



Draft Water Resources Management Plan 2024

Resource Options – Groundwater Feasibility Report
Addendum

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Executive Summary

This report provides a summary of changes that have been made to the groundwater options since Thames Water's 2019 Water Resources Management Plan (WRMP19) as part of the 2024 Water Resources Management Plan (WRMP24) development.

This report acts as an addendum to **Thames Water WRMP19 Resource Options Groundwater feasibility report, September 2018, Rev 03**. The updated WRMP24 feasibility assessment presents the WRMP19 options and the additional WRMP24 options.

Six new groundwater options have been identified at WRMP24, one of which was rejected as a duplicate of an existing option. The remaining five options have been screened using the same approach as WRMP19 and passed all the stages to be included on the Feasible List.

The deployable output (DO) of the groundwater options has been reviewed at WRMP24, and some minor changes made to the benefit and costs of the options. Addington Groundwater option is the only option where these changes resulted in the design of the option being updated. None of these changes have resulted in changes to the feasibility scoring of these options completed at WRMP19.

Several options were rejected at both WRMP19 and WRMP24, subsequent to the feasibility scoring. Three options have also been removed from the WRMP24 list, as they are being progressed in AMP7.

This leaves twenty four groundwater options on the WRMP24 list of feasible options.

The following list of options are the confirmed list of feasible groundwater options for WRMP24:

- London:
 - Kidbrooke Aquifer Recharge/Aquifer Storage and Recovery (SLARS1)
 - Merton Aquifer Recharge (SLARS3)
 - Streatham Aquifer Recharge (SLARS2)
 - South East London (Addington) Aquifer Storage and Recovery
 - Thames Valley Central Aquifer Storage and Recovery
 - Horton Kirby Aquifer Storage and Recovery
 - Groundwater Addington
 - Southfleet/Greenhithe (new WTW)
 - London Confined Chalk (north)
 - GW – Honor Oak
 - Honor Oak Increase DO
 - Merton Recommissioning
- SWOX:
 - Woods Farm Increase DO
 - Moultsford 1
 - Ashton Keynes borehole pumps - Removal of Constraints to DO
 - Britwell Removal of Constraints
- SWA:
 - Datchet

- Datchet Increase DO
- Dorney Increase DO
- Taplow Increase DO
- Guildford:
 - Dapdune Licence Disaggregation
 - Dapdune RoC
- Kennet Valley:
 - Mortimer Disused Source (Recommission)
 - East Woodhay borehole pumps Removal of Constraints to DO

1 Introduction

Thames Water is developing options for the 2024 Water Resources Management Plan (WRMP24). These options build on options developed as part of Thames Water's 2019 Water Resources Management Plan (WRMP19). This report provides a summary of changes that have been made to the groundwater options since WRMP19 and as part of WRMP24 development.

This report acts as an addendum to Thames Water WRMP19 Resource Options Groundwater feasibility report, September 2018, Rev 03. This report should be read alongside the WRMP19 report. Information in this report supersedes information provided in the WRMP19 report.

New groundwater options have been identified at WRMP24; these options have been screened following the same methodology as used at WRMP19. This methodology is detailed in Section 3: Methodology of the WRMP19 report. Screening of new groundwater options is detailed in Section 3: New WRMP24 Groundwater Options.

Changes to the WRMP19 Groundwater Options have been detailed in Section 2. A backchecking exercise has been completed to assess if any changes are required to WRMP19 options as a result of identification of the new options or development of WRMP19 options. Backchecking also provides the opportunity to take into account any changes of circumstance that might affect how an option is considered. This might include a change in the planning and environmental status of a site, changes in national and local planning policy and the emergence of viable technical solutions that were unavailable at the time the original assessment was undertaken.

The WRMP24 screening, option development and backchecking methodology is detailed in WRMP24 Section 7 - Appraisal of Resource Options.

This report summarises changes to the groundwater options up to the end of feasibility screening.

1.1. Structure of this report

Table 1.1 summarises the structure of this report.

Table 1.1 Structure of this report

Section	Name	Description
	Executive summary	Summary of addendum report
1	Introduction	This section
2	Updates since WRMP19	Summary of the changes made to the options list since WRMP19, including changes to WRMP19 options, new WRMP24 options and changes to Deployable Output (DO).
3	New WRMP24 Groundwater Options	Summary of the new groundwater options identified at WRMP24 and their feasibility assessment scoring,
4	Updated feasibility assessment	Provides a summary of the current feasibility assessment for all options including options identified at both WRMP19 and WRMP24.
5	Option verification and conclusion	Validation of risk and uncertainty for all options and the confirmation of the feasible list of options.

Section	Name	Description
6	Reference information	A list of useful links and references
App A	Environmental Agency Letter, Information Letter: EA/11/2021	A copy of the Environmental Agency Letter: Information Letter: EA/11/2021 is provided in Appendix A.

2 Updates since WRMP19

2.1. Option Identification

To align with the Water Resource Planning Guideline and Water Resources South East WRSE approach, the following updates have been made to option identification for WRMP24:

- The WRMP19 rejection register has been revisited to ensure that the rejection reasoning remains robust for all rejected options.
- Rejected options have been reviewed to identify any options which should be revisited due to potential for regional benefits, particularly in light of changes in requirements to plan for 1:500 drought resilience (previously 1:200 at WRMP19) and the need to plan for a long-term environmental destination that achieves and maintains a sustainable level of abstraction by 2050.
- A review has been undertaken to identify new options to be considered in addition to the existing WRMP19 options. New options have been identified (in addition to the existing WRMP19 options). These new options are summarised in Section 3. As a result of the above review six new groundwater options were identified at WRMP24:
 - Taplow Increase DO
 - Datchet DO
 - Dorney Increase DO
 - Honor Oak DO
 - Woods Farm
 - Nonsuch Increase DO – rejected during screening

2.2. Feasibility Screening Updates

The overall changes to options and approach since WRMP19 are described in WRMP24 Section 7 Appraisal of Resource Options. Specific changes applicable to Groundwater options are detailed in Table 2.1 and Table 2.2. These tables should be read alongside the WRMP19 Groundwater Feasibility report.



Table 2.1: Option changes since WRMP19

WRMP19 Option Reference and name	WRSE Option Reference and name	Changes to the Option	WRMP19 Feasibility Screening Outcome	WRMP24 Feasibility Screening Outcome
London				
AR - Kidbrooke / Artificial recharge – Kidbrooke SLARS Kidbrooke (SLARS1) / South London Artificial Recharge Scheme Kidbrooke (South London Artificial Recharge Scheme 1) <i>RES-AR-SLARS1-7</i>	Kidbrooke Aquifer Recharge/Aquifer Storage and Recovery (SLARS1) <i>TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars</i>	AR and SLARS Options combined at WRMP19 Fine Screening to make a single option with combined DO.	Both individual options passed Stage 3 – on Feasible List	Combined option included in WRMP24. No changes made to screening of option from WRMP24. Option has been included in the WRMP24 Feasible List of options.
ASR Horton Kirby/ Aquifer storage and Recovery Horton Kirby <i>RES-ASR-HOR</i>	ASR Horton Kirby <i>TWU_LON_HI-GRW_RE1_ALL_asrhortonkirby</i>	Delivery deferred beyond end of AMP7 ¹	Passed Stage 3 – on Feasible List	Option has been included in Feasible List but feasibility assessment has not been reviewed for dWRMP24, will be reviewed before final WRMP24.
GW – Addington/ GW – Addington <i>RES-GW-ADD</i>	Groundwater Addington <i>TWU_LON_HI-GRW_ALL_ALL_addington gw</i>	DO significantly increased after modelling by TWUL. Design of option reviewed.	Passed Stage 3 – on Feasible List	Option design reviewed, no changes to Feasibility Assessment Scoring.
RC – Epsom / Removal of constraints – Epsom <i>RES-RC-EPS</i>	Epsom Removal of Constraints <i>TWU_LON_HI-GRW_ALL_ALL_epsom roc</i>	Option passed screening at WRMP19, decision reviewed at WRMP24 in consultation with EA.	Passed Stage 3 – on Feasible List	Option rejected following stakeholder engagement with the Environment Agency (EA).
RC – New River Head/Removal of constraints – New River Head	Not included in WRMP24 as planned delivery in AMP7	Planned Delivery in AMP 7 ²	Passed Stage 3 – on Feasible List	Removed from option list, as option to be delivered in AMP7

¹ ASR Horton Kirby Groundwater scheme was included in the WRMP19 Preferred Programme for London for delivery in AMP7 (2020-25). Since WRMP19 the delivery of this option has been deferred beyond the end of AMP7 as the supply demand balance in the London WRZ is in surplus.

² New River Head groundwater scheme was included in the WRMP19 Preferred Programme for London for delivery in AMP7 (2020-25). This option is therefore not included in the Draft WRMP plan however since this decision the option has been deferred beyond the end of AMP7 as the supply demand balance in the London WRZ is in surplus. The option will therefore be included in the Final WRMP24 options list.



WRMP19 Option Reference and name	WRSE Option Reference and name	Changes to the Option	WRMP19 Feasibility Screening Outcome	WRMP24 Feasibility Screening Outcome
<i>RES-RC-NRV</i>				
New WRMP24 option	Honor Oak Increase DO <i>TWU_LON_HI-GRW_ALL_ALL_honoroak do</i>	New option – See Section 3 - WRMP19 existing Honor Oak GW option is dependent on the WRMP24 options	N/A	Passed – on Feasible List of options.
New WRMP24 option	Nonsuch Increase DO <i>TWU_LON_HI-GRW_ALL_ALL_nonsuch do</i>	New option – See Section 3	N/A	Rejected as duplicate of Epsom Removal of Constraints Option. Epsom ROC also rejected. Screen decision stands as Nonsuch would be subject to the same constraints as Epsom.
SWOX				
New WRMP24 option	Woods Farm Increase DO <i>TWU_SWX_HI-GRW_ALL_ALL_woods farm do</i>	New option – Section 3	N/A	Passed – on Feasible List of options
SWA				
Taplow / Taplow <i>No WRMP19 ID as option was rejected at Stage 1.</i>	N/A	Option rejected as superseded by new Taplow Increase DO option	Failed Stage 1	Rejected outside Feasibility Assessment process, superseded by new Taplow Increase DO option
GW – Datchet / Datchet <i>RES-GW-DAT</i>	N/A	Option rejected as superseded by new Datchet Increase DO option	Passed stage 3 – on Feasible List of options	Rejected outside Feasibility Assessment process, superseded by new Datchet Increase DO option
New WRMP24 option	Taplow Increase DO <i>TWU_SWA_HI-GRW_ALL_ALL_taplowincreasedo</i>	New option – See Section 3	N/A	Passed – on Feasible List of options
New WRMP24 option	Datchet Increase DO <i>TWU_SWA_HI-GRW_ALL_ALL_datchet do</i>	New option – See Section 3	N/A	Passed – on Feasible List of options
New WRMP24 option	Dorney Increase DO <i>TWU_SWA_HI-GRW_ALL_ALL_dorney do</i>	New option – See Section 3	N/A	Passed – on Feasible List of options



Table 2.2: Option DO changes since WRMP19

WRMP19 Option Name		WRMP19 DO (Ml/d)**		WRMP24 DO (Ml/d)			Difference (Ml/d)		Impact on Feasibility Assessment Scoring
		Average	Peak	1 in 2 average	1 in 500 average	1 in 500 peak	Average	Peak	
London									
AR - Kidbrooke / Artificial recharge – Kidbrooke SLARS Kidbrooke (SLARS1) / South London Artificial Recharge Scheme Kidbrooke (South London Artificial Recharge Scheme 1) RES-AR-SLARS1-7	Kidbrooke Aquifer Recharge/Aquifer Storage and Recovery (SLARS1) TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars	7*	NA	8	8	8	1	NA	Minor changes to DO and therefore no change to option design or Feasibility Assessment scoring.
AR Merton (SLARS3) / Artificial recharge Merton (South London Artificial Recharge Scheme 3) RES-AR-SLARS3	Merton Aquifer Recharge (SLARS3) TWU_LON_HI-GRW_ALL_ALL_merton ar	5	NA	6	6	5	1	NA	Minor changes to DO. No change to option design, as existing design was capable of treating current flows. Therefore no change to Feasibility Assessment scoring.
AR Streatham (SLARS2) / Artificial recharge Streatham (South London Artificial Recharge Scheme 2) RES-AR-SLARS2	Streatham Aquifer Recharge (SLARS2) TWU_LON_HI-GRW_ALL_ALL_streatham ar	4	NA	5	5	7	1	NA	Change due to reassessment of baseline DO. Feasibility Assessment scoring reviewed and no changes.
GW – Addington/ GW – Addington RES-GW-ADD	Groundwater Addington TWU_LON_HI-GRW_ALL_ALL_addington gw	1	NA	2.7	2.7	5.7	1.7	NA	Option design reviewed and no changes to Feasibility Assessment scoring.
GW – Southfleet / Greenhithe (new WTW) / Groundwater - Southfleet/Greenhithe	Southfleet/Greenhithe (new WTW)	8	NA	8.8	8.8	8.8	0.8	NA	DO change due to review of benefit and process losses. No increase to peak, so no change to option design or Feasibility Assessment scoring.



WRMP19 Option Name	WRMP24 Option Name	WRMP19 DO (MI/d)**		WRMP24 DO (MI/d)			Difference (MI/d)		Impact on Feasibility Assessment Scoring
		Average	Peak	1 in 2 average	1 in 500 average	1 in 500 peak	Average	Peak	
<i>RES-GW-SOU</i>	<i>TWU_LON_HI-GRW_ALL_ALL_s'fleet lic disagg</i>								
GW – Honor Oak / Groundwater – Honor Oak <i>RES-GW-HON</i>	GW – Honor Oak <i>TWU_LON_HI-GRW_ALL_ALL_honor oak gw</i>	1	NA	1.4	1.4	2.7	0.4	NA	DO change due to review of benefit and process losses. No increase to peak so no change to option design or Feasibility Assessment scoring.
Merton recommissioning / Removal of constraints - Merton recommissioning <i>RES-RC-MTN</i>	Merton Recommissioning <i>TWU_LON_HI-GRW_ALL_ALL_merton recommission</i>	2	NA	2	2	6	0	NA	Minor changes to DO. No increased impact on any Feasibility Assessment scores so not reassessed.
RC – Epsom / Removal of constraints – Epsom <i>RES-RC-EPS</i>	Epsom Removal of Constraints <i>TWU_LON_HI-GRW_ALL_ALL_epsom roc</i>	2	NA	3	3	2.8	1	NA	Rejected – refer to Table 2.1.
SWOX									
Ashton Keynes borehole pumps / Ashton Keynes borehole pumps <i>RES-RC-ASH</i>	Ashton Keynes borehole pumps - Removal of Constraints to DO <i>TWU_SWX_HI-GRW_ALL_ALL_ashton keynes roc</i>	NA	1.5	0	0	2	NA	0.5	Change due to reassessment of current source peak DO – no change to option design or total DO from source – therefore no change to Feasibility Assessment scoring.

*The WRMP19 Kidbrooke AR/SLARS DO is the sum of the DOs of two separate options

** From WRMP19 Section 7, Table 7-3 Climate Change 2080s DO (MI/d)

3 New WRMP24 Groundwater Options

Six new groundwater options were identified at WRMP24, a summary of these options is provided in Table 3.1. Five of the new options passed the three stages of screening and are included on the Feasible List of options. Nonsuch increase DO option was rejected at Stage 1 as this was found to be a duplicate of the WRMP19 Epsom option. A summary of the screening undertaken for the new groundwater options can be found in Section 4.

Table 3.1 Summary of New WRMP24 Groundwater Options

Option Name	Option Description	DO Benefit	Outcome of screening
Datchet increase DO	Increase current DO limited by pump capacity to the annual average licence limit.	Average 1.6 MI/d, Peak 6.2 MI/d	Passed
Dorney increase DO	Increase current DO to licence by drilling an additional borehole.	Average 0 MI/d, Peak 4.3 MI/d	Passed
Taplow increase DO	Increase current DO to licence by drilling an additional borehole.	Average 0 MI/d, Peak 5.7MI/d	Passed
Woods Farm increase DO	Increase current DO to licence by drilling an additional borehole.	Average 2.4 MI/d, Peak 2.9 MI/d	Passed
Honor Oak increase DO	Recommission Honor Oak WTW and well.	Average 1.66 MI/d, Peak 1.66 MI/d	Passed
Nonsuch increase DO	This option was rejected as further review confirmed option was a duplicate of Epsom Removal of Constraints.	1.27 MI/d at Nonsuch and ~2 MI/d at Epsom.	Failed

4 Updated Feasibility Assessment

4.1. Feasibility Assessment Approach

This section of the report outlines the updates made in WRMP24 to the WRMP19 feasibility assessment. This should be read alongside the WRMP19 groundwater feasibility report. Where options have been rejected through the screening process the rejection reason is recorded in WRMP24 Appendix Q rejection register.

A three-stage feasibility screening approach was taken at WRMP24, this approach is unchanged from WRMP19, details of the approach can be found in the WRMP19 groundwater feasibility report.

At WRMP19, fine screening was undertaken for all options which passed the feasibility screening. The WRMP19 fine screening took account of the estimated volume of water resources need for Thames Water and, where applicable, neighbouring companies. However, the potential water resources need for the region at WRMP24 is potentially significantly higher than at WRMP19, owing to potentially significant increased sustainability reductions as well as a shift to 1:500 level of drought resilience.

Furthermore, potential new transfers identified by WRSE would potentially allow new resource options in the Thames Water supply area to supply more WRSE WRZs than were considered at WRMP19 when estimating potential resource needs. For these reasons, the potential resource need is not being used as a consideration in the screening process at WRMP24. This is to avoid rejecting options based on Thames Water's need where there could be a regional benefit. At WRMP24 the fine screening stage has therefore been replaced by use of the investment model to compare options against cost, environmental, and resilience criteria.

4.2. Stage 1 Assessment Results

At WRMP19 total of 47 options were identified through the top-down and bottom-up investigations for assessment at Stage 1. Two options were rejected/removed from the list at WRMP24 as they have been progressed in AMP7:

- Removal of Constraints – New River Head²
- Ladymead WTW removal of constraints to DO

A further 6 options were identified at WRMP24.

Where changes have been made to WRMP19 RAG status this is indicated in Table 4.3.

The Stage 1 assessment of all WRMP19 and WRMP24 options is presented in Table 4.1 providing the red, amber, green assessment of the criteria described in the WRMP19 groundwater feasibility report. Thirty-five options passed the Stage 1 assessment. **Error! Reference source not found.**



Table 4.1: Stage 1 assessment

			Planning, socio-economic and environmental criteria							Engineering Data	
Criterion	WRSE ID	WRMP19 ID	National / international nature conservation sites	National / international heritage sites	Areas of major built development	Water availability (CAMS status)	Realistic prospect of acceptable abstraction licence	Is the option drought resilient	Proximity to source water	Source quality (treatability)	Pass / Fail
London											
Kidbrooke Aquifer Recharge	TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars (Combined with ASR below)	RES-AR-SLARS1-7 (Combined with ASR below at WRMP19 Fine Screening)									Pass
Kidbrooke Aquifer Storage and Recovery (SLARS1)	TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars (Combined with AR above)	RES-AR-SLARS1-7 (Combined with AR above at WRMP19 Fine Screening)									Pass
Merton Aquifer Recharge (SLARS3)	TWU_LON_HI-GRW_ALL_ALL_merton ar	RES-AR-SLARS3									Pass
Streatham Aquifer Recharge (SLARS2)	TWU_LON_HI-GRW_ALL_ALL_streatham ar	RES-AR-SLARS2									Pass
South East London (Addington) Aquifer Storage and Recovery	TWU_LON_HI-GRW_ALL_ALL_addington asr	RES-ASR-SEL									Pass
Thames Valley Central Aquifer Storage and Recovery	TWU_LON_HI-GRW_ALL_ALL_thames valley asr	RES-ASR-TV									Pass
Groundwater Addington	TWU_LON_HI-GRW_ALL_ALL_addington gw	RES-GW-ADD									Pass
GW – Epsom	TWU_LON_HI-GRW_RE1_ALL_epsom-gw	Not on Constrained List									Fail
Shortlands	TWU_LON_HI-GRW_RE2_ALL_shortlands	Not on Constrained List									Pass



			Planning, socio-economic and environmental criteria							Engineering Data	
Criterion	WRSE ID	WRMP19 ID	National / international nature conservation sites	National / international heritage sites	Areas of major built development	Water availability (CAMS status)	Realistic prospect of acceptable abstraction licence	Is the option drought resilient	Proximity to source water	Source quality (treatability)	Pass / Fail
Southfleet/ Greenhithe (new WTW)	TWU_LON_HI-GRW_ALL_ALL_s'fleet lic disagg	RES-GW-SOU									Pass
London Confined Chalk (north)	TWU_LON_HI-GRW_ALL_ALL_london conchalk	RES-GW-LCC									Pass
London Confined Chalk (north-east)	TWU_LON_HI-GRW_ALL_ALL_london-cc (ne)	Not on Constrained List									Pass
GW – Honor Oak	TWU_LON_HI-GRW_ALL_ALL_honor oak gw	RES-GW-HON									Pass
Honor Oak Increase DO	TWU_LON_HI-GRW_ALL_ALL_honoroak do	NA – new WRMP24 option									Pass
Merton recommissioning	TWU_LON_HI-GRW_ALL_ALL_merton recommission	RES-RC-MTN									Pass
Epsom Removal of Constraints	TWU_LON_HI-GRW_ALL_ALL_epsom roc	RES-RC-EPS									Pass
North London Licence trading		Not on Constrained List									Fail
SWOX											
AR – Cricklade	TWU_SWX_HI-GRW_RE1_ALL_cricklade-ar	Not on Constrained List									Pass
Woods Farm licence increase	TWU_SWX_HI-GRW_RE2_ALL_wood farm licence	Not on Constrained List									Fail
Woods Farm Increase DO	TWU_SWX_HI-GRW_ALL_ALL_woods farm do	NA – new WRMP24 option									Pass



			Planning, socio-economic and environmental criteria							Engineering Data	
Criterion	WRSE ID	WRMP19 ID	National / international nature conservation sites	National / international heritage sites	Areas of major built development	Water availability (CAMS status)	Realistic prospect of acceptable abstraction licence	Is the option drought resilient	Proximity to source water	Source quality (treatability)	Pass / Fail
GW - South Stoke 1	TWU_SWX_HI-GRW_ALL_ALL_gw south stoke 1	Not on Constrained List									Pass
GW - South Stoke 2 (with treatment)	TWU_SWX_HI-GRW_ALL_ALL_gw s stoke 2 w/treat	Not on Constrained List									Fail
GW - Moultsford 1	TWU_SWX_HI-GRW_ALL_ALL_moultsford gw	RES-GW-MOU									Pass
GW - Moultsford 2 (with treatment)	TWU_SWX_HI-GRW_ALL_ALL_gwmoultsford2 w/treat	Not on Constrained List									Fail
Cotswold Edge	TWU_SWX_HI-GRW_RE1_ALL_cotswold edge	Not on Constrained List									Fail
River Marden	TWU_SWX_HI-GRW_RE1_ALL_river marden	Not on Constrained List									Pass
Britwell Removal of Constraints	TWU_SWX_HI-GRW_RE1_ALL_britwell roc	RES-RC-BTW									Pass
Ashton Keynes borehole pumps - Removal of Constraints to DO	TWU_SWX_HI-GRW_ALL_ALL_ashton keynes roc	RES-RC-ASH									Pass
Witheridge Hill borehole pumps	TWU_SWX_HI-GRW_RE1_ALL_witheridge hill bh	Not on Constrained List									Pass
SWA											
Hampden Bottom-Wendover	TWU_SWA_HI-GRW_RE1_ALL_hampbottom-wendover	Not on Constrained List									Pass



			Planning, socio-economic and environmental criteria							Engineering Data	
Criterion	WRSE ID	WRMP19 ID	National / international nature conservation sites	National / international heritage sites	Areas of major built development	Water availability (CAMS status)	Realistic prospect of acceptable abstraction licence	Is the option drought resilient	Proximity to source water	Source quality (treatability)	Pass / Fail
GW - Datchet	TWU_SWA_HI-GRW_ALL_ALL_datchet gw	RES-GW-DAT									Pass
Datchet Increase DO	TWU_SWA_HI-GRW_ALL_ALL_datchet do	NA – new WRMP24 option									Pass
Dorney Increase DO	TWU_SWA_HI-GRW_ALL_ALL_dorney do	NA – new WRMP24 option									Pass
Bourne End (East Marlow)	TWU_SWA_HI-GRW_ALL_ALL_bourne end-e marlow	Not on Constrained List									Fail
Medmenham	TWU_SWA_HI-GRW_RE2_ALL_medmenham	Not on Constrained List									Fail
Taplow	TWU_SWA_HI-GRW_ALL_ALL_taplow	Not on Constrained List									Fail
Taplow Increase DO	TWU_SWA_HI-GRW_ALL_ALL_taplowincreased o	NA – new WRMP24 option									Pass
Remenham	TWU_SWA_HI-GRW_RE2_ALL_remenham	Not on Constrained List									Fail
GW – West Marlow	TWU_SWA_HI-GRW_RE2_ALL_gw west marlow	Not on Constrained List									Fail
RC - Hampden disinfection upgrade	TWU_SWA_HI-ROC_RE2_ALL_rc-hampden upgrade	Not on Constrained List									Fail
Kennet Valley											
GW - Purley	TWU_KVZ_HI-GRW_ALL_ALL_gw purley	Not on Constrained List									Fail



			Planning, socio-economic and environmental criteria							Engineering Data	
Criterion	WRSE ID	WRMP19 ID	National / international nature conservation sites	National / international heritage sites	Areas of major built development	Water availability (CAMS status)	Realistic prospect of acceptable abstraction licence	Is the option drought resilient	Proximity to source water	Source quality (treatability)	Pass / Fail
GW - Mapledurham	TWU_KVZ_HI-GRW_ALL_ALL_gw mapledurham	Not on Constrained List									Fail
GW - Mortimer (transfer peak licence from Arborfield)	TWU_KVZ_HI-OTH_ALL_ALL_mortimer peaklicence	Not on Constrained List									Pass
GW - Mortimer disused source (recommission)	TWU_KVZ_HI-GRW_ALL_ALL_mortimer recomm	RES-GW-MOR									Pass
GW – Hungerford	TWU_KVZ_HI-GRW_ALL_ALL_gw hungerford	Not on Constrained List									Fail
GW - Playhatch (increased licence)	TWU_KVZ_HI-OTH_ALL_ALL_gw playhatch licence	Not on Constrained List									Fail
East Woodhay borehole pumps Removal of Constraints to DO	TWU_KVZ_HI-GRW_ALL_ALL_east woodhay roc	RES-RC-EWO									Pass
Guildford											
ASR - Guildford (Abbotswood)	TWU_GUI_HI-GRW_ALL_ALL_asr abbotswood	Not on Constrained List									Pass
Dapdune licence disaggregation	TWU_GUI_HI-GRW_ALL_ALL_dapdune lic disagg	RES-GW-DAP									Pass
Mousehill and Rodborough Rehab	TWU_GUI_HI-GRW_RE2_ALL_mousehill rodborough	Not on Constrained List									Fail



Planning, socio-economic and environmental criteria										Engineering Data	
Criterion	WRSE ID	WRMP19 ID	National / international nature conservation sites	National / international heritage sites	Areas of major built development	Water availability (CAMS status)	Realistic prospect of acceptable abstraction licence	Is the option drought resilient	Proximity to source water	Source quality (treatability)	Pass / Fail
Dapdune removal of constraints to DO	TWU_GUI_HI-GRW_ALL_ALL_dapdune roc	Not on Constrained List									Pass
RC - Sturt Road Spring Capture	TWU_GUI_HI-GRW_RE2_ALL_rc sturt road spring	Not on Constrained List									Pass
Henley											
Sheeplands licence disaggregation	TWU_HEN_HI-OTH_ALL_ALL_sheeplands licence	Not on Constrained List									Fail

Following WRMP24 Stage 1 screening 18 options failed and are included in WRMP24 Appendix Q - Scheme rejection register.

Six new options identified at WRMP24 were screened. Five of the options passed Stage 1 of screening. The sixth option, Nonsuch Increase DO was not screened as this was found to be a duplicate of Epsom Removal of Constraints.

WRMP19 options which were completed during AMP7 were removed from the list, see Table 2.1. There were no changes to WRMP19 decisions at Stage 1 for the remaining options.

Further details regarding the Stage 1 assessments are included for WRMP19 options in the Groundwater Feasibility Report. Further details for new WRMP24 options are provided in Section 3.

4.3. Stage 2 assessment results

The Stage 2 assessment of the WRMP19 and WRMP24 options that passed Stage 1 is presented in Table 4.2 providing the red, amber, green assessment of the criteria described in the WRMP19 Groundwater Feasibility Report. Twenty-six options passed the Stage 2 assessment. Further details are included in the WRMP19 Groundwater Feasibility report.

There were no changes to WRMP19 RAG status as indicated in Table 4.2.



Table 4.2: Stage 2 assessment

Criterion	WRSE ID	WRMP19 ID	Ownership of site and tenancies	Floodplain encroachment	Nature conservation and biodiversity	Non-traffic impact of construction on local residents	Water resources and water quality	Network reinforcement requirements	OPEX cost	Water source and availability	Cost/benefit of further investigation to validate yield	Resilience	Hydrogeological suitability	Construction complexity	Operational complexity	Pass / Fail
London																
Kidbrooke Aquifer Recharge	TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars (Combined with ASR below)	RES-AR-SLARS1-7 (Combined with ASR below at WRMP19 Fine Screening)														Pass
Kidbrooke Aquifer Storage and Recovery (SLARS1)	TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars (Combined with AR above)	RES-AR-SLARS1-7 (Combined with AR above at WRMP19 Fine Screening)														Pass
Merton Aquifer Recharge (SLARS3)	TWU_LON_HI-GRW_ALL_ALL_merton ar	RES-AR-SLARS3														Pass
Streatham Aquifer Recharge (SLARS2)	TWU_LON_HI-GRW_ALL_ALL_streatham ar	RES-AR-SLARS2														Pass
RES-ASR-SEL South East London (Addington) Aquifer Storage and Recovery	TWU_LON_HI-GRW_ALL_ALL_addington asr	RES-ASR-SEL														Pass



Criterion	WRSE ID	WRMP19 ID	Ownership of site and tenancies	Floodplain encroachment	Nature conservation and biodiversity	Non-traffic impact of construction on local residents	Water resources and water quality	Network reinforcement requirements	OPEX cost	Water source and availability	Cost/benefit of further investigation to validate yield	Resilience	Hydrogeological suitability	Construction complexity	Operational complexity	Pass / fail
Thames Valley Central Aquifer Storage and Recovery	TWU_LON_HI-GRW_ALL_ALL_thames valley asr	RES-ASR-TV														Pass
Groundwater Addington	TWU_LON_HI-GRW_ALL_ALL_addingt on gw	RES-GW-ADD														Pass
Shortlands	TWU_LON_HI-GRW_RE2_ALL_shortlands	Not on Constrained List														Fail
Southfleet/ Greenhithe (new WTW)	TWU_LON_HI-GRW_ALL_ALL_s'fleet lic disagg	RES-GW-SOU														Pass
London Confined Chalk (north)	TWU_LON_HI-GRW_ALL_ALL_london conchalk	RES-GW-LCC														Pass
London Confined Chalk (north-east)	TWU_LON_HI-GRW_ALL_ALL_london-cc (ne)	Not on Constrained List														Fail
GW – Honor Oak	TWU_LON_HI-GRW_ALL_ALL_honor oak gw	RES-GW-HON														Pass
Honor Oak Increase DO	TWU_LON_HI-GRW_ALL_ALL_honoroak do	NA – new WRMP24 option														Pass
Merton recommissioning	TWU_LON_HI-GRW_ALL_ALL_merton recommission	RES-RC-MTN														Pass



Criterion	WRSE ID	WRMP19 ID	Ownership of site and tenancies	Floodplain encroachment	Nature conservation and biodiversity	Non-traffic impact of construction on local residents	Water resources and water quality	Network reinforcement requirements	OPEX cost	Water source and availability	Cost/benefit of further investigation to validate yield	Resilience	Hydrogeological suitability	Construction complexity	Operational complexity	Pass / fail
Epsom Removal of Constraints	TWU_LON_HI-GRW_ALL_ALL_epsom roc	RES-RC-EPS														Pass
SWOX																
AR – Cricklade	TWU_SWX_HI-GRW_RE1_ALL_cricklade-ar	Not on Constrained List														Fail
Woods Farm Increase DO	TWU_SWX_HI-GRW_ALL_ALL_woods farm do	NA – new WRMP24 option														Pass
GW - South Stoke 1	TWU_SWX_HI-GRW_ALL_ALL_gw south stoke 1	Not on Constrained List														Pass
GW - Moulsoford 1	TWU_SWX_HI-GRW_ALL_ALL_moulsoford gw	RES-GW-MOU														Pass
River Marden	TWU_SWX_HI-GRW_RE1_ALL_river marden	Not on Constrained List														Fail
Ashton Keynes borehole pumps - Removal of Constraints to DO	TWU_SWX_HI-GRW_ALL_ALL_ashton keynes roc	RES-RC-ASH														Pass
Witheridge Hill borehole pumps	TWU_SWX_HI-GRW_RE1_ALL_witheridge hill bh	Not on Constrained List														Fail



Criterion	WRSE ID	WRMP19 ID	Ownership of site and tenancies	Floodplain encroachment	Nature conservation and biodiversity	Non-traffic impact of construction on local residents	Water resources and water quality	Network reinforcement requirements	OPEX cost	Water source and availability	Cost/benefit of further investigation to validate yield	Resilience	Hydrogeological suitability	Construction complexity	Operational complexity	Pass / fail
Britwell Removal of Constraints	TWU_SWX_HI-GRW_RE1_ALL_britwell roc	RES-RC-BTW														Pass
SWA																
Hampden Bottom-Wendover	TWU_SWA_HI-GRW_RE1_ALL_hampbottom-wendover	Not on Constrained List														Fail
GW - Datchet	TWU_SWA_HI-GRW_ALL_ALL_datchet gw	RES-GW-DAT														Pass
Datchet Increase DO	TWU_SWA_HI-GRW_ALL_ALL_datchet do	NA – new WRMP24 option														Pass
Dorney Increase DO	TWU_SWA_HI-GRW_ALL_ALL_dorney do	NA – new WRMP24 option														Pass
Taplow Increase DO	TWU_SWA_HI-GRW_ALL_ALL_taplowincreasedo	NA – new WRMP24 option														Pass
Kennet Valley																
GW - Mortimer disused source (recommission)	TWU_KVZ_HI-GRW_ALL_ALL_mortimer recomm	RES-GW-MOR														Pass
GW - Mortimer (transfer peak licence from Arborfield)	TWU_KVZ_HI-OTH_ALL_ALL_mortimer peaklicence	Not on Constrained List														Fail



Criterion	WRSE ID	WRMP19 ID	Ownership of site and tenancies	Floodplain encroachment	Nature conservation and biodiversity	Non-traffic impact of construction on local residents	Water resources and water quality	Network reinforcement requirements	OPEX cost	Water source and availability	Cost/benefit of further investigation to validate yield	Resilience	Hydrogeological suitability	Construction complexity	Operational complexity	Pass / fail
East Woodhay borehole pumps Removal of Constraints to DO	TWU_KVZ_HI-GRW_ALL_ALL_east woodhay roc	RES-RC-EWO														Pass
Guildford																
ASR - Guildford (Abbotswood)	TWU_GUI_HI-GRW_ALL_ALL_asr abbotswood	Not on Constrained List														Fail
Dapdune licence disaggregation	TWU_GUI_HI-GRW_ALL_ALL_dapdun e lic disagg	RES-GW-DAP														Pass
Dapdune removal of constraints to DO	TWU_GUI_HI-GRW_ALL_ALL_dapdun e roc	RES-RC-DAP														Pass
RC - Sturt Road Spring Capture	TWU_GUI_HI-GRW_RE2_ALL_rc sturt road spring	Not on Constrained List														Fail

Screening of the remaining WRMP19 options and the new WRMP24 options has been combined and backchecking completed, nine options were rejected at Stage 2; the reasons for the option rejection are included in WRMP24 Appendix Q - Scheme rejection register.

The five new WRMP24 options which passed Stage 1 passed Stage 2 of the screening.

There were no changes to the WRMP19 RAG status this is indicated in Table 4.3.

Further information regarding the investigations into the options is included in the WRMP19 Groundwater Feasibility report and Section 3 of this report.

4.4. Stage 3 assessment results

Assessment against Stage 3 criteria of options has been undertaken for all options that passed Stage 2. Two options were changed following the Stage 2 assessment (changes made at WRMP19 and are carried through to WRMP24); the updated options will be taken forward for the Stage 3 assessment:

- SLARS Kidbrooke: one site has been removed from the option due to issues with land ownership, with a resultant decrease in the potential DO benefit from 8 MI/d average and 7 MI/d peak to 4 MI/d average and 5.1 MI/d peak; and
- Groundwater Addington:
 - At Stage 3 WRMP19 an upgrade to the WTW was included in the proposed scope of this option. Removing the mutual exclusivity between the South East London (Addington) Aquifer Storage and Recovery option and the groundwater development options at Addington. The two options were still interdependent.
 - At WRMP24 it was decided the cost of the WTW upgrade required if both South East London (Addington) Aquifer Storage and Recovery and Groundwater Addington Options were selected would be considered at post-processing. The capital cost of the WTW was thus removed from Addington Groundwater.
 - Addington Groundwater DO was also reviewed and increased significantly at WRMP24, leading to a design update for the option. The feasibility scores at all stages were reviewed, but no changes were required.

The Stage 3 assessment of the WRMP19 and WRMP24 options that passed Stage 2 is presented in Table 4.3 providing the red, amber, green assessment of the criteria described in WRMP19 Groundwater Feasibility report. Twenty-six options passed the Stage 3 assessment. Further details are included in the WRMP19 Groundwater Feasibility report and Section 3 of this report.

Where changes have been made to WRMP19 RAG status this is indicated in Table 4.3.



Table 4.3: Stage 3 assessment

Criterion	WRSE ID	WRMP19 ID	Nature conservation and biodiversity	Water resources and water quality	Normalised cost	Water source and availability	Pass / Fail
London							
Kidbrooke Aquifer Recharge	TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars (Combined with ASR below)	RES-AR-SLARS1-7 (Combined with ASR below at WRMP19 Fine Screening)					Pass
Kidbrooke Aquifer Storage and Recovery (SLARS1)	TWU_LON_HI-GRW_ALL_ALL_kidbrooke slars (Combined with AR above)	RES-AR-SLARS1-7 (Combined with AR above at WRMP19 Fine Screening)					Pass
Merton Aquifer Recharge (SLARS3)	TWU_LON_HI-GRW_ALL_ALL_merton ar	RES-AR-SLARS3					Pass
Streatham Aquifer Recharge (SLARS2)	TWU_LON_HI-GRW_ALL_ALL_streatham ar	RES-AR-SLARS2					Pass
RES-ASR-SELRES-ASR-SEL South East London (Addington) Aquifer Storage and Recovery	TWU_LON_HI-GRW_ALL_ALL_addington asr	RES-ASR-SEL					Pass
Thames Valley Central Aquifer Storage and Recovery	TWU_LON_HI-GRW_ALL_ALL_thames valley asr	RES-ASR-TV					Pass
Groundwater Addington	TWU_LON_HI-GRW_ALL_ALL_addington gw	RES-GW-ADD					Pass
Southfleet/ Greenhithe (new WTW)	TWU_LON_HI-GRW_ALL_ALL_s'fleet lic disagg	RES-GW-SOU					Pass



London Confined Chalk (north)	TWU_LON_HI-GRW_ALL_ALL_london conchall	RES-GW-LCC					Pass
GW – Honor Oak	TWU_LON_HI-GRW_ALL_ALL_honor oak gw	RES-GW-HON					Pass
Honor Oak Increase DO	TWU_LON_HI-GRW_ALL_ALL_honoroak do	NA – new WRMP24 option					Pass
Merton recommissioning	TWU_LON_HI-GRW_ALL_ALL_merton recommission	RES-RC-MTN					Pass
Epsom Removal of Constraints	TWU_LON_HI-GRW_ALL_ALL_epsom roc	RES-RC-EPS					Pass
SWOX							
GW - South Stoke 1	TWU_SWX_HI-GRW_ALL_ALL_gw south stoke 1	Not on Constrained List – failed at Fine Screening					Pass
Woods Farm Increase DO	TWU_SWX_HI-GRW_RE2_ALL_wood farm licence	NA – new WRMP24 option					Pass
GW - Moultsford 1	TWU_SWX_HI-GRW_ALL_ALL_moultsford gw	RES-GW-MOU					Pass
Ashton Keynes borehole pumps - Removal of Constraints to DO	TWU_SWX_HI-GRW_ALL_ALL_ashton keynes roc	RES-RC-ASH					Pass
Britwell Removal of Constraints	TWU_SWX_HI-GRW_RE1_ALL_britwell roc	RES-RC-BTW					Pass
SWA							
GW – Datchet	TWU_SWA_HI-GRW_ALL_ALL_datchet gw	RES-GW-DAT					Pass
Datchet Increase DO	TWU_SWA_HI-GRW_ALL_ALL_datchet do	NA – new WRMP24 option					Pass
Dorney Increase DO	TWU_SWA_HI-GRW_ALL_ALL_dorney do	NA – new WRMP24 option					Pass



Taplow Increase DO	TWU_SWA_HI- GRW_ALL_ALL_taplowincrea sedo	NA – new WRMP24 option	<div><div></div><div></div><div></div><div></div></div>	Pass
Kenet Valley				
GW - Mortimer disused source (recommission)	TWU_KVZ_HI- GRW_ALL_ALL_mortimer recomm	RES-GW-MOR	<div><div></div><div></div><div></div><div></div></div>	Pass
East Woodhay borehole pumps Removal of Constraints to DO	TWU_KVZ_HI- GRW_ALL_ALL_east woodhay roc	RES-RC-EWO	<div><div></div><div></div><div></div><div></div></div>	Pass
Guildford				
Dapdune licence disaggregation	TWU_GUI_HI- GRW_ALL_ALL_dapdune lic disagg	RES-GW-DAP	<div><div></div><div></div><div></div><div></div></div>	Pass
Dapdune removal of constraints to DO	TWU_GUI_HI- GRW_ALL_ALL_dapdune roc	RES-RC-DAP	<div><div></div><div></div><div></div><div></div></div>	Pass

At WRMP24 assessment of the five new options and backchecking of the remaining WRMP19 options was completed. Twenty-six options passed the Stage 3 assessment and none failed the Stage 3 assessment. Kidbrooke Aquifer Recharge and Kidbrooke Aquifer Storage and Recovery (SLARS1) were combined at the Fine Screening Stage at WRMP19, resulting in twenty-five options.

The five new WRMP24 options which passed Stage 2 also passed Stage 3 of the screening.

5 Option Verification and Conclusion

The validation discussion of risk and uncertainty in Section 7 of the WRMP19 Groundwater Feasibility Report remains unchanged. Where options have been rejected through the screening process the rejection reason is recorded in WRMP24 Appendix Q rejection register.

5.1. Subsequent removals and rejections

This report summarises changes to the groundwater options up to the end of feasibility screening. There were, however, subsequent removals, both at WRMP19 and WRMP24 resulting from further development of the options.

GW - South Stoke 1 was rejected at WRMP19 validation. The rejection reasoning has been reviewed at WRMP24 and has been found to remain valid. The rejection reasoning can be found in WRMP24 Appendix Q Rejection Register.

A new environmental policy has been introduced by the Environment Agency in the WRMP24 round of planning, resulting in a new Supplementary Guidance note entitled, “Water resources planning guideline supplementary guidance – actions required to prevent deterioration”. This supplementary guidance highlighted the potential deterioration risk of increasing water abstraction from groundwater sources above historic levels, even where this increase is within the abstraction licence. To mitigate the deterioration risk the Environment Agency guidance sets out that some abstraction licenses may be capped at volumes that have been abstracted in recent years. The groundwater options were reviewed against these environmental scenarios and as a result Epsom Removal of Constraints was rejected at WRMP24.

In addition to the options that passed Stage 3 feasibility assessment, Horton Kirby ASR has been included in the Feasible List. Horton Kirby ASR Groundwater scheme was included in the WRMP19 Preferred Programme for London for delivery in AMP7 (2020-25). Since WRMP19 the delivery of this option has been deferred beyond the end of AMP7 as the supply demand balance in the London WRZ is in surplus. The feasibility assessment of this option has not been reviewed for dWRMP24, but will be reviewed before final WRMP24.

Twenty four groundwater options are therefore included in the WRMP24 Feasible List.

Information on option development and investment modelling can be found in WRMP24 Section 7 - Appraisal of Resource Options.

5.2. Confirmation of feasible list of options:

The following list of options are the confirmed list of feasible groundwater options for WRMP24:

- London:
 - Kidbrooke Aquifer Recharge/Aquifer Storage and Recovery (SLARS1)
 - Merton Aquifer Recharge (SLARS3)
 - Streatham Aquifer Recharge (SLARS2)
 - South East London (Addington) Aquifer Storage and Recovery
 - Thames Valley Central Aquifer Storage and Recovery
 - Horton Kirby Aquifer Storage and Recovery

- Groundwater Addington
- Southfleet/Greenhithe (new WTW)
- London Confined Chalk (north)
- GW – Honor Oak
- Honor Oak Increase DO
- Merton Recommissioning
- SWOX:
 - Woods Farm Increase DO
 - Moultsford 1
 - Ashton Keynes borehole pumps - Removal of Constraints to DO
 - Britwell Removal of Constraints
- SWA:
 - Datchet
 - Datchet Increase DO
 - Dorney Increase DO
 - Taplow Increase DO
- Guildford:
 - Dapdune Licence Disaggregation
 - Dapdune RoC
- Kennet Valley:
 - Mortimer Disused Source (Recommission)
 - East Woodhay borehole pumps Removal of Constraints to DO

6 Reference information

The draft WRMP24 and Technical Appendices can be found on the Thames Water website at:

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Please contact consultation@thames-wrmp.co.uk for access to WRMP19 reports

