwellings would be lost.
Site 52 Beech Hill	The site contains Ancient Woodland, which is considered to be irreplaceable. It also contains a number of Listed Buildings, numerous public rights of way including a national cycle trail. Additionally, it has high topographic variation, a high number of residential dwellings would be lost and acquisition costs are likely to be high.
Site 37 - Ludgershall - 50Mm^3	The options feeding into the upper Thames River are subject to a combined discharge limit of 600 Ml/d. This limit applies to STT, SESRO, Chinnor Reservoir, Marsh Gibbon Reservoir, Ludgershall Reservoir, Aylesbury Reservoir and Haddenham Reservoir. Scenario runs of the investment model were undertaken to assess which options within the combined limit are selected. STT and SESRO were selected as preferred options and in combination reach the 600 Ml/d discharge limit.
Site 37 - Ludgershall - 30Mm^3	
Site 43 - Aylesbury - 50Mm^3	

Option Type/Name	Rejection Reasoning
Site 43 - Aylesbury - 30Mm^3	Marsh Gibbon and Chinnor have been included on the Constrained List to provide reservoir options up to the discharge limit, in combination with SESRO, This is to allow the model maximum possible flexibility in option selection. These reservoirs were selected in preference to Ludgershall, Aylesbury and Haddenham as they perform better against Stage 3 Feasibility criteria. Ludgershall, Aylesbury and Haddenham reservoirs have therefore been rejected at Further Screening.
Site 42 - Haddenham - 30Mm^3	
Inter-company Transfers	
Cheam to Merton - 30Ml/d	This option was identified through WRSE transfers option identification and definition. SES have advised that they can provide 15 Ml/d for transfer. Increased volumes of water may be available but would be dependent on SES implementing TUBs/NEUBs, and successfully delivering their demand management programme, to create surplus. As such, larger variants of the Cheam to Merton transfer are not confirmed as being resilient.
Cheam to Merton - 50Ml/d	
Cheam to Merton – 100Ml/d	
Cheam to Merton - 200Ml/d	

Table Q-2: London rejection summary

Specific option rejection – SWOX WRZ

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
Groundwater						
	Woods Farm licence increase	✕				
	GW - South Stoke 2 (with treatment)	✕				
	GW - Moulsford 2 (with treatment)	✕				
	Cotswold Edge	✕				
	River Marden		✕			
	GW - South Stoke 1				✕	
	Pump House Water Ltd	Confirmed the licence has been revoked, this option was therefore rejected without screening. This option is therefore not listed in below rejection reasoning tables.				
Aquifer Recharge						
	AR-Cricklade		✕			
Removal of Constraints to DO						
	Britwell Removal of Constraints				✕	
	Witheridge Hill borehole pumps		✕			
Inter-Zonal Transfers						
	Kennet Valley to SWOX – 8.31 Ml/d			✕		
	Transfer from Hambleden WTW to Long Crendon SR to an existing pipeline at Milton	✕				
	Transfer from Hambleden WTW to Long Crendon SR to an existing service reservoir at Shotover.	✕				
	Transfer from Hambleden WTW to Long Crendon SR to an existing pipeline at Marston	✕				
	Transfer from Hambleden WTW to Nettlebed service reservoir to Beggarsbush service reservoir at South Oxford area.	✕				
Inter-Company Transfer						
	Wessex to SWOX - Charlton WTW to Minety SR and from there to Flaxlands SR in South Swindon.					✕
	Wessex to SWOX - Charlton WTW to Minety SR and from there to Blunsdon SR in South Swindon		✕			
	Wessex to SWOX - Charlton WTW to Minety SR and from there to Ashton Keynes WTW in South Swindon			✕		

		Rejection Stage				
Type	Option	Stage 1	Stage 2	Stage 3	Validation	Further screening
DRA						
	River Thames Culham abstraction - Abstraction at Culham and transfer to Farmoor Reservoir via a new pumping main	✕				
	River Thames Days Weir Abstraction - River Thames abstraction at Days Weir and transfer to Farmoor	✕				
	Recommission existing DRA and treatment at Culham and directly supply to SWOX			✕		

Table Q-3: SWOX rejection summary

Option Type/Name	Rejection Reasoning
	Groundwater.[10]
Woods Farm licence increase	An increase in abstraction licence and construction of a new abstraction borehole in the unconfined Chalk, 1.4 km east of the existing Woods Farm Boreholes, would enable an increase in abstraction from 5 to 8 Ml/d (average) and from 5.5 to 9 Ml/d (peak). The option also includes upgrades to WTW treatment and a new 1.4 km raw water pipeline from the new satellite borehole to Woods Farm WTW. The Environment Agency will not support an increase in abstraction licence at this location due to concerns over the impact of the abstraction on groundwater and on flows in the River Thames. This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
GW - South Stoke 2 (with treatment)	Construction of four new abstraction boreholes on private land in the unconfined Chalk north of Goring. Water abstracted from the boreholes will be treated at a new on-site WTW, with 1.8 km run to waste pipeline for clearance pumping of the boreholes to the River Thames; 1.6 km waste run from the WTW to the existing local sewage works; and 1.4 km treated water pipeline to supply. The Environment Agency will not support a new licence in this location, without a corresponding reduction in upstream licence or hands-off flow condition, due to concerns over the impacts on flows in the River Thames and deterioration of the Chiltern Scarp groundwater body. This therefore failed due to no realistic prospect of an abstraction licence being granted and concerns about the water availability (CAMS status).
GW - Moulsford 2 (with treatment)	Three new unconfined Chalk boreholes, treated at a new WTW which is partially on private land. Includes short lengths of raw, treated and washout pipelines and reservoir demolition on site. The Environment Agency will not support a new licence in this location, without a corresponding reduction in upstream licence or hands-off flow condition, due to concerns over the potential impacts on flows in the River Thames and subsequent potential deterioration of the Chiltern Scarp groundwater body. This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
Cotswold Edge	New borehole in the Cotswold Edge GWMU, abstracting from the Jurassic limestone aquifer. The Environment Agency has concerns regarding the potential impacts of a groundwater abstraction on surface water flows. Any new abstraction licence would be subject to a hands-off flow condition or may not be supported. There is also concern about the resilience of the aquifer to drought. Uncertain thickness and structurally complex geology means that the potential yield and success of a groundwater or AR/ASR option is considered to be high risk. This therefore failed due to no realistic prospect of an abstraction licence and drought resilience issues.
River Marden	New and unproven groundwater development in the headwaters of the River Marden. Two or more boreholes to be drilled in the Corallian Group aquifer. This option failed due to the low potential yield of the proposed boreholes, the cost to investigate yield and water quality. This therefore failed due to hydrogeological suitability and water source and availability issues.
GW - South Stoke 1	The option comprises drilling of a new borehole in the Chalk and transfer of the Childrey Warren licence to the new site. This option is mutually exclusive of the Moulsford 1 option, which has been carried forward to the further screening stage. The Moulsford option performs better on cost and there is also a risk of the South Stoke option derogating existing Thames Water groundwater

[10] Mott MacDonald/Cascade, Groundwater Feasibility Report prepared for Thames Water, updated September 2018

Option Type/Name	Rejection Reasoning
	sources. Therefore, the South Stoke 1 option was rejected at the validation stage.
	Aquifer Recharge
AR-Cricklade	Construction of three new recharge boreholes in the confined Great Oolite Limestone aquifer on-site at the existing Cricklade STW. All of the Cricklade sites and surrounding area is in Flood Zone 3. The Latton site is in area at high risk of surface water flooding and is known to be prone to groundwater flooding. There are no likely impacts on the groundwater body, but there is potential to impact on local surface water bodies where they cross the GOG outcrop (particularly the River Churn and Ampney Brook which are known to be impacted by abstraction at Latton). Recharge water to be supplied by Farmoor WTW will require increase in licence at Farmoor of around 12 Ml/d. This is currently designated as no water available and a licence increase at Latton is likely to face regulatory challenge due to recent sustainability reductions at this site. There is uncertainty about aquifer properties in the confined GOG (although data available from site at Latton closer to outcrop). Depending on the aquifer properties assumed, hydrogeological analysis suggests that it will not be possible to recharge the required quantity of water at Cricklade (lowest transmissivity) or water recharged at Cricklade will not remain in the aquifer for sufficient time to provide an abstraction resource at Latton during dry periods (average to high transmissivity). The option has been rejected due to concerns of increased groundwater flooding at Latton, requirements for high recharge pressures and impacts on the Ampney Brook, River Churn and the River Coln during abstraction periods. This is therefore failed due to hydrogeological suitability and water source and availability issues.
	Removal of DO Constraints
Britwell Removal of Constraints	This option has been rejected on the basis that we have been asked to carry out a WFD no deterioration investigation and as a result have planned for there to be a reduction in licence at this source to meet the No Deterioration requirement, making this option unfeasible. If the investigation shows no risk of deterioration from increase to licence then the scheme could be considered to be reintroduced.
Witheridge Hill borehole pumps	This option involves lowering of the pumps in a single unconfined Chalk borehole This option has been rejected due to high costs to complete the investigation compared with the potential DO benefit and low resilience of the source. This therefore failed due to resilience and cost benefit to investigate potential yield.
	Inter-Zonal.[11]
Kennet Valley to SWOX – 8.31 Ml/d	This option has been rejected due insufficient water available to support an 8.31 Ml/d transfer.
Transfer from Hambleden WTW to Long Crendon SR to an existing pipeline at Milton	Transfer water from Hambleden WTW to Long Crendon Service Reservoir (SR) and from there to an existing pipeline at Milton, identified at WRMP14. Rejected on the basis SWA is forecast to be in deficit throughout much of the planning horizon
Transfer from Hambleden WTW to Long Crendon SR to an existing service reservoir at Shotover.	Transfer water from Hambleden WTW to Long Crendon SR (SWA) and from there to an existing service reservoir at Shotover, identified at WRMP14. Rejected on the basis SWA is forecast to be in deficit throughout much of the planning horizon

[11] Mott MacDonald/Cascade, Inter Zonal Feasibility Report prepared for Thames Water, updated June 2017

Option Type/Name	Rejection Reasoning
Transfer from Hambleden WTW to Long Crendon SR to an existing pipeline at Marston	Transfer water from Hambleden WTW to Long Crendon SR (SWA) and from there to an existing pipeline at Marston, identified at WRMP14. Rejected on the basis SWA is forecast to be in deficit throughout much of the planning horizon
Transfer from Hambleden WTW to Nettlebed service reservoir to Beggarsbush service reservoir at South Oxford area.	Transfer water from Hambleden WTW to Nettlebed SR (SWA) and from there to Beggarsbush service reservoir at South Oxford area, identified at WRMP14. Rejected on the basis SWA is forecast to be in deficit throughout much of the planning horizon.
Inter-company Transfers.[12]	
Wessex to SWOX - Charlton WTW to Minety SR and from there to Flaxlands SR in South Swindon..	Wessex Water have confirmed that the water is no longer available for transfer in 2040.
Inter-company transfer from Wessex to SWOX Charlton WTW to Minety SR and from there to Blunsdon SR in South Swindon	Wessex Water to transfer 2.9 Ml/d from Charlton WTW to Minety SR and then to Blunsdon SR in South Swindon. Option mutually exclusive with RES-ICT-WSX-FLX and RES-ICT-WSX-ASH. Option rejected due to the large conveyance length.
Inter-company transfer from Wessex to SWOX Charlton WTW to Minety SR and from there to Ashton Keynes WTW in South Swindon	Option mutually exclusive with RES-ICT-WSX-SWOX-FLX, which is the preferred one on the basis that RES-ICT-WSX-SWOX-ASH presents bigger construction complexity and bigger needs for network reinforcements downstream.
Direct River Abstraction.[13]	
River Thames Days Weir Abstraction - River Thames abstraction at Days Weir and transfer to Farmoor	This option was proposed by Group Against Reservoir Development (GARD) based upon work previously done by Entec for the Environment Agency (report entitled "Assessment of the Potential Benefit of Effluent Reuse in SWOX WRZ - November 2009"). The option proposed by GARD included abstraction at Days Weir in Oxfordshire with transfer to either Farmoor intake, reservoir or treatment works. However, the Environment Agency's 2014 Catchment Abstraction Licensing Strategy designates the River Thames at Days Weir as having no water available at low flows and specifies hands off flow of between Q21 (7209 Ml/d) and Q50 (1780 Ml/d) while between May and September 1976, the critical drought for determining the DO of SWOX supplies, flow at Days weir never rose above the 1450 Ml/d. On this basis the option would not therefore provide a DO benefit. New non-consumptive licences may be granted irrespective of the resource availability status where a high proportion (>95%) of the abstracted volume is returned to the river upstream or immediately downstream of the point of abstraction. However, our assessment is that typically 20-27% of the volume of water abstracted is consumed and so a non-consumptive licence would not be applicable. It remains unclear how the Environment Agency would treat a licence application that is linked to increased abstraction associated with increased effluent discharges due to growth in demand in SWOX and whether it would be necessary for such growth

[12] Mott MacDonald/Cascade, Inter Zonal Feasibility Report prepared for Thames Water, updated June 2017
[13] Mott MacDonald/Cascade, Direct River Abstraction Feasibility Report prepared for Thames Water, updated September 2018

Option Type/Name	Rejection Reasoning
	to be realised before a licence could be granted. Without clarification on abstraction licencing policy in this regard this option has been rejected due to water availability and impacts on downstream abstractors.
River Thames Culham abstraction - Abstraction at Culham and transfer to Farmoor Reservoir via a new pumping main	We have an existing abstraction license for 4.5 Ml/d at Culham. The existing abstraction is disused and so the resource benefits the London WRZ DO. This option involved transferring the 4.5 Ml/d of abstracted flows approximately 13km to Farmoor Reservoir via a new raw water pumping main. The flows would then enter supply into the Swindon and Oxford Water Resource Zone (SWOX WRZ) through the existing Farmoor WTW. We completed modelling using WARMS2 to understand the potential DO. It was found that when abstracting 4.5 Ml/d at Culham and transferring to Farmoor Reservoir, the benefit to SWOX would be fully offset by the loss of DO to London. Therefore, this option was rejected based on the impact on existing abstractions downstream.
Recommission existing DRA and treatment at Culham and directly supply to SWOX	This option involves reinstating the existing 4.5 Ml/d WTW at Culham with supply to the SWOX WRZ via the nearby Culham service reservoir. We completed WARMS2 modelling to understand the potential DO of this option. It was found that the net DO benefit to SWOX would only be 2 Ml/d once the reduction in benefit to the London WRZ is taken into account. Due to the relatively low resource benefit and high treatment costs the option was assessed as excessively costly at feasibility stage 3 and therefore this option was rejected.

Table Q-4: SWOX rejection reasoning

Specific option rejection – SWA WRZ

Type	Option	Rejection Stage				
		Stage 1	Stage 2	Stage 3	Validation	Further screening
Aquifer storage and recovery						
	Hampden Bottom-Wendover		✕			
Groundwater						
	Bourne End (East Marlow)	✕				
	Medmenham	✕				
	Taplow	✕				
	Remenham	✕				
	GW – West Marlow	✕				
Removal of DO Constraints						
	Hampden disinfection upgrade	✕				

Table Q-5: SWA rejection summary

Zone and type	Rejection reasoning
Aquifer storage and recovery	
Hampden Bottom-Wendover	Hampden Bottom-Wendover Five operational Aquifer Storage and Recovery (ASR) boreholes in the Lower Greensand aquifer (LGS), with recharge from the treated water network during the winter months and abstraction and treatment at the existing Hampden Bottom WTW (after upgrade) during the summer, is required. Boreholes at both sites and treatment works extension are likely to require purchase of new land around both existing TWUL sites and there is a high degree of uncertainty surrounding presence of LGS in this area. If present, there is a high degree of uncertainty surrounding aquifer properties and therefore ability to provide required storage and DO. Therefore, the site may not be hydrogeologically suitable for the proposed ASR option. There are also significant network reinforcement requirements including: • Existing distribution will require reinforcement ~10 km 300 mm diameter pipe • Hampden Bottom WTW proposed upgrade • Conditioning discharges pumped to sewer via estimated 7 km 300 mm diameter pipe • The unassessed network capacity requirements to accommodate recharge flows (priority risk). The option has failed due to uncertainty regarding the presence and thickness of the LGS aquifer in this location, required network reinforcement and hydrogeological suitability.

Zone and type	Rejection reasoning
Groundwater[14]	
Bourne End (East Marlow)	Construction of a new abstraction borehole in the unconfined Chalk aquifer near an existing abstraction borehole site. The nearby WTW would be expanded to treat the water. The option also includes 1km of network enhancement to connect into supply. An increase in the peak daily licence will also be required. The Environment Agency will not support an increase in the abstraction licence at this location as the abstraction is from the South West Chilterns groundwater body, which has a Poor status and abstraction would be at the expense of flows in the River Thames (which is non-compliant for flow under full licence conditions). This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
Medmenham	An annual average abstraction licence increase at a group of existing abstraction boreholes in the Chalk aquifer. Water abstracted from the boreholes would be treated at an existing WTW. The Environment Agency will not support an increase in abstraction licence at this location as the abstraction is from the South West Chilterns groundwater body, which has a Poor status and abstraction would be at the expense of flows in the River Thames (which is non-compliant for flow under full licence conditions). This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
Taplow	The proposed option comprises of the construction of two new boreholes at the Taplow site, new borehole pumps and enhanced RWT main to the existing Dorney WTW. The option also includes expansion of the Dorney WTW to treat the additional flow. A licence increase at Taplow to 55 Ml/d (annual average and daily peak) will be required to allow increased abstraction from the new boreholes. This is an increase of 15.9 Ml/d in the annual average licensed quantity and an increase of 5 Ml/d in the daily peak licensed quantity. The Environment Agency will not support an increase in abstraction licence at this location due to concerns about the impacts on the Maidenhead Chalk groundwater body and flows in the River Thames (which is non-compliant for flow under full licence conditions). This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
Remenham	Commissioning of the abandoned Remenham boreholes to bring the source into supply, test pumping and considerable network enhancements would be required. The Environment Agency will not support an abstraction licence as it is located in a Poor status groundwater body. This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
GW – West Marlow	This option involves the refurbishment of three existing unlicensed abstraction boreholes in the unconfined Chalk aquifer located on land southwest of Marlow, currently leased to Thames Water. Water abstracted from the boreholes will be treated at a new WTW located on land adjacent to the existing Marlow WTW. The Environment Agency will not support an abstraction licence at this location, which is in the South West Chilterns groundwater body, which has a poor status and due to impacts of the abstraction on the River Thames. This therefore failed due

[14] Mott MacDonald/Cascade, Groundwater Feasibility Report prepared for Thames Water, September 2018

Zone and type	Rejection reasoning
	to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
Removal of DO Constraints	
Hampden disinfection upgrade	Upgrade of existing WTW disinfection capability is required to remove constraint on peak DO. It is not considered to be cost-effective to deliver the potential volume benefit without an increase in licence. However, the Environment Agency will not support an increase in licence at this location due to concerns about the impacts of the abstraction on headwater flows in the River Misbourne. This therefore rejected due to no realistic prospect of an abstraction licence.

Table Q-6: SWA rejection reasoning

Specific option rejection – Kennet Valley WRZ

Type	Option	Rejection Stage				
		Stage 1	Stage 2	Stage 3	Validation	Further screening
Raw Water Transfer (RWT)						
	Conveyance -Thames to Southern Transfer Spur to Fobney	✕				
Groundwater						
	GW – Purley	✕				
	GW - Mapledurham	✕				
	GW – Hungerford	✕				
	GW – Playhatch (increased licence)	✕				
	GW-Mortimer (transfer peak licence from Arborfield)		✕			
	Inter Zonal Transfer					
	SWA to Kennet Valley	✕				
	Sheeplands WTW to Early SR		✕			
	T2ST Spur: Reading to Fobney (Potable)	✕				

Table Q-7: Kennet Valley rejection summary

Zone and type	Rejection reasoning
Raw Water Transfer	
T2ST Spur: Culham to Fobney (Raw)	Thames to Southern Transfer (T2ST) SRO has selected potable transfers as the preferred option and therefore this option, which is a spur from a T2ST raw water transfer is rejected.
Groundwater[15]	
GW - Purley	Construction of three new abstraction boreholes in the unconfined Chalk north-west of Reading on the south bank of the River Thames, and a new on-site WTW. Option includes: test pumping to support the application for a new abstraction licence for 10 Ml/d average and 15 Ml/d peak; a 6.5 km treated water main from the new WTW to the Tilehurst service reservoir; and new raw water and run to waste pipelines. The Environment Agency would not support an abstraction licence at this location due to concerns about impacts on the South West Chilterns groundwater body, which has Poor status. Any abstraction licence would have a hands-off flow condition applied. Consequently, the DO benefit of the option would be 0 Ml/d. This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
GW - Mapledurham	Construction of three new abstraction boreholes in the unconfined Chalk north-west of Reading on the north bank of the River Thames, and a new on-site WTW. Option includes: test pumping to support the application for a new abstraction licence for 10 Ml/d average and 15 Ml/d peak; an 11 km treated water main from the new WTW to the Tilehurst service reservoir, with a crossing under the River

[15] Mott MacDonald/Cascade, Groundwater Feasibility Report prepared for Thames Water, September 2018

Zone and type	Rejection reasoning
	Thames; and new raw water and run to waste pipelines. The Environment Agency have stated that they would not support an abstraction licence at this location due to concerns about impacts on the South West Chilterns groundwater body, which has Poor status. Any abstraction licence would have a hands-off flow condition applied. Consequently, the DO benefit of the option would be 0 Ml/d. This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
GW – Hungerford	Rehabilitation of one existing abstraction borehole at the Hungerford unconfined Chalk groundwater source and upgrading the pump capacity in two operational boreholes. The option also includes upgrading the existing treatment on site and test pumping the source to support an application to increase the abstraction licence to 4.55 Ml/d. The Environment Agency will not support the proposed increase in abstraction licence as the abstraction would be from a Poor status groundwater body and there are concerns about the impact on flows in the River Kennet (which is currently non-compliant for flow). This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
GW - Playhatch (increased licence)	Construction of a new abstraction borehole at the Playhatch unconfined Chalk borehole source located on the site of the existing WTW. Option also includes: upgrade of one operational borehole pump and existing booster pumps; test pumping to support an application for abstraction licence increase to 9.5 Ml/d (average and peak); and upgrade of the WTW to treat the additional supply. The Environment Agency would not support an abstraction licence at this location due to concerns about the impact of the abstraction on flows in the River Thames, which are currently non-compliant for flow, and because the site is within the South West Chilterns, Poor status groundwater body. This therefore failed due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).
GW-Mortimer (transfer peak licence from Arborfield)	Transfer of the peak licence from the disused Arborfield source to the existing Mortimer borehole source. This option includes refurbishment of two issued confined Chalk abstraction boreholes located on-site at the existing, but disused Mortimer WTW. Water abstracted from the boreholes will be treated at the disused WTW which will be upgraded for ammonia and iron removal and recommissioned. A reassessment of the source DO diagram indicates that it will not be possible to achieve a DO of more than 5.0 Ml/d, which is less than the licence transfer quantity. The site is also adjacent to the east bank of the Foundry brook and hence lies within a Flood Zone 3. Therefore, the option fails as the site may not be hydrogeologically suitable for the proposed option and has significant flooding risk.
Inter Zonal Transfer.[16]	
SWA to Kennet Valley	Rejected on the basis that SWA is forecasted to be in deficit throughout much of the planning horizon.
Sheeplands WTW to Early SR	Transfer 2.37 Ml/d from Sheeplands WTW to Early SR. Kennet Valley is in surplus throughout the planning horizon. The option is only for increasing the export potential and is mutually exclusive to RES-IZT-HEN-SWA-HAM and RES-IZT-HEN-SWOX-NET. Given the large deficit in SWOX and SWA along with the high construction complexity it was rejected.
T2ST Spur: Reading to Fobney (Potable)	Thames to Southern Transfer (T2ST) SRO has selected potable transfer from Culham as the preferred option and therefore this option, which is a spur from a T2ST water transfer from Reading is rejected.

[16] Mott MacDonald/Cascade, Inter-Zonal Feasibility Report prepared for Thames Water, June 2017

Table Q-8: Kennet Valley rejection reasoning

Specific option rejection – Guildford WRZ

Type	Option	Rejection Stage				
		Stage 1	Stage 2	Stage 3	Validation	Further screening
Aquifer Storage and Recovery						
	ASR-Guildford (Abbotswood)		✕			
Groundwater						
	Mousehill & Rodborough Rehab	✕				
Removal of Constraints to DO						
	Sturt Road Spring Capture		✕			
Inter-Company Transfer						
	SEW to Guildford - Surrey Hills SR (SEW) to Hogsback SR (TW- Guildford)		✕			

Table Q-9: Guildford rejection summary

Zone and type	Rejection
Aquifer Storage and Recovery	
ASR-Guildford	Construction of five new ASR boreholes in the Lower Greensand Aquifer on private land. Recharge would occur during the winter months through high pressure recharge and be provided via a new 750mm main connected to an existing WTW. Water would be abstracted during the summer months from the ASR boreholes and treated at a new on-site WTW. A number of risks have been highlighted concerning the option, primarily due to the purchase of land. There is no TWUL land at this location; a new greenfield site will be required for this option; and there is little space for future growth. There are also impacts on a local nature reserve and the site is located 50% within a floodplain. This therefore rejected due to flood risk and land use issues.
Groundwater[17]	
Mousehill and Rodborough Rehab	Rehabilitation of eight existing abstraction boreholes in the Lower Greensand aquifer at two existing TWUL sites, in order to support a licence increase to 7 Ml/d (average and peak). Water abstracted from the boreholes would be treated at the existing WTW. The Environment Agency will not support an increase in licence at this location due to concerns over the impact of the abstraction on the River Ock. It is not considered to be cost-effective to deliver the potential volume benefit without an increase in licence. This therefore rejected due to no realistic prospect of an abstraction licence.
Removal of Constraints to DO	
Sturt Road Spring Capture	The Sturt Road spring source is an existing licensed, natural groundwater discharge from the Lower Greensand aquifer, developed via several headings that transfer flow out of the Hythe Beds into a raw water network that transfers the water to the treatment works. There are several spring overflows that discharge into the River Wey. Monitoring has indicated that the uncaptured spring flow is between 0.3 and 0.6 Ml/d, which is lower than

[17] Mott MacDonald/Cascade, Groundwater Feasibility Report prepared for Thames Water, September 2018

Zone and type	Rejection
	previously expected. The monitoring indicated that an off-site abstraction impacts the flows. It is possible that the flow could decrease further if the abstraction were increased or sustained for a long period. Longer term monitoring is required to define the resilience of the springs but based on recent monitoring the resilience is considered to be low. The option has therefore been rejected due to uncertainties in water availability and potential yield, the low resilience of the potential increase in DO and the cost benefit of further investigation to reduce these uncertainties.
Inter-Company Transfer.[18]	
Surrey Hills SR (SEW) to Hogsback SR (TW- Guildford)	Transfer 10 Ml/d from Surrey Hills SR (SEW) to Hogsback SR (TW-Guildford). Option mutually exclusive with RES-ICT-SEW-GUI-MNT-10. Option rejected at WRMP19 Feasibility Stage 2 due to long length of conveyance (> 20km), high pumping head and construction complexity. In addition, there is a high mixing water quality risk identified.

Table Q-10: Guildford rejection reasoning

[18] Mott MacDonald/Cascade, Inter-Zonal Feasibility Report prepared for Thames Water, June 2017

Specific option rejection – Henley WRZ

Type	Option	Rejection Stage				
		Stage 1	Stage 2	Stage 3	Validation	Further screening
Groundwater						
	Sheeplands licence disaggregation	✕				

Table Q-11: Henley rejection summary

Zone and type	Rejection
Groundwater.[19]	
Sheeplands licence disaggregation	Disaggregation of a group borehole abstraction licence to allow operation of two sources as per their individual licensed amounts. The option also includes a pump capacity upgrade in one borehole to facilitate total peak output of the source, and the upgrade of the Granular Activated Carbon (GAC) and nitrate removal capacity at an existing WTW. The Environment Agency will not support the disaggregation of the licence due to impacts on the River Thames and River Loddon and the Maidenhead Chalk (Good status, at risk) and South West Chilterns (Poor status) groundwater bodies. It may be possible to

[19] Mott MacDonald/Cascade, Groundwater Feasibility Report prepared for Thames Water, September 2018

Zone and type	Rejection	
		demonstrate that impacts on surface water are limited due to the discharge of effluent upstream of the groundwater source but this would not mitigate the impacts on groundwater. This therefore rejected due to no realistic prospect of an abstraction licence and concerns about the water availability (CAMS status).

Table Q-12: Henley rejection reasoning

Demand scheme rejection register

Q.15 The purpose of the demand options screening is to develop a list of feasible demand management options (Section 8: Appraisal of demand options) from the unconstrained demand options list (Appendix P: Options list tables). At each stage of the screening process, options are rejected. These rejected options make up our demand options rejection register which is presented in Table Q-13 and Table Q-14.

Q.16 The full Demand Management Options Screening process is presented in the report, 'Thames Water WRMP24 Demand Management Options Screening Report', September 2022.

Q.17 A summary of the demand options screening process is presented in Section 8.

Q.18 There are two predominant stages to create a feasible demand management options list, primary screening and secondary screening. Primary Screening assesses option feasibility at a high level for acceptance or not, having regard to Technological, Financial, Environmental, Risk and Resilience and Legal constraints. Secondary screening further refines the options list that has emerged from the primary screening exercise by reference to qualitative criteria.

Primary Screening Rejection Register

Q.19 The purpose of Primary Screening is to remove from further consideration any water Demand Options considered non-feasible with regard to Technological, Financial, Environmental, Risk and Resilience, and Legal constraints.

Q.20 Each option in the Unconstrained Options List (Appendix P: Options list tables) is assessed against the following questions:

- Technical: Is the option currently technically feasible?
- Cost: Does the option avoid excessive cost, using available outline cost information?
- Environmental: From an initial environmental assessment, are the likely significant effects of the option on the environment considered acceptable?
- Risk: Does the option give rise to an acceptable risk of it being implemented? Is there an acceptable risk that the option will not provide a net water resource benefit or not provide sufficient future resilience?
- Legal: Does the option comply with current legal requirements?

Q.21 This assessment is conducted at a high level by Thames Water economists, engineers and environmental experts who specialise in each of the Generic Options areas.

Q.22 To pass through the Primary Screening exercise each Demand Option must score 'yes' to all five questions. If an option is rejected it will not continue to Secondary Screening and be presented in the demand options rejection register.

Q.23 Of the 216 Demand Management Options presented in the Unconstrained Options List (Appendix P: Options list tables), 108 specific options have been rejected by Primary Screening.

Demand options primary screening

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
Generic Option Type: Leakage								
Pressure Management	Pressure Management 4 - further reduction of pressure on existing schemes that are made up of multiple DMAs. Requires the installation of additional tall building boosters.	y	y	y	n	y	Rejected	Prior to the implementation of a Pressure Management Scheme, We conduct extensive investigations to determine the viability and benefit of installing Pressure Management across multiple DMAs in a zone. This includes desktop studies involving topographic data, burst and customer complaint history, large users and large blocks of flats information to identify customers that may be impacted by pressure management. Further hydraulic modelling studies and field studies are then undertaken to verify this information and ensure the Pressure Management Scheme is viable. Due to the extensive studies undertaken prior to the implementation of existing large Pressure Management Schemes, there is limited scope for further significant reductions in pressure even with the installation of additional tall building boosters. Consequently, the risk that this demand option will not provide a net benefit is considered unacceptable and therefore this option has not be taken further in the screening process.
Mains Rehabilitation	Asset renewal - this option would involve the replacement and renewal of trunk mains. This option excludes replacement of communication pipes and Customer Supply Pipes (CSP) (from the property boundary to inside the property).	y	n	y	y	y	Rejected	Replacement of large diameter pipes is not a cost effective option.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
Generic Option Type: Water Efficiency								
Advice and Guidance	Benchmark to help drive water efficient behaviours (domestic)	y	y	y	n	y	Rejected*	High risk that this will not achieve behaviour change and therefore save water and produce a yield. Potential for Baseline.
	Social landlord audits and benchmarking	y	y	y	n	y	Rejected	High risk that this will not achieve behaviour change and therefore save water and produce a yield. Option 'Benchmark to help drive water efficient behaviours (domestic)' includes all housing and is considered more suitable.
	Call Centre contact to customers giving water efficiency advice	y	y	y	n	y	Rejected*	Medium risk that this will not achieve behaviour change and therefore save water and produce a yield. However, this option will continue to be included in baseline. We will proactively call customers specifically on water efficiency and also integrate more water efficiency information / advice into more customer journeys – call centre and online.
	Intensive area based promotional campaigns	y	y	y	n	y	Rejected*	Medium risk that this will not achieve behaviour change and therefore save water and produce a yield. However, this option will continue to be included in baseline.
	Develop an AMR interface tool to help drive water efficiency behaviours	y	y	y	n	y	Rejected	We are moving away from procuring / installing AMR devices, in favour of AMI smart meters. These devices will allow customers to see more accurate and frequent consumption information on mobile-responsive web-portals. Consequently, there is a medium risk this option will not provide sufficient future resilience as the online technology will not be compatible with the majority of in ground technology.
	Develop water certificates for customer properties	y	n	y	n	y	Rejected	There is a high risk that this will not achieve a water saving as homes which achieve a certificate are already water aware. This is also not a cost-effective option for all households in the supply area. We are however

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								providing bespoke Water Saving Reports to each household following their Smarter Home Visit.
	Development and promotion of an online water use calculator	y	y	y	n	y	Rejected*	Medium risk that this will not achieve a behaviour change and therefore save water and produce a yield as it targets already water wise customers. However, this option will continue to be included in baseline. We will continue to offer all household customers a free online calculator tool, in the form of the Water Energy Calculator (WEC). The WEC is an Energy Saving Trust software tool that provides personalised water use, water and energy saving advice, which can be downloaded by the customer.
	Development of Smart Phone Applications	y	y	y	n	y	Rejected	Medium risk that this will not achieve a behaviour change and therefore save water and produce a yield as it targets already water wise customers. Instead of a Smart Phone Application, We have recently launched our new Thames Water website using a SiteCore platform. This will be far more capable, flexible and cost effective than smartphone apps.
	Distribution of advice and guidance via Water Regs visits	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving as we will not know if the guidance has been acted upon. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Distribution of self-audit packs	y	n	y	y	y	Rejected	High risk that this will not achieve a water saving as we will not know if the guidance has been acted upon. At present, the distribution of self-audit packs is also not seen as a cost effective water efficiency method. We promote our free online Water Energy Calculator as the preferred method of quantifying personalised water

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								use/savings, and identifying appropriate water savings interventions.
	Distribution of water saving information in customers' bills	y	y	y	n	y	Rejected*	Medium risk as it is unknown whether the information will achieve an actual water saving. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Distribution of water saving information via leaflet distribution	y	y	y	n	y	Rejected*	Medium risk as it is unknown whether the information will achieve an actual water saving. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Education in schools and provision of educational material	y	y	y	n	y	Rejected*	Medium risk as it is unknown whether the information will achieve an actual water saving. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Adolescents showering campaign	y	y	y	n	y	Rejected*	We does not consider it beneficial to focus on one specific campaign type. We have an 'always on' approach to educating younger generations around water usage, including showering. We already have a dedicated education team who talk to schools throughout the year, providing tips to children across our region.
	Campaign to encourage customers to self-repair internal leaks	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving as we will not know if the guidance has been acted upon. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Leaky Loos campaign	y	y	y	n	y	Rejected*	We already has a 'You may have a leaky loo' message included in measured customer bills where high use is

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								identified and we provide information on our website/social media.
	Events and road shows	y	y	y	n	y	Rejected	We have reduced the number of events and road shows, as there is little to no mechanism or quantifying any real water savings attributed to this action
	Promotions via newspapers	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving as we will not know if the guidance has been acted upon. However, this option will continue to be included in baseline using the lessons from our area specific water saving programmes in AMP5/6/7, into programmes for AMP8 and beyond.
	Water efficiency advice via an internet promotion	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving as we will not know if the guidance has been acted upon. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Development of a multi-utility consumption web-portal	y	y	y	n	y	Rejected	The smart meter portal/toolkit is due for delivery within AMP7. High risk that this will not achieve additional water saving beyond our only portal.
	Community/religious groups to promote water efficiency advice	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving as we will not know if the advice has been acted upon. However, there is potential for including as part of our geo-targeted media programme.
	Council and community landscape redesign advice	y	y	y	n	y	Rejected	This option has been rejected owing to the high risk that water savings may not be realised.
	Use satellite technology to advise customer when to water their gardens	y	y	y	n	y	Rejected	This option has been rejected owing to the high risk that water savings may not be realised.
	Target water consumption at the community scale	y	y	y	n	y	Rejected	This option has been rejected owing to the high risk that water savings may not be realised.
	Target water consumption in university private rental sector	y	y	y	n	y	Rejected	This option has been rejected owing to the high risk that water savings may not be realised.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Tailored digital engagement with customers, targeted at high use households	y	y	y	n	y	Rejected*	Medium risk as it is unknown whether the engagement will achieve an actual water saving. However, this option will continue to be included in baseline using the lessons from AMP7 into AMP8 and beyond.
	Targeted water efficiency communication based on supply demand pressures	y	y	y	n	y	Rejected*	This option is being trialled currently and it is yet unknown whether the engagement will achieve an actual water saving. However, this option has a potential for inclusion in baseline using the lessons from AMP7 into AMP8 and beyond.
	Targeted digital engagement based on presence of continuous flow	y	y	y	n	y	Rejected*	Medium risk as it is unknown whether the engagement will achieve an actual water saving. However, this option will continue to be included in baseline using the lessons from AMP7 into AMP8 and beyond.
Self-Install	Distribution of hose guns for self-installation	y	y	y	n	y	Rejected	We have ceased to offer garden trigger hoses due to lack of measurable water savings evidence. Some anecdotal evidence shows that water consumption increases due to customers wanting to use the new gadget.
	Distribution of water gels to gardeners for self-installation	y	y	y	n	y	Rejected	We have ceased to offer this due to lack of measurable and significant water savings evidence.
	Distribution of water saving devices to businesses via Water Regs visits	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving if the devices are not installed. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Distribution of innovative technologies / products	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving if the devices are not installed. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Subsidy for water efficient white goods	y	n	y	y	y	Rejected	We do not offer this as there as many other more cost effectives actions to implement ahead of such rebates. In addition, previous offers have only resulted in a small uptake.
	Subsidy for water butts	y	y	y	n	y	Rejected	We do not offer subsidy for water butts due to lack of measurable water savings evidence.
	Subsidising drought tolerant plants	y	y	y	n	y	Rejected	We do not offer subsidy for drought tolerant plants due to lack of measurable water savings evidence.
	Rebate to replace old toilets	y	n	y	y	y	Rejected	We do not offer this as there as many other more cost effectives actions to implement ahead of such rebates.
	Rebates on water efficient fixtures and fittings	y	n	y	y	y	Rejected	We do not offer this as there as many other more coordinated cost effectives actions to implement ahead of such rebates. We provide free devices to customers who complete the online water and energy calculator.
Direct Efficient Goods Plumber Installation	Installation of smart shower monitor	y	n	y	y	y	Rejected	Our small trial results indicated this is not a cost effective option.
	Virtual Smarter Home Visit (vSHV) – As above but the customer consultation is online. Any water saving devices are mailed to the customer.	y	y	y	n	y	Rejected*	High risk that this will not achieve a water saving if the devices are not installed. However, this option will continue to be included in baseline using the lessons from AMP5/6/7, into programmes for AMP8 and beyond.
	Housing Association fixes problems found at Household properties (LAHAs only)	y	y	y	n	y	Rejected	Medium risk that the engagement will not achieve an actual water saving.
	Appliance exchange programme	y	n	y	y	y	Rejected	We do not offer this as there as many other more cost effective actions to implement ahead of such programmes. This option may encourage replacement of appliances before they are due for replacement and thus increasing waste.
	Retrofit - installation of 'smart devices' (such as taps) that can send data to the customer portal	y	n	y	y	y	Rejected	Our small trial results indicated this is not a cost effective option.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Replacement - installation of instantaneous water heaters/boilers	y	n	y	y	y	Rejected	We do not offer this as there as many other more cost effective actions to implement ahead of such programmes. This option may encourage replacement of heaters before they are due for replacement and thus increasing waste.
Partner Efficiency Goods and Installation	Subsidy to appliance manufacturers	y	y	y	n	y	Rejected	We do not offer this as there as many other more cost effectives actions to implement ahead of such subsidies.
Non-Domestic Advice and Assistance	Benchmark to help drive water efficient behaviours (non-domestic)	y	y	y	n	y	Rejected*	High risk that this will not achieve behaviour change and therefore save water and produce a yield. However, this option will continue to be included in baseline. We have a number of case studies on our website which outline some benchmark and good practice advice for non-domestic buildings. We will be launching new online tools and advice in early 2017.
	Smarter Business Visits to Non-Household Properties - customer funded	y	y	y	n	y	Rejected	High risk that this will not achieve a water saving due to low certainty around customer participation.
	Exploit retail and loan funding opportunities for non-domestic water saving	y	y	y	n	y	Rejected	High risk that this will not achieve water savings following Non-Household customers' transfer to Castle Water in 2017.
	Free water efficiency goods and advice to all newly metered businesses	y	y	y	n	y	Rejected	High risk that this will not achieve water savings or be cost effective for us following Non-Household customers' transfer to Castle Water in 2017.
	Introduce training for non-domestic customers about wise water use	y	y	y	n	y	Rejected	High risk that this will not achieve water savings. We have previously delivered a number of water efficiency training sessions for non-domestic customers. However, much of this role will now move to Castle Water with the transfer of customers in 2017.
	Non-Domestic water saving advice and assistance	y	y	y	n	y	Rejected*	Medium risk that this will not achieve a behaviour change and result in water savings. However, this

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								option will continue to be included in baseline. We have the industry's most comprehensive self-audit tool kit available online (Saving water in your Business). We offer a range of free downloadable water efficiency case studies for businesses.
	Provision of water butts	y	y	y	n	y	Rejected	High risk that this will not achieve water savings or be cost effective.
	Optimising water using processes	y	y	y	n	y	Rejected	High risk that this will not achieve water savings following Non-Household customers' transfer to Castle Water in 2017.
	Whole farm water efficiency programme	y	y	y	n	y	Rejected	High risk that this will not achieve water savings or be cost effective.
	Trial installation of innovative water efficient products in non-household premises	y	y	y	n	y	Rejected	High risk that this will not achieve water savings following Non-Household customers' transfer to Castle Water in 2017.
Research	Whole-town water efficiency programme	y	n	y	y	y	Rejected	We do not offer this as there as many other more cost effective actions to implement ahead of such programmes.
Regulation	Enforce use of water efficient fittings in new buildings	y	y	y	y	n	Rejected	We are not empowered to enforce such actions. To include this as a discrete additional management option would also be double counting as our demand forecasts do assume the installation of water efficient fittings in new buildings.
	Flow restrictor charging	y	y	y	y	n	Rejected	We are not empowered to enforce a tariff reduction for a restriction in domestic water supply pressure.
	Ban high water use devices	y	y	y	y	n	Rejected	We are not empowered to enforce such actions as we are a service provider and must meet the reasonable expectations of customers. This option could only be enforced by the Government.
	Preventing new development	y	y	y	y	n	Rejected	We are not empowered to prevent a growth in demand by enacting planning restrictions and preventing new

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								development. We are routinely consulted on planning and development matters and may influence the scale and location of new development. We will continue to liaise with planning authorities into the future but cannot include this as a discrete demand management option.
	Legislate on water use	y	y	y	y	n	Rejected	We are not empowered to enforce such actions as we are a service provider and must meet the reasonable expectations of customers.
Generic Option Type: Non-potable								
Rainwater Harvesting	Individual Buildings (Typology 1) - Commercial Only. Individual commercial Buildings throughout our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as We cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings (Typology 1) - Residential Only. Individual residential buildings throughout our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as We cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings (Typology 1) - Commercial and Residential. Individual commercial and residential buildings throughout our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Individual Buildings within a Development (Typology 2) - Commercial Only. A non-potable treatment system is delivered to individual commercial buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Residential Only. A non-potable treatment system is delivered to individual residential buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Commercial and Residential. A non-potable treatment system is delivered to individual commercial and/or residential buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Commercial only. A non-potable treatment system and network is delivered that serves multiple commercial buildings on new developments. i.e. multiple non-potable system can be delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Residential only. A non-potable treatment system and network is delivered that	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	serves multiple residential buildings on new developments. i.e. multiple non-potable system can be delivered on the one development.							properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Commercial and Residential. A non-potable treatment system and network is delivered that serves multiple commercial buildings on new developments. i.e. there could be a number of these non-potable systems delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	All Buildings within a Development (Typology 4) - Commercial and Residential. A non-potable central system and network is delivered that serves all buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
Stormwater Harvesting	Individual Buildings (Typology 1) - Commercial Only. Individual commercial Buildings throughout our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings (Typology 1) - Residential Only. Individual residential buildings throughout our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								researched under the Household Innovation and Tariffs option.
	Individual Buildings (Typology 1) - Commercial and Residential. Individual commercial and residential buildings throughout our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Commercial Only. A non-potable treatment system is delivered to individual commercial buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Residential Only. A non-potable treatment system is delivered to individual residential buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Commercial and Residential. A non-potable treatment system is delivered to individual commercial and/or residential buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Multiple Buildings within a Development (Typology 3) - Commercial only. A non-potable treatment system and network is delivered that serves multiple commercial buildings on new developments. i.e. multiple non-potable system can be delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Residential only. A non-potable treatment system and network is delivered that serves multiple residential buildings on new developments. i.e. multiple non-potable system can be delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Commercial and Residential. A non-potable treatment system and network is delivered that serves multiple commercial buildings on new developments. i.e. there could be a number of these non-potable systems delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	All Buildings within a Development (Typology 4) - Commercial and Residential. A non-potable central system and network is delivered that serves all buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
Greywater Recycling	Individual Buildings (Typology 1) - Commercial Only. Individual commercial Buildings throughout	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Our supply area that are being redeveloped contain a non-potable treatment system.							properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings (Typology 1) - Residential Only. Individual residential buildings throughout Our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings (Typology 1) - Commercial and Residential. Individual commercial and residential buildings throughout Our supply area that are being redeveloped contain a non-potable treatment system.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Commercial Only. A non-potable treatment system is delivered to individual commercial buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Residential Only. A non-potable treatment system is delivered to individual residential buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								researched under the Household Innovation and Tariffs option.
	Individual Buildings within a Development (Typology 2) - Commercial and Residential. A non-potable treatment system is delivered to individual commercial and/or residential buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Commercial only. A non-potable treatment system and network is delivered that serves multiple commercial buildings on new developments. i.e. multiple non-potable system can be delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Residential only. A non-potable treatment system and network is delivered that serves multiple residential buildings on new developments. i.e. multiple non-potable system can be delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
	Multiple Buildings within a Development (Typology 3) - Commercial and Residential. A non-potable treatment system and network is delivered that serves multiple commercial buildings on new developments. i.e. there could be a number of these non-potable systems delivered on the one development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	All Buildings within a Development (Typology 4) - Commercial and Residential. A non-potable central system and network is delivered that serves all buildings on a new development.	y	y	y	n	y	Rejected	High risk that this will not achieve water savings as we cannot regulate the maintenance and continued use of non-potable systems on individual private commercial properties located throughout the water supply area. However, the feasibility of this option will continue to be researched under the Household Innovation and Tariffs option.
Wastewater (Blackwater) Recycling	Blackwater recycling at new developments	y	y	y	n	n	Rejected	Blackwater recycling has been rejected on the grounds of it being more complicated to implement and presenting higher risks. In addition, there is no current guidance on the use of treated effluent (Blackwater) for non-potable purposes in the UK. In the absence of such guidance and due to the potential risk of contamination and impact on public health, we will not take this option further in the screening process. With further developments in the future, this option could be reconsidered in future planning periods.
Generic Option Type: WRSE Region-Wide								
Metering	Compulsory metering - Basic meters in 5 year rollout	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
	Compulsory metering - Hosepipes	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
	Compulsory metering - walk-by meters with limited fixed network in 10 year rollout	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
	Meter remaining unmetered swimming pool owners	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
Advice and Guidance	Household water efficiency	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
	Media campaigns to influence water use	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
	Metered households' proactive consumption support	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered. However, within our own region smart metered customers are already offered assistance if their consumption is greater than 500 litres/day.
Direct Efficient Goods Plumber Installation	Household water efficiency programme (Company led, home visit)	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
	Replacement -installation of a dual flush toilet	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
Self-Install	Distribution of tap inserts for self-installation	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered. However, within our own region tap inserts are available to household customers at no cost following completion of the online water and energy calculator.
	Free water efficiency goods and advice to all newly metered customers	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								region. We have, therefore, rejected this option as duplicates of an option that we have considered.
Partner Efficiency Goods and Installation	Partnership projects with utility companies	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
Non-Domestic Advice and Assistance	Non-household and commercial water efficiency	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
Non-Domestic Advice and Assistance	Water Audits -Commercials (Non-process)	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally.

Sub option	Specific option	Technical	Cost	Environment	Risk and resilience	Legal	Overall outcome	Screening reasoning
								Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.
Greywater Recycling	Treated greywater reuse in new households	n	y	y	y	y	Rejected	This WRSE Region-wide option is a duplicate an of option that we have considered as an option to make up our demand management programme, with the difference being that actions would have been aligned across all WRSE companies and/or delivered centrally. Companies in the WRSE region did not develop fully aligned demand management programmes, due to inter-company variability in programmes delivered to date resulting in differences in priorities and deliverability of different options in different parts of the region. We have, therefore, rejected this option as duplicates of an option that we have considered.

Table Q-13: Primary screening of demand management options

Secondary Screening Rejection Register

Q.24 The purpose of Secondary Screening is to provide a manageable list of Demand Management Options to input into the IDM model for optimisation, while ensuring that a sufficient range of water management schemes is being assessed.

Q.25 Each option that passed through the Primary Screening process is assessed against the following questions applied for the purposes of Secondary Screening:

- Does the option avoid excessive cost?
- Is the option likely to be acceptable in terms of planning and environmental constraints?
- Is the option likely to help meet WFD objectives and prevent deterioration of water body status?
- Does the option have an acceptable risk of social impact or inequality?
- Does the option align with company policy objectives?
- Does the option provide flexibility/adaptability to climate change uncertainty?
- Does the option provide conjunctive use benefits or other benefits to water resource management?
- Is the option practical and efficient to implement and maintain?
- Is the option lead time sufficiently flexible to planning or other uncertainties to ensure security of supply is maintained?
- Are all other risks and uncertainties acceptable?
- Can costs and benefits of the Demand Option be modelled for comparison with alternatives at DMA level or can the option be actively investigated in the 2025-30 period for future consideration within our long-term strategy?

Q.26 This assessment is carried out by internal Thames Water economists, engineers and environmental experts who specialise in each of the Generic Options areas.

Q.27 To pass Secondary Screening each option must score 'yes' to all 11 questions. If an option is rejected it will not pass to the Feasible Options list and will be presented in the demand options rejection register. Of the 108 Demand Management Options remaining after Primary Screening, a further 87 specific options have been rejected by Secondary Screening).

Demand options secondary screening

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
Generic option type: Leakage														
Advice and Guidance	Advice and information on leakage detection and fixing techniques (Agriculture).	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners.
	Advice and information on leakage detection and fixing techniques (Industrial and Commercial Customers).	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners. Potential for Baseline.
	In house awareness campaign to reduce internal losses.	y	y	y	y	y	y	y	y	y	y	n	Rejected	High risk that this will not achieve a water saving as we will not know if the guidance has been acted upon.
Active Leakage Control	ALC + 10% - Enhanced levels of 'Find and Fix' over and on top of that already being undertaken to maintain current levels of leakage to achieve a further 10% reduction in leakage.	y	y	y	y	y	y	y	y	y	n	y	Rejected	Given the extensive work on leakage detection and repair activity there is considered to be limited scope to make significant further leakage reductions with current methods of leakage detection and repair alone. As leakage is reduced further, the uncertainty of delivery increases. In addition, as leakage is reduced, much greater time is required to detect multiple, smaller leaks in a DMA. In the absence of other work (i.e. Network Reconfiguration), additional leakage detection as an individual demand management option becomes prohibitive both with regard to cost and sustainability of leakage reduction. Consequently, although the risk that 'ALC + 10%' will not provide a leakage reduction is

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														less than the risk associated with 'ALC + 20%', the additional cost and risk of non-delivery is considered unacceptable and therefore this option has not be taken further in the screening process. Rather, it has been replaced by 'Advanced DMA Intervention'.
	ALC + 20% - Enhanced levels of 'Find and Fix' over and on top of that already being undertaken to maintain current levels of leakage to achieve a further 20% reduction in leakage.	y	y	y	y	y	y	y	y	y	n	y	Rejected	Given the extensive work on leakage detection and repair activity, with 60,000 repairs completed on the water supply network per year, there is considered to be limited scope to make significant further leakage reductions with current methods of leakage detection and repair alone. As leakage is reduced further, the uncertainty of delivery increases. The high risk that this demand option will not provide the additional 20% leakage reduction is considered unacceptable and therefore this option has not be taken further in the screening process.
	Improvements in systems to allow more easy reporting of visible leaks and analysis of social media for leak notification.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Be more operationally efficient.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	Decreasing the time taken to fixing reported leaks.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Develop metrics and monitoring to quantify SR leakage.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Enhanced district meter verification - meter verification is an onsite check to determine the accuracy of flow being registered through a meter.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Enhanced logger verification - logger verification is a simple on site check to ensure that the flow being registered by a meter matches the flow being recorded by the data logging device attached to the meter.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Explore PRV noise reduction methods.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Household meter under /over registration analysis - meter verification as an onsite check to	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	determine the accuracy of flow being registered through a meter.													model this option at a DMA level. Potential for Baseline.
	Improve quality of repairs.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Improving analytics to detect leak breakouts.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Increase pressure for leak detection.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Measuring performance of the ALC activity.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Non-household meter under /over registration analysis - meter verification as an onsite check to determine the accuracy of flow being registered through a meter.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Remote sensing technologies - aircraft-based.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	Remote sensing technologies - ground-based.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Remote sensing technologies - satellite-based.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Trunk main and service reservoir leakage reduction by improved metering.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Installation of through bore hydrants to allow for in-pipe leak detection/localisation.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
Pressure Management	Pressure Management - install new pressure management schemes within individual DMAs at sub-DMA level.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected as a separate option for modelling purposes only and as this activity is included in the Advanced District Metered Area (DMA) Intervention.
	Pressure Management - install new zonal pressure management schemes.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	CaLM Networks - this option includes a range of activities: targeted extension of pressure management, upgrade of controllers for PRVs and pumps, transient investigations, trunk mains	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	expansion/extension, distribution mains expansion/extension. To include: Design, construction, and commissioning of new pressure management schemes. Retrofit improved controllers to pumps and valves to enable more precise and responsive pressure profiles to be maintained that minimise leakage while providing adequate pressures at critical points at all times. Investigating the existence of pressure transience using transient loggers, tracing the sources of those transients and removing the causes.													
Smart Networks	Smart Networks Programme to improve leakage targeting and detection.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
Mains Rehabilitation	Asset Replacement - replace individual pipes that have high burst rates.	y	y	y	y	y	y	y	n	y	y	n	Rejected	Replacing individual pipes as a demand management intervention is not a practical or efficient use of time, resources (human and equipment) or permits (traffic management/dig). It is also difficult to accurately measure and model the demand

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														benefit making it infeasible for realistic modelling against alternative demand options.
	Asset Replacement 100m - replace individual pipes that have high burst rates and must be above 100m in length.	y	y	y	y	y	y	y	n	y	y	n	Rejected	Replacing individual pipes as a demand management intervention, even at length of 100m, is not a practical or efficient use of time, resources (human and equipment) or permits (traffic management/dig). It is also difficult to accurately measure and model the demand benefit making it infeasible for realistic modelling against alternative demand options.
	Comms Only - replace communication pipes only.	y	y	y	n	y	y	y	n	y	y	n	Rejected	Replacing individual communication pipes alone as a demand management intervention, is not a practical or efficient use of time, resources (human and equipment) or permits (traffic management/dig). It is unlikely to be considered acceptable by our customers to interrupt their supply to replace their communication pipe without replacing the water main at the same time. It is also difficult to accurately measure and model the demand benefit making it infeasible for realistic modelling against alternative demand options.
	Develop procedure for abandoned mains.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. Potential for Baseline.
	Minimise joints.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														model this option at a DMA level. Potential for Baseline.
	Replace rather that repair - household supply pipes. Includes a study to assess the impact on leakage if the supply pipes are replaced instead of repairing them.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
Regulation	Investigate and lobby for improved regulatory incentives for reducing leakage.	y	y	y	y	y	y	y	n	y	n	n	Rejected	We are not empowered to introduce regulatory incentives. High risk that leakage reduction may not be realised or quantified and the inability to model this option at a DMA level.
Generic option type: Metering														
Progressive Metering Programme (PMP) (previously Houses Only)	Meter all houses (Basic technology) and repair CSLs found.	y	y	y	n	n	y	n	y	y	n	y	Rejected	For the last three AMP periods, We have used AMI, AMR and Dumb meter technology as we moved towards a full smart metering solution. However, from AMP7 and beyond, we will no longer support the large scale rollout of Dumb meter technology. There are three main factors for this decision: 1. Reduced Customer Benefit and social inequality: Dumb meter technology is not supported by Web and Mobile Apps that allow customers to track their water use in real time. Web and Mobile Apps facilitate a greater reduction in water use and therefore lower bills, and increase customer confidence in meter reading accuracy. This in turn leads to greater customer satisfaction and a reduction in customer calls.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														2. Low Reduction in CSL: Due to the requirement for manual meter reads, Dumb meter technology results in a 24% reduction in CSL compared with 56% and 76% from ARM and AMI technology. 3. No Benefit to Mains Replacement Targeting: due to their real time monitoring abilities, AMR and AMI technology provides data to conduct a water balance within a DMA or sub DMA facilitating better mains replacement targeting. Due to the requirement for manual meter reads, Dumb metering technology cannot provide this benefit. To reconfirm this decision, the full Dumb metering option has still been taken forward for modelling, see 'Meter all houses (including CSL repair) and individual flats (internal, no CSL repair) with DUMB technology and bulk metering (including CSL repair) blocks of flats with AMR technology.'
Houses and Bulks	Meter all houses and bulk meter (external) blocks of flats (AMI technology) and repair CSLs found.	y	y	y	y	y	y	y	y	y	y	n	Rejected	Metering of houses and bulks as a combined option is rejected for modelling purposes only and not as a concept; instead individual options are modelled.
	Meter all houses and bulk meter (external) blocks of flats (AMR technology) and repair CSLs found.	y	y	y	y	y	y	y	y	y	y	y	Rejected	Metering of houses and bulks as a combined option is rejected for modelling purposes only and not as a concept; instead individual options are modelled.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	Meter all houses and bulk meter (external) blocks of flats (Basic technology) and repair CSLs found.	y	y	y	n	n	y	n	y	y	n	y	Rejected	Metering of houses and bulks as a combined option is rejected for modelling purposes only and not as a concept; instead individual options are modelled.
Houses, bulks and individual flats	Meter all houses (including CSL repair), individual flats (internal, no CSL repair) and bulk meter (including CSL repair) blocks of flats (AMI technology).	y	y	y	y	y	y	y	y	y	y	n	Rejected	Metering of houses, bulks and individual flats as a combined option is rejected for modelling purposes only and not as a concept; instead individual options are modelled.
	Meter all houses (including CSL repair), individual flats (internal, no CSL repair) and bulk meter (including CSL repair) blocks of flats (AMR technology).	y	y	y	y	y	y	y	y	y	y	n	Rejected	Metering of houses, bulks and individual flats as a combined option is rejected for modelling purposes only and not as a concept; instead individual options are modelled.
	Meter all houses (including CSL repair), individual flats (internal, no CSL repair) and bulk meter (including CSL repair) blocks of flats (Basic technology).	y	y	y	n	n	y	n	y	y	n	y	Rejected	For the last three AMP periods, we have used AMI, AMR and Dumb meter technology as we moved towards a full smart metering solution. However, from AMP7 and beyond, We will no longer support the large scale rollout of Dumb meter technology. There are three main factors for this decision: 1. Reduced Customer Benefit and social inequality: Dumb meter technology is not supported by Web and Mobile Apps that allow customers to track their water use in real time. Web and Mobile Apps facilitate a greater reduction in water use and therefore lower bills, and increase

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														customer confidence in meter reading accuracy. This in turn leads to greater customer satisfaction and a reduction in customer calls. 2. Low Reduction in CSL: Due to the requirement for manual meter reads, Dumb meter technology results in a lower reduction in CSL compared with AMR and AMI technology. 3. No Benefit to Mains Replacement Targeting: due to their real time monitoring abilities, AMR and AMI technology provides data to conduct a water balance within a DMA or sub DMA facilitating better mains replacement targeting. Due to the requirement for manual meter reads, Dumb metering technology cannot provide this benefit.
	Meter all houses (including CSL repair) and individual flats (internal, no CSL repair) with Basic technology and bulk metering (including CSL repair) blocks of flats with AMR technology.	y	y	y	n	n	y	n	y	y	n	y	Rejected	For the last three AMP periods, we have used AMI, AMR and Dumb meter technology as we moved towards a full smart metering solution. However, from AMP7 and beyond, We will no longer support the large scale rollout of Dumb meter technology. There are three main factors for this decision: 1. Reduced Customer Benefit and social inequality: Dumb meter technology is not supported by Web and Mobile Apps that allow customers to track their water use in real time. Web and Mobile Apps facilitate a greater reduction in water use and therefore lower bills, and increase

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														customer confidence in meter reading accuracy. This in turn leads to greater customer satisfaction and a reduction in customer calls. 2. Low Reduction in CSL: Due to the requirement for manual meter reads, Dumb meter technology results in a lower reduction in CSL compared with AMR and AMI technology. 3. No Benefit to Mains Replacement Targeting: due to their real time monitoring abilities, AMR and AMI technology provides data to conduct a water balance within a DMA or sub DMA facilitating better mains replacement targeting. Due to the requirement for manual meter reads, Dumb metering technology cannot provide this benefit.
Selective metering	Selective metering (agricultural troughs).	y	y	y	y	y	y	y	n	y	y	n	Rejected	Informed by our trials, this option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level. The installation of meters is not considered to be practical.
Illegal connections	Target and meter illegal connections.											n	Rejected	Illegal connections are already being metered when identified as part of our progressive metering programme. This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
Information	In-home display of real time consumption.	y	y	y	y	y	y	y	y	y	n	y	Rejected	We already provide access to usage information via Smart Meters online portal.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														This option has been rejected owing to the high risk that additional water savings may not be realised.
Generic Option Type: Water Efficiency														
Advice and Guidance	Free water efficiency goods and advice to all newly metered customers.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This has been rejected as a discrete option as there is a risk that water savings will not be realised if customers do not install and use the devices or implement the advice. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit
	Offer free water efficiency goods online.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This has been rejected as a discrete option as there is a risk that water savings will not be realised if customers do not install and use the devices or implement the advice. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit.
	Targeted information concerning the benefits of trickle irrigation compared to spray irrigation.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Targeted water efficiency information to other abstractors.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Targeting perceptions and attitudes via shared	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	spaces (urban environment).													realised or quantified and the inability to model this option at a DMA level.
Self-Install	Distribution of aerated shower head.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Distribution of cistern displacement devices.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Distribution of Shower Timers.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Distribution of tap inserts for self-installation.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
Direct Efficient Goods Plumber Installation	Installation of water butt.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Smarter Home Visits to current unmeasured Household Properties - involves water efficiency devices, water audit and water savings plan with customer (non-LAHAs only).	y	y	y	y	y	y	y	y	y	n	y	Rejected	This option has been rejected owing to the high risk that water savings may not be realised with the decreasing number of unmeasured properties as our programmes of progressive metering and optant metering are implemented.
	Household water efficiency visits and wastage repairs to mini bulk metered properties, targeted based on high use and continuous flow.	y	y	y	y	y	y	y	y	y	y	n	Rejected	The meter fitted to a mini bulk metered area will be for leakage detection purposes and will be non-revenue. This means it will measure the total water supplied but the meter will not be measuring water use in individual flats. Individual premises within a mini bulk metered area may have individual meters and these are included in the Smarter Home Visits and Wastage Fixes options.
	Household water efficiency visits and wastage repairs to bulk	y	y	y	y	y	y	y	y	y	y	n	Rejected	The meter fitted to a bulk metered area will be for leakage detection purposes and will be non-revenue. This means it will measure

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	metered properties, targeted based on high use and continuous flow.													the total water supplied but the meter will not be measuring water use in individual flats. Individual premises within a bulk metered area may have individual meters and these are included in the Smarter Home Visits and Wastage Fixes options.
	Plumber assisted installation of tap inserts.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a dual flush toilet.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a low flush toilet.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
	Replacement - installation of self-closing taps.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a shallow trap toilet.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a composting toilet.	n	y	y	y	y	y	n	n	y	n	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property and uptake expected to be very low due to concerns over disconnecting from mains supply, installation and location within the property, ongoing maintenance, odour etc. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Retrofit - installation of a dual flush toilet device.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Trial installation of whole house flow restrictors in high pressure areas.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
	Installation of water efficiency devices and internal leak repairs embedded into other internal visits such as internal meter repairs and CSL.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level.
Partner Efficiency Goods and Installation	Partner controlled domestic plumbing installs.	y	y	y	y	y	y	y	y	y	y	y	Rejected*	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners. This option is being explored as a benchmark option through small scale pilot projects with social housing providers
	Partnership projects with national organisations.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners.
	Partnership projects with public and third sector organisations.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														model this option at a DMA level until commitment from specific partners.
	Partnership projects with utility companies.	y	y	y	y	y	y	y	y	y	n	n	Rejected*	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners. We will continue to work with other utility companies to explore opportunities through our baseline programme.
	Partnership with retailers for more efficient white goods.	y	y	y	y	y	y	y	y	y	n	n	Rejected*	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners. Potential for baseline through Government-led initiatives.
	Partnership working benefits.	y	y	y	y	y	y	y	y	y	n	n	Rejected*	This option has been rejected owing to the high risk that water savings may not be realised or quantified and the inability to model this option at a DMA level until commitment from specific partners. We have many partnership programmes running to benefit water efficiency, and will continue to enhance these and new projects in the future to explore opportunities through our baseline programme.
Non-Domestic Advice and Assistance	Replacement - installation of a new toilet.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the premises. Instead it is more effective to promote multiple non-household retrofit activities conjunctively, integrated with other demand

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a waterless urinals.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the premises. Instead it is more effective to promote multiple non-household retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of self-closing taps.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the premises. Instead it is more effective to promote multiple non-household retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a shallow trap toilet.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the premises. Instead it is more effective to promote multiple non-household retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of a composting toilet.	n	y	y	y	y	y	n	n	y	n	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the property and uptake expected to be very low due to

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														concerns over disconnecting from mains supply, installation and location within the property, ongoing maintenance, odour etc. Instead it is more effective to promote multiple domestic retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Replacement - installation of timing devices.	n	y	y	y	y	y	n	n	y	y	y	Rejected	This has been rejected as a discrete option owing to the high cost to engage with each customer and gain access to the premises. Instead it is more effective to promote multiple non-household retrofit activities conjunctively, integrated with other demand management activity such as our Smarter Home Visit, Smarter Business Visit and Wastage fix programmes.
	Discretionary Water use - using non potable water for large users such as golf courses.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework.
Research	Continue to support ongoing research projects.	y	y	y	y	y	y	y	y	y	y	n	Rejected*	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework. Through our baseline programme we will continue to support the Water UK and UKWIR water efficiency research initiatives – a combined water sector initiative. We are also conducting research into Faith / Cultural water efficiency.
	Ofwat water efficiency research fund.	y	y	y	y	y	y	y	y	y	y	n	Rejected*	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework. Through our baseline

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
														programme we will continue to support the Water UK and UKWIR water efficiency research initiatives – a combined water sector initiative. We are also conducting research into Faith / Cultural water efficiency.
	Save Water Swindon and other flagship research projects.	y	y	y	y	y	y	y	y	y	n	n	Rejected	The Save Water Swindon Project finished in 2014.
	Support the leak toilet valves project phase 2.	y	y	y	y	y	y	y	y	y	y	n	Rejected*	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework. However, this option will continue to be included in baseline. We have been supporting the leaking toilet valves project throughout AMP6 and this will continue into AMP7 and beyond.
	Support the research undertaken by UKWIR.	y	y	y	y	y	y	y	y	y	y	n	Rejected*	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework. Through our baseline programme we will continue to support the Water UK and UKWIR water efficiency research initiatives – a combined water sector initiative. We are also conducting research into Faith / Cultural water efficiency.
	Support the Waterwise evidence base.	y	y	y	y	y	y	y	y	y	n	n	Rejected	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework.

Sub option	Specific option	1	2	3	4	5	6	7	8	9	10	11	Overall outcome	Screening reasoning
Incentive Schemes														
Innovative Tariffs	Financial Tariff implementation - only feasible post smart metering.	y	y	y	y	y	y	y	y	y	y	n	Rejected	This option cannot be modelled at DMA level or the benefits accurately quantified for the model framework. However, this option will continue to be investigated as part of Household Innovation and Tariffs option.

Table Q-14: Secondary screening of demand management options


Thames
Water