

APPENDIX A ENVIRONMENT AGENCY DROUGHT MANAGEMENT ACTION FORMS

Assessment	Drought Permit
Action to maintain water supply	
Risk to the environment (High, medium or low) and how you have assessed this	
Summary of the likely environmental effects (include details for features of moderate and major sensitivity and minor sensitivity features from designated sites). Assess the likely impact on WFD ecological and chemical status.	
Information used to understand conditions before drought or any drought actions are implemented.	
A summary of additional monitoring requirements before your application	
Mitigation and compensation measures	
Effects on other activities, e.g. fisheries or industry	

ion Implementation Assessment	Trigger(s) Or preceding actions	
	Demand Saving or DO of Option (Mld)	
	Implementation Timetable Preparation time, time of year effective, duration	
Op	Permissions required and Constraints Including details of liaison carried out with bodies responsible for giving any permits or approvals	
	Risks associated with option	
Environmental Accessment	Risk to the Environment (High/Medium/Low or unknown)	
	Summary of possible Environmental Impacts	
	Details of studies Undertaken & required	
	Monitoring Requirements	
	Mitigation Actions	

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Impact on Other Activities e.g. Public, Industry etc	

APPENDIX B STATUTORY CONSULTEE RESPONSES TO THE SCOPING REPORT

Cascade Consulting

	Consultee	Comment	How addressed in Drought Plan Environmental Report
1	National Farmers' Union	GeneralThank you for consulting on the Drought Plan SEA scoping report. The document is well structured and the proposed approach to assessment logically thought through.We welcome that the document recognises agriculture as playing a key position in the region, for example by stating "The region is one of the most densely populated and urbanised parts of the UK, where businesses services make up a significant proportion of the economy, interestingly agriculture is one of the most important industries."It also goes on to state "the implementation of the DP may have some indirect links with the food industry, through ensuring the availability of water for food based activities."However on this point we would like to see the scope more clearly consider food 	Noted
2	National Farmers' Union	Water SEA TopicWe note that this topic recognises the requirements of other abstractors within the keymessage "Balance the abstraction of water for supply with the other functions andservices the water environment performs or provides."It is less clear how this message is reflected within the objective and key questions.Perhaps a further question needs to be included which considers the balance ofabstraction for public water supply with other water requirements such as agriculture?For example "Will it achieve an appropriate balance of supply with other functionsand services?" (where agriculture would be considered a food provisioning service).	Added a key question to Table 4.2 SEA Objectives and Assessment approach to read: "Will it achieve an appropriate balance of water supply with other functions and services (including agriculture)? "

	Consultee	Comment	How addressed in Drought Plan Environmental Report
3	National Farmers' Union	Population and Human Health SEA Topic We believe that the key message "To ensure secure, safe, reliable, sustainable and affordable supplies of water are provided for all communities" should encompass the farming and food production sector; however this is open to interpretation. In our reading, the objective "To promote a sustainable economy with good access to essential services, including a secure, affordable supply of water" should encompass the promote a sustainable economy with good access to essential services.	Agriculture is covered in the objective and questions.
		the needs of the farming sector. Further the questions will it help to promote healthy communities and protect from risks to health and wellbeing?" and "Will it assist in ensuring provision of essential infrastructure services to support a sustainable economy?" should enable an assessment of the effects of the plan on agriculture. For clarity however we highlight these in the hope that the effects on farming and food provisioning services will be given due consideration within the assessment.	
4	National Farmers' Union	Soil Geology and Land Use SEA Topic We agree with the general scope of the questions offered under this heading.	Noted
5	National Farmers' Union	<u>Water White Paper 2011</u> Finally we note that there is a reference to the Water White Paper 2011 "the Government's intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment". Given that policy has developed considerably over the intervening five years, it may be worth reviewing in case this is no longer the most relevant up to date reference?	Updated text provided for the Water White Paper in Appendix C PPP Review.
6	Port of London Authority	<u>General</u> Thank you for the opportunity to comment on the Scoping Report for the SEA of Thames Water's Drought Plans. As you are aware, the Port of London Authority (PLA) has responsibility for the tidal Thames and its tributaries. As such, key areas of interest for us in relation to your plans are how any changes to water levels or flow may impact on safety of navigation, use of the river and river ecology. The PLA also has a statutory duty to maintain a certain water height behind Richmond Lock and Weir.	Noted

	Consultee	Comment	How addressed in Drought Plan Environmental Report
7	Port of London Authority	Invasive Non-Native Species (INNS) The biodiversity section does not consider Invasive Non-Native Species (INNS). Would any of the measures for drought allow transfer of INNS from one area to another or create temporary conditions for INNS to thrive from which they could naturally spread? Should preventing the introduction or spread of INNS be a SEA Objective?	A key message has been added to Table 2.1 Key Messages derived from the review of Plans, Policies and programmes and an SEA objective and key question on INNS has been added to the assessment framework presented in Table 4.2 SEA Objectives and Assessment approach. INNS added to Appendix C.
8	Port of London Authority	Water Quantity and Quality - Navigation On page 40, under Key Issues, the 4th bullet point "The need to ensure water quantity and quality is maintained for other users including tourists, recreational users and other users such as farmers." should include a recognition of the need to maintain safe navigation (which also relates to economy, recreation and tourism). This should also feed through the navigation being a SEA Objective.	Navigation has been added to the SEA objectives and key questions in Table 4.2 SEA Objectives and Assessment approach.
9	Port of London Authority	Water Quantity and Quality - Richmond Weir The Water Section recognises the need to "balance the abstraction of water for supply with the other functions and services the water environment performs or provides". We highlight that water level at Richmond Weir is protected by an Act of Parliament (Port of London Act 1968 as amended).	Navigation has been added to the SEA objectives and key questions and is therefore covered at strategic level.
10	Port of London Authority	SEA ObjectivesTable 3.1 comments:• Biodiversity – key questions should include whether the proposal will introduce or allow the spread of Invasive Non-Native Species.• Population – It is good that the questions recognise the importance of navigation but this should really be in the SEA objectives.• Materials – SEA objective should include the requirement to ensure sufficient flows in the Thames at Richmond to comply with the Port of London Act 1968 (as amended) Section 88.• Water – SEA Objective 4.1 could include the words "especially when they impact on navigation and / or habitats".	See reference 7 above regarding addressing INNS. Navigation has been added to the SEA objectives and key questions. Flows are addressed under Water at a strategic level. Navigation has been added to SEA objectives and key questions.
11	Port of London Authority	Proposed Framework For Assessment - Primary Assessment In S3.2.1 short term is defined as less than 6 months, medium term as 6 months to 2 years and long term as over 3 years. What happens if the impact lasts, for example, 2.5 years?	Text provided in section 4 to address the gap.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
12	Port of London Authority	Appendix B In Appendix B, a number of local plans and programmes are included but the Thames Vision has not been included. This was launched with consultation and studies in 2015 and has been co-ordinated by the PLA to set out a Vision for the tidal Thames to 2035. Further details are available on the PLA website http://www.pla.co.uk/About- Us/The-Thames-Vision and a final version is being launched on Monday 4 July 2016.	Reference to the Thames Vision is made in Appendix C PP Review.
13	Natural England	Boundary of the assessment area This SEA scoping report has identified relevant policies, plans and projects, and baseline information, for Thames Water's supply area. Natural England would expect the zone of hydrological influence to be identified for all supply side options, taking account of groundwater influence and the downstream impacts on surface waters. If hydrological influence or construction impacts occur beyond the boundary of Thames Water's supply area, then any environmental receptors in that area should also be identified. In particular this should include any Sites of Special Scientific Interest (SSSIs), European sites or priority habitats, along with designated landscapes and National Character Areas. If Thames Water has already concluded that there are no such impacts outside of its supply area, it would be helpful to state this in the report.	The boundary has been amended to reflect the natural water catchment.
14	Natural England	Designated sites The SEA Environmental Report should assess the potential for the proposal to affect nationally and internationally important designated sites, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites and Sites of Special Scientific Interest (SSSIs). SSSI citations, site conservation objectives and condition assessments can be viewed online on the Designated Sites View database (https://designatedsites.naturalengland.org.uk/).	Noted

	Consultee	Comment	How addressed in Drought Plan Environmental Report
15	Natural England	Habitats Regulations Assessment (HRA) European sites (eg designated SACs and SPAs) fall within the scope of the Conservation of Habitats and Species Regulations 2010 (as amended). In addition paragraph 118 of the National Planning Policy Framework requires that potential SPAs, possible SACs, listed or proposed Ramsar sites, and any site identified as being necessary to compensate for adverse impacts on classified, potential or possible SPAs, SACs and Ramsar sites be treated in the same way as classified sites. Under Regulation 61 of the Conservation of Habitats and Species Regulations 2010 an appropriate assessment needs to be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site. Should a Likely Significant Effect on a European/Internationally designated site be identified or be uncertain, the competent authority (in this case Thames Water) may need to prepare an Appropriate Assessment, in addition to consideration of impacts through the SEA process. Natural England understands that Thames Water has already undertaken a Habitats Regulations screening assessment in its drought option Environmental Assessment Reports, and has concluded that an Appropriate Assessment is not required for any site at this time.	Noted

	Consultee	Comment	How addressed in Drought Plan Environmental Report
16	Natural England	New licences for previously exempt abstractions (Water Act 2003) An emerging issue to be resolved in the SEA (for nature conservation sites) is the interaction of drought plan options with new abstraction licences which will be required as a result of the implementation of the Water Act 2003. Many existing abstractions, including on managed wetlands, are currently exempt from requiring a licence. Such exemptions are due to be removed either this winter or early next Spring. It will be important to understand not only how each drought plan option will directly affect nationally and internationally important designated sites, but also if the drought scheme's use under a drought order will have any implications for access of water for conservation management at such sites. Managed wetlands (including National Nature Reserves and other designated sites) will require an abstraction licence for their primary offtake from water courses. Public water supply licences, including drought options, take precedence in drought. It should be considered whether a drought permit could theoretically interfere with the ability to manage sites for nature conservation.	It is noted that currently many existing abstractions are exempt from requiring an abstraction licence but that this may change. This includes the primary offtake from water courses for managed wetlands. The potential impacts of the implementation of a drought permit on designated sites has been included in the EAR for each drought permit/options. It is important to determine the effect of the implementation of a drought permit/option on the abstraction of water for managed wetlands and the conservation of such wetlands. This is reported in the EARs for each drought permit/ order and is incorporated into the SEA. A detailed assessment of the effect of a drought permit/option on the abstraction of water for managed wetlands will need to be determined at the time of implementation of a permit/option.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
17	Natural England	Regionally and locally important sites Thames Water will need to consider impacts of the Drought Plan on local wildlife and geological sites. Local Sites are identified by the local wildlife trust, geoconservation group or a local forum established for the purposes of identifying and selecting local sites. They are of county importance for wildlife or geodiversity. Due to the number of drought options and the area covered by the drought plan, along with the fact that only a selection of options will be required during a drought situation, it may not be practical to assess impacts on these sites within the SEA. However, sufficient information should be available through the SEA or the Environmental Assessment Reports to make meaningful and strategic decisions about the use of drought permits. The SEA should explain where any gaps in baseline information are, and how the water company will fill these gaps in sufficient time, should a drought permit be required.	The number of Local Nature Reserves (LNRs) has been included in the Environmental baseline section. The revised Environment Agency Drought Plan Guidance states that the level of detail included in the environmental assessment (EAR) should be based on the level of risk posed by the action that is being assessed (e.g. based on the scale of the impact, the expected frequency of use or the importance or sensitivity of the site). The level of risk of a local wildlife site being significantly affected by the implementation of a drought permit / order is considered to be low and the implications on local wildlife sites will be considered in more detail in the EARs at the time of a potential application for a drought permit / order. It is important to note that any important or sensitive sites (SACs, SSSIs, NNRs and KWS) that could be affected by each drought options are addressed in the EARs. For the SEA the sites that are assessed are of a strategic level and it is not practical to assess each local site.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
18	Natural England	 Protected Species Protected Species are those protected by the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2010 (as amended). Thames Water will need to consider the impacts of the drought plan on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law, but advises on the procedures and legislation relevant to such species. Records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment. As with regionally and locally important sites, it may not be practical to assess impacts on protected species within the SEA. However, sufficient information should be available through the SEA or the Environmental Assessment Reports to make meaningful and strategic decisions about the use of drought permits. The SEA Environmental Report should explain where any gaps in baseline information are, and how the water company will fill these gaps in sufficient time, should a drought permit be required. The conservation of species protected by law is explained in Part IV and Annex A of Government Circular 06/2005 Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System. If a potential risk to protected species is identified for any drought option, then the area likely to be affected by the drought option should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the Envir	Text has been added to Section 4 about how the SEA can be used to inform the decision making during times of drought. The monitoring requirements are specified in the EARs and include baseline monitoring, pre- drought monitoring, in drought monitoring and post-drought monitoring. It is noted that the monitoring needs to be at particular times of year and carried out by suitably qualified and where necessary, licensed, consultants.

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	Consultee	Comment	How addressed in Drought Plan Environmental Report
19	Natural England	<u>Rights of way, access land, coastal access and National Trails</u> The SEA Environmental Report should consider potential impacts of the drought plan options on access land, public open land, rights of way and coastal access routes. Consideration should also be given to the potential impacts on National Trails (eg the Thames Path and The Ridgeway). The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts. We also recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way that should be maintained or enhanced.	Public rights of way including National Trails are addressed in the SEA objectives and key questions in Table 4.2 SEA Objectives and Assessment approach. Reference is made to ROWIPs in Appendix C PPP Review
20	Natural England	Landscape and visual impacts Thames Water will need to consider the potential impacts of the drought plan on local landscape character. The SEA and Environmental Assessment Reports should include sufficient baseline information to make meaningful and strategic decisions about the use of drought permits. For many drought options, it may be straightforward to screen out any potential landscape and visual impacts. The SEA should explain where any gaps in baseline information are, and how the water company will fill these gaps in sufficient time, should a drought permit be required. Landscape assessment methodologies should be used to assess the potential impacts of the drought plan on local landscape character. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. Natural England supports the publication Guidelines for Landscape and Visual Impact Assessment, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment. Throughout the SEA scoping document, reference is made to 'Natural England Natural Areas'. These should instead be referred to National Character Areas (NCAs). The assessment should refer to the relevant National Character Areas (https://www.gov.uk/government/publications/national-character-area-profiles- data-for-local-decision-making) which can be found on our website. Information on Landscape Character Assessment (https://www.gov.uk/government/publications/landscape-character-assessments- identify-and-describe-landscape-types) is also available on	Many of the drought options do not involve construction. A strategic and high level approach has been taken considering designations such as AONBs as appropriate. It is not considered that detailed assessment (as undertaken as part of an Environmental Impact Assessment) is required for this SEA. The assessment refers to National Character Areas.

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	Consultee	Comment	How addressed in Drought Plan Environmental Report
21	Natural England	Air quality Information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk). Further information on air pollution modelling and assessment can be found on the Environment Agency website.	Reference to APIS is included in the environmental baseline in Appendix D.
22	Natural England	<u>Contacts for local records</u> Natural England does not hold local information on local sites, local landscape character and local or national biodiversity priority habitats and species. We recommend that you seek further information from the appropriate bodies (which may include the local records centre, the local wildlife trust, local geoconservation group or other recording society and a local landscape characterisation document).	Noted
23	Natural England	Cumulative and in-combination assessment The scoping report recognises the need to consider cumulative and in-combination effects of options, both within the plan and with other plans and programmes. In particular, Natural England would like to highlight the importance of including other water companies' water resource and drought plan options in this assessment, including any bulk water transfers which are being considered. It may be helpful to take account of the work of Water Resources South East on cumulative and in combination assessment. The SEA Environmental Report should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with any other large or locally-significant projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information): a. existing completed projects; b. approved but uncompleted projects; c. ongoing activities; d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and e. plans and projects which are reasonably foreseeable, ie projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.	The cumulative effects are described in section 6. This includes consideration of other water companies' WRMPs and drought plans. Other projects considered are those that are particularly large scale and high profile to be in accordance with a strategic level of assessment.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
24	Natural England	Biodiversity, flora and fauna Policies, plans and programmes (Table 2.1) The following policies, plans and programmes should also be included in this section: International: - The Water Framework Directive (2000/60/EC). National: - Natural England's standing advice on protected species. Regional/local: - Site Improvement Plans (SIPs) for Natura 2000 sites; - National Character Area (NCA) profiles; - Some of the legislation listed under regional/local, should be in the national list (eg the Countryside and Rights of Way (CROW) Act 2000 and the Wildlife and Countryside Act 1981 (as amended)).	These have been added to the PPP review in Appendix C and summarised in Table 2.1.
25	Natural England	Biodiversity, flora and faunaKey messages (Tables 2.1, 2.4 and 3.1)The following should also be included in the key messages:- Avoidance of activities likely to cause the spread of non-native invasive species.	This has been included in the key messages (and SEA objectives) in Table 4.2.
26	Natural England	Biodiversity, flora and fauna Review of baseline (Section 2.3.4) This section could include the current baseline in terms of the condition of SSSIs and Natura 2000 sites (percentage in favourable or favourable/recovering condition), and the number of WFD waterbodies which are failing ecological targets. The WFD ecological classification for surface waters is already summarised in Appendix C under the 'Water' topic (Table C11), but it would be helpful to summarise it here in the Biodiversity baseline review too. If possible, it would be helpful to also provide information about the reasons for WFD failure (eg number of waterbodies failing for fish passage, or invasive species etc.).	Added in current baseline with respect to SSSIs and Natura 2000 sites in Appendix D. The 'Biodiversity' baseline section has been updated to include a summary of the WFD Ecological classification for surface waters - the 'Water' baseline section is referenced for more detailed information. WFD reasons for failure are not included in the ER but will be considered in the assessment.
27	Natural England	Biodiversity, flora and fauna Review of baseline (Section 2.3.4)At the top of page 35, it might be helpful to give some examples of the ways in which water abstraction has the potential to affect biodiversity. For example the drying of wetland habitats, lower water levels and slower flows in watercourses, deterioration in water quality, change in water temperature, or the transfer or proliferation of invasive species.	Text updated in the 'Baseline' section to read: "Impacts on biodiversity maybe caused by the drying out of wetland habitats, lower water levels and slower flows in watercourse, deterioration in water quality, change in water temperature, or the transfer or proliferation of invasive species".

	Consultee	Comment	How addressed in Drought Plan Environmental Report
28	Natural England	Biodiversity, flora and fauna Review of baseline (Section 2.3.4) In the Future Baseline section, acknowledgement of the impacts of climate change on biodiversity would be helpful, highlighting the need to allow wildlife to adapt to a changing climate.	Text updated in the 'Future Baseline' section of Appendix D to read: "Climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity and water scarcity. There is therefore a need to allow wildlife to adapt to climate change. "
29	Natural England	Biodiversity, flora and fauna Key issues (Section 2.3.4, Table 2.4 and Table 3.1) The first key issue ("The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation") should also refer to protected species, and habitats and species of principal importance.	Updated key issue in section 3 to read: "The need to protect or enhance the region's biodiversity, particularly within designated sites, protected species and habitats of principal importance"
30	Natural England	Biodiversity, flora and fauna Key issues (Section 2.3.4, Table 2.4 and Table 3.1) The importance of allowing wildlife to adapt to climate change should be recognised. This could be linked to the third key issue which refers to improving connectivity between fragmented habitats.	Added a new key issue in section 3: "The need to recognise the importance of allowing wildlife to adapt to climate change"
31	Natural England	Biodiversity, flora and fauna SEA objectives and key questions (Table 3.1) The first key question, "Will it protect the most important sites for nature conservation?" should read "protect and enhance".	Key question in section 3 amended.
32	Natural England	Population and human health Policies, plans and programmes (Table 2.1)The following policies, plans and programmes should also be included in the regional/local list: - Rights of Way Improvement Plans (ROWIPs); - Local Authority green infrastructure strategies, eg The All London Green Grid (Greater London Authority, March 2012).	PROWIPs added to PPP review in Appendix D and Table 2.1. Generic reference to green infrastructure included as there are variations in coverage across the area.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
33	Natural England	Population and human healthKey messages (Tables 2.1, 2.4 and 3.1)We advise that consideration of purely economic impacts is not appropriate for anSEA, and such impacts should be assessed elsewhere in the water company's businessplanning documents. However it is appropriate to include an assessment of health andsafety-related issues, including the supply of a secure water supply to the population.Thames Water should take care to separate out these issues and not give undue weightto purely economic impacts.In light of this, Natural England suggests that the key message "Promotion of asustainable economy supplied by universal access to essential utility andinfrastructure services" should be removed. Access for all to a secure water supply isalready covered in another key message, and this is fine as it relates to human health.	An objective on a sustainable economy is required as it becomes important during times of drought for businesses to have access to water. Emphasis of key question in Table 4.2 changed to health and well-being.
34	Natural England	Population and human health Key issues (Section 2.3.5, Table 2.4 and Table 3.1) The need to protect and enhance the green infrastructure network should also be recognised. This could be incorporated into the fifth key issue ("The need to ensure a balance between different aspects of the built and natural environment").	Updated key issue in section 3 to read: "The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to, protecting and enhancing recreation resources, green infrastructure and the natural and historic environment.
35	Natural England	Population and human healthSEA objectives and key questions (Table 3.1)- The fourth key question, "Will it protect or enhance opportunities for recreation and tourist activities, including navigation?", could also refer to Rights of Way and National Trails We suggest an additional key question could be "Will it protect and enhance the green infrastructure network?" We suggest that the final key question, "Will it assist in ensuring provision of essential infrastructure services to support a sustainable economy?" is not appropriate for an SEA and should be removed (see earlier comment about assessment of purely economic impacts).	See responses regarding PRoW and green infrastructure above. An objective on a sustainable economy is required as it becomes important during times of drought for businesses to have access to water. Emphasis of key question changed to health and well-being.
36	Natural England	<u>Material asset and resource use</u> Natural England has no comments to make on coverage of this SEA topic.	Noted

	Consultee	Comment	How addressed in Drought Plan Environmental Report
37	Natural England	Water If there are any documents or plans relating to the Water Resources South East (WRSE) group, which might be relevant to the SEA Environmental Report, these should be included in the list of Plans, Projects and Programmes. Natural England has no further comments to make on coverage of this SEA topic.	Water Resources in the South East (WRSE) Group (forthcoming) regional water resources strategy added to PPP review in Appendix D and to be reviewed if becomes available.
38	Natural England	Soil, geology and land use Policies, plans and programmes (Table 2.1) The following policies, plans and programmes should also be included in this section: National: - Countryside and Rights of Way (CROW) Act 2000; - Wildlife and Countryside Act 1981 (as amended). Regional/local: - National Character Area (NCA) profiles; http://publications.naturalengland.org.uk/category/587130	Table 2.1 amended to include these.
39	Natural England	Soil, geology and land use Key messages (Tables 2.1, 2.4 and 3.1) - The first key message (to "maintain the quality and diversity of geology and soils") should also include reference to geomorphology and geomorphological processes; - Conservation and enhancement of geological SSSIs and local geological sites.	Geomorphology has been added to the SEA objectives and key questions in Table 4.2. For the SEA the sites that are assessed are of a strategic level and it is not practical to assess each local site.
40	Natural England	Soil, geology and land use Review of baseline (Section 2.3.8) It is good that this section includes reference to geological SSSIs. It would be helpful to state how many geological SSSIs there are in the area. The soil, geology and land use section of Appendix C should list or refer to the number of geological SSSIs in each WRZ.	Number of geological SSSIs added to the baseline section in Appendix D.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
41	Natural England	Soil, geology and land useSEA objectives and key questions (Table 3.1)The SEA objective should also include the protection and enhancement of geomorphology.	Geomorphology has been added to the SEA objectives and key questions in Table 4.2.
42	Natural England	Soil, geology and land use Supporting information (Appendix C) Table C13 ('Natural England Natural Areas: Geological features') doesn't list any National Character Areas (NCAs) within the Guildford WRZ or the eastern part of the London WRZ. The main NCAs in these areas are: - North Downs - Wealdon Greensand - Low Weald - North Kent Plain.	Added NCAs to the baseline in Appendix D.
43	Natural England	Air and climate Policies, plans and programmes (Table 2.1) Also relevant to regional/local programmes is the Air Pollution Information System (www.apis.ac.uk). This provides information on air pollution impacts and the sensitivity of different habitats/designated sites.	Reference made to APIS in baseline section in Appendix D.
44	Natural England	<u>Archaeology and cultural heritage</u> Natural England has no comments to make on coverage of this SEA topic.	Noted
45	Natural England	Landscape and visual amenityThroughout the SEA scoping document, reference is made to 'Natural Areas'. Theseshould instead be referred to National Character Areas (NCAs).Policies, plans and programmes (Table 2.1)The following policies, plans and programmes should also be included in theregional/local list:- National Character Area (NCA) profiles;- Landscape Character Assessments (where available).	The National Character Areas have been included. Landscape character assessments have not been included due to the high level strategic approach (see previous comment above).

	Consultee	Comment	How addressed in Drought Plan Environmental Report
46	Natural England	Landscape and visual amenity Supporting information (Appendix C, Table C3) The list of National Character Areas within Thames Region (referred to in the report as Natural England Natural Areas) should also include: - Midvale Ridge (SWOX and Slough/Wycombe/Aylesbury WRZs) and - North Kent Plain (London WRZ). There are several further NCAs which fall within small areas at the periphery of Thames Water's supply area, and it should be considered whether any of these are relevant to the drought plan options: - Severn and Avon Vales - Midland Clay Pastures - West Anglian Plain - Greater Thames Estuary - Hampshire Downs - South Wessex Downs.	The National Character Areas have been included in Appendix D.
47	Natural England	Proposed framework for assessment (Section 3.2) Natural England is happy with the proposed methods for assessment as set out in the SEA scoping report.	Noted
48	Natural England	Next steps (Chapter 4) Task B2 – Developing strategic alternatives: The scoping report says that "Where significant negative impacts are identified, it may be necessary to identify other alternative options, both demand and supply side". Natural England advises that where significant negative impacts are identified, alternative options should always be considered.	Noted
49	Spelthorne Borough Council	Relevant Plan, Policies and Programmes Officers at Spelthorne Borough Council agree with the approach taken in the Thames Water SEA report with respect to keeping the list of plans, policies and programmes (PPP) succinct and related to the drought plan under preparation. However there are a number of additional PPPs which could be included and which would still keep the overall list of PPPs succinct. These are listed in the table below:	Noted
50	Spelthorne Borough Council	<u>Material Assets</u> Fixing the Foundations: creating a more prosperous nation (HM Treasury) 2015	This has been added to Appendix C PPP review.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
51	Spelthorne Borough Council	Air and Climate River Thames Scheme: reducing flood risk from Datchet to Teddington (2016) Thematic Strategy on Air Pollution (2005) EC The National Adaptation Programme: Making the country resilient to a changing climate (2013) DEFRA	These have been added to Appendix C PPP review.
52	Spelthorne Borough Council	Soil and Land Environmental Protection Act (1990) HMSO	This has been added to Appendix C PPP review.
53	Spelthorne Borough Council	SEA Objectives and Proposed Framework It is considered that Table 3.1, which shows the SEA objectives and assessment approach, would benefit from an additional column listing the indicators to measure the impact of the SEA objectives and key questions.	Indicators are included as part of the commentary on the assessment of options.
54	Spelthorne Borough Council	Baseline Data - Population and Human Health Section 2.3.5 on Population and Human Health notes that there is good general health in the regions the TWUL supply area covers. It would be helpful if appendix C included a map of indices of multiple deprivation to show wider aspects of health.	It is not proposed to include reference to indices of multiple deprivation because it is not considered relevant in relation to the drought plan and the SEA objectives.
55	Spelthorne Borough Council	Baseline Data - Landscape and Visual It is considered that under Section 2.3.11 on Landscape and Visual Amenity, the key issues section should make reference to protecting and improving the character of landscapes and townscapes rather than solely areas of beauty as this would be more encompassing.	A new key issue has been added to section 3.
56	Spelthorne Borough Council	Baseline Data - Cumulative effects Given the wide area that Thames Water supplies, there is a need to consider the trans- boundary issues and consequently understand these in relation to each topic and their settings. Future cooperation and working should extend to areas beyond the Thames Water supply area where options could potentially have an impact.	The cumulative effects of plans outside of the Thames water supply area are considered in section 6. In addition the area under consideration for the SEA has been expanded to include the areas hydrologically linked with the options even if they extend outside of Thames supply zone area.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
57	Gloucestershire County Council	 <u>Archaeology</u> Table 2.1 P30 - the Ancient Monuments and Archaeological Areas Act 1979 is UK (not international) legislation. 2.3.10 is supported. Table 2.4 P63-64 (and table 3.1 P69) - I'd suggest amending the first bullet point toin the vicinity of historic buildings and Scheduled Monuments could have implications for the setting and/or built fabric and cause damage to any archaeological deposits present on the site. Setting issues also apply to SMs. Table 3.1 P69 – Objectives 7.1-7.3 are supported. 	The Ancient Monuments and Archaeological Areas Act has been moved accordingly. Updated key message in Table 2.1 to read: "Built development in the vicinity of historic buildings and Scheduled Monuments could have implications for the setting and/or built fabric and cause damage to any archaeological deposits present on the site".
58	Gloucestershire County Council	Biodiversity (Ecology)It is noted on page 8 that HRA screening will be undertaken and North Meadow & Clattinger Farm SAC, just beyond the borders of Gloucestershire, will be a site that needs consideration versus the options in the Drought Plan especially as it is very much a water dependent site.Environmental Assessment (page 14 & 34) will also include consideration of SSSIs, LNRs and species/habitats on the English List but to this should be added Local Wildlife Sites as this is where most of the area's biodiversity is present. Information on local sites can be obtained from relevant Biological record Centres and for Gloucestershire (in the most western part of the region) the contact is GCER at http://www.gcer.co.uk/. Table 2.1 (Biodiversity) should be amended accordingly.	North Meadow & Clattinger Farm SAC is considered in the HRA screening. See comment above regarding local wildlife sites.
59	Gloucestershire County Council	Biodiversity (Ecology) Please note that in Gloucestershire there is no Biodiversity Action Plan to consider but instead Gloucestershire's Nature Map and Green Infrastructure Framework see http://gloucestershirenature.org.uk/index.php . These could be usefully added to Appendix B Under 'Local'.	See comment above regarding local wildlife sites. Priority habitats' inventory (PHI) formerly known as BAP habitats, which are at a national scale will be considered in the assessment.
60	Gloucestershire County Council	Biodiversity (Ecology) Please note that Natural Areas (Appendix C) are now subsumed within Natural England's National Character Areas. Please see https://www.gov.uk/government/publications/national-character-area-profiles-data- for-local-decision-making/national-character-area-profiles for profiles for each of them for the South East and South West regions.	National Character Areas are now referred to in Appendix D.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
61	Environment Agency	Cumulative effectsThe approach set out in the scoping report appears to be comprehensive. You have acknowledged the need to consider in-combination effects of drought options, which will be considered in the SEA. I believe this is something we raised with the previous draft drought plan so we are pleased to see that it is being considered at this early stage.We'd recommend that you also consider assessing the impacts of bulk transfers to other companies and how these may change in a drought in your cumulative assessment (page 82). Transfers have been identified in the baseline assessment, but	Transfers will be part of WRMP so already included as options to be assessed. If these will change in a drought they will be included in the cumulative assessment.
		not in the in-combination assessment.	
62	Environment Agency	Plans and programmesYou have considered a wide range of plans and programmes, as detailed in appendixB. Please note that Environment Agency drought plans are now on an Area scalerather than Regional scale (page 106). The Area drought plans of relevance are WestThames, Hertfordshire and North London, and Kent and South London.Also, page 26 doesn't appear to list the River Basin Management Plans andAbstraction Management strategies which could be considered for the SEA Watertopic.	The Environment Agency has subsequently advised the area drought plans are not published. Therefore, to refer to the National Drought Action Plan instead. This is used for the cumulative effects assessment in section 6.
63	Environment Agency	DP and WRMP You have noted the requirement to consider links between your WRMP and drought plan, in line with the WRMP and drought plan guidelines. Given that the drought plan is being published before the WRMP, we would appreciate confirmation that the drought plan and SEA will be updated if changes are necessary following the WRMP publication, e.g. changes to levels of service. It would also be useful to provide information on the likely causes for an update and how you would go about this (e.g. drought plan annual review).	Text has been added to the ER to explain what would happen to the DP and SEA in the event the WRMP implies material change.
64	Environment Agency	<u>NEP</u> You should consider proposed schemes and ongoing investigations in your NEP and how these may interact with the actions you propose, both for water resources and water quality. You have mentioned groundwater quality in the baseline assessment, however, there is no detail about how this may be affected by drought options. It would be useful to know if there are any perceived risks.	Thames Water's NEP is currently unpublished. A brief description is provided in the PPP review and a discussion about the risk to groundwater quality is in the baseline section.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
65	Environment Agency	 Drought options and operations We will continue liaison with you on the Environmental Assessment Reports for drought permit sites and raise any specific concerns regarding environmental impacts of drought options through that process. This will also include the hierarchy of drought permits based on environmental impact, network constraints and location of drought permit etc. However, the SEA scoping report doesn't appear to mention the hierarchy categories that will be assigned to drought permits. It may be beneficial to include a section on this to highlight the relationship between the environmental assessments, drought operations and whether the SEA in-combination assessment would inform the categorisation. 	Text added to section 4.4 to further explain cumulative assessment for drought options. The Beckton desal plant will be considered when assessing the drought options. In particular the Lower Thames options.
		Also, there is little mention of the Beckton desal and how its planned operation fits with the planned actions for drought. We assume this will be covered in the drought plan commentary, but may be worth acknowledging this drought action in this document (e.g. table 1.2).	
66	Environment Agency	Other licensed sources There may be some licensed sources that do not necessarily require a drought permit application to obtain extra resources during a drought. We would like to discuss these sites with you through local liaison to understand your planned approach to utilising these sources, how you will ensure the environment is protected, and also how you will seek and consider customers and stakeholders' views in deciding on implementing these actions.	Thames Water to discuss with the EA.
67	Environment Agency	Further guidance Additional guidance on drought plan environmental assessment is due to be published on the Defra Huddle website soon. You should ensure that you have considered the recommendations in this guidance in all of your environmental assessments, from EARs to SEA. The further guidance may be more appropriate to site specific environmental assessments, but the general principles, for example WFD assessment, should be used consistently from site to whole plan scale.	Guidance was received on 18 July 2016 and added to the ER in Table 2.1 and Appendix C.
68	Wilts and Berks Canal Trust	Dear Chris and Steve On behalf of the Wilts and Berks Canal Trust we have no comments on the SEA Scoping report Kind Regards Dave Cook Environment and Sustainability Adviser 6/17/2016 12:39 PM	Noted

	Consultee	Comment	How addressed in Drought Plan Environmental Report
69	Borough of Rushmoor	The Borough of Rushmoor is supplied by South East Water who extract from the Thames via the Keleher Water Treatment Works at Bray. Therefore it is reassuring to see that South East Water's Drought Plans will be taken into account.	Noted
70	Canal and River Trust	 Thanks for the email. I've spoken with Mat Wells and also Darren Leftley, and we can confirm that we're content for Thames Water to retain the Oxford Canal drought permit option in your next Drought Plan as a feasible option, but noting the following points: 1) As there is no commercial agreement in place at present, the Canal & River Trust is not ring-fencing the water at all times for the possibility of supply to Thames Water 2) That as other water transfer or water sales opportunities are progressed by the Trust, these may lead to firm options being agreed which mean the Oxford Canal drought permit option is no longer viable, but we would do our best to ensure you are given the chance to explore a more formal commercial arrangement as part of that work. 	Noted
71	Canal and River Trust	I've cc'd Laura, as we have also received the consultation request on the Thames Water Drought Plan Strategic Environment Assessment Scoping Report. On reading through that document, the only direct reference to the Trust is the Oxford Canal drought permit option, so I think we can say that we're fine with that – do you still want me to respond formally online too? The only other thing I'd say about the SEA Scoping Report is that there are some incorrect reference to ourselves, we should be described as the "Canal & River Trust" please.	Changed name to "Canal & River Trust"
72	Institute of Civil Engineers	ICE London and South East England is pleased to see that the Scoping Report provides an extensive set of measures to ensure that the negative effects of drought are reduced and mitigated. Overall, the document covers a large number of areas and objectives.	Noted
73	Institute of Civil Engineers	However, the ICE London and South East England Water Panel felt that the Scoping Report needs to be more focused on the measures necessary for a short term extreme drought event. Many of the objectives listed in the Report instead seem to set out Thames Water's general approach to water management and, whilst the Panel agreed with much of this approach, it does not reflect the compromises and pragmatic decisions that sometimes need to be taken during an extreme drought event.	This will be addressed in the DP.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
74	Institute of Civil Engineers	The Scoping Report also assumes that per capita consumption will not fall in the future. The Panel believes that reducing the amount of water each person uses is imperative in better preparing the region for extreme weather events. The Scoping Report must consider Thames Water and Government measures to reduce per capita consumption and have this goal integrated fully into the assessment of all drought measures	The per capita consumption is addressed in Thames WRMP. The Drought Plan cannot make assumptions about long term improvements which are considered in the WRMP and based on supply/demand. The Drought Plan is short term and the WRMP is longer term. The demand side options will also be assessed in the SEA ER.
75	Institute of Civil Engineers	Biodiversity, flora and fauna The section does not reflect the possible environmental issues resulting from an extreme drought event. Whilst Thames Water should take steps to reduce environmental disruption, some will be inevitable in the case of an extreme event and this needs to be reflected in the report.	Text updated in the biodiversity section of the environmental baseline in Appendix D to clarify the potential impacts.
76	Institute of Civil Engineers	Population and Human Health Human health should be the highest priority during a drought event. The Report should reflect this by listing "Population and Human Health" first and foremost. The Report says little of the effects of a drought on the economy. Further information is needed on how a drought would affect the economy of the region and how these effects could be kept to a minimum. An increasing population is listed as a factor in the Baseline Review. Whilst a larger population can worsen the effect of a drought, it is not a direct contributor to an extreme weather event.	The topics are not presented in any order of priority within the ER to avoid implying weighting. Potential impacts on the economy are identified under population and Human Health. The implications of climate change are described for the water baseline. Also, the DP itself considers the economy.

	Consultee	Comment	How addressed in Drought Plan Environmental Report
77	Institute of Civil Engineers	Material Asset and Resource The Report says Thames Water will "maintain a reliable public water supply and ensure there is enough water for human uses,-as well as providing an improved water environment". During a drought, a reduction in water quality is highly likely. Thames Water must accept and set out how they will mitigate this. For example, would improved wastewater discharges help in mitigating the reduction in river flows? On Page 46, the Report shows little reduction in per capita consumption. Thames Water must consider how they can reduce per capita consumption which will ensure the effects of an extreme drought are minimised. There is no mention of the recycling or reuse of water. There is no mention on how you enforce water restrictions.	The DP will have regard to wastewater discharges. The DP generally addresses short term measures whereas long term measures are addressed in the WRMP. Other matters such as recycling will be addressed in the DP.
78	Institute of Civil Engineers	WaterDuring a drought more radical measures listed in the draft WRMP, such as shipping water, may become more economically viable.Thames Water needs to consider what an extreme an event means in terms of these options.	Measures such as shipping water would be for a very extreme drought. The case for this will be considered in the WRMP.
79	Institute of Civil Engineers	Soil, Geology and Land Use In the region there are a number of polluted aquifers which are not in use due to their effects on human health. However, during an extreme drought event, Thames Water may need to weigh up the effects on human health of using or cleaning the aquifer water with the health effects of a prolonged extreme drought. In such an event, it may be better for the population's wellbeing to use a polluted water source for a short period of time.	The use of polluted water is not currently considered to be a feasible option and this will be discussed in the WRMP.
80	Institute of Civil Engineers	ICE London and South East England thanks Thames Water for the opportunity to respond to this consultation. The Institution is keen to engage further on the report and would be delighted if a representative from Thames Water were able to present to Panel Members on the Scoping Report after the consultation period.	TWUL are to liaise with ICE directly.

APPENDIX C REVIEW OF POLICY, PLANS AND PROGRAMMES

The findings of the review of policy, plans and programmes are set out in **Table C.1**. The purpose of the review and the key findings are set out in Section 2 of this Environmental Report. This table sets out the purpose and objectives of the policy, plans and programmes, their potential relationship with TWUL's DP and the potential implications of the plan objectives for the objectives of the SEA.

Table C.1 Summary of the Policy, Plans and Programmes reviewed and their link to the Strategic Environmental Assessment

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
International		
The Bern Convention on the Conservation of European Wildlife	and Natural Habitats (1979)	
International convention which aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices.	The impacts of the DP options on internationally designated sites, species and important Bird habitats must be considered as part of the SEA.	
Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).		
The Bonn Convention on the Conservation of Migratory Species	of Wild Animals (1983)	
Aims to conserve terrestrial, marine and avian migratory species throughout their range. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The impacts of the DP options on important Bird habitats (i.e. Ramsar sites and SPA designated sites) must be considered as part of the SEA.	
The Cancun Agreement (2011) & Kyoto Agreement (1997)		
The agreement represent key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures. It includes a shared vision to keep global temperature rise to below two degrees Celsius.	The SEA should seek to promote a reduction in greenhouse gas emissions.	
The Convention for the protection of the architectural heritage of	of Europe (Granada Convention)	
This sets the framework for the approach to conservation across Europe.	The SEA should take into account the need to conserve heritage.	
Council of Europe (2003) European Soils Charter		
Sets out common principles for protecting soils across the EU and will help.	The SEA should seek to ensure that the quality of the regions land, including soils, is protected or enhanced.	
Council of Europe (2006), European Landscape Convention		
 European Landscape Convention (ELC) is the first international convention to focus specifically on landscape. Natural England implements the European Landscape Convention in England. The aims of the 2009/10 action plan are: Lead on improving the protection, planning and management of all England's landscapes 	The implementation of the DP may influence landscape or the enjoyment of landscapes in the Thames River Basin District and as such the SEA should seek to maintain or enhance the quality of the regions landscapes and the potential enjoyment of these landscapes.	
 Raise the quality, influence and effectiveness of policy and practical instruments 		
• Increase the engagement in and enjoyment of landscapes by the public		
Collaborate with partners across the UK and Europe.		
The Environment Noise Directive (Directive 2002/49/EC)		
The END aims to –define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise. It also aims to provide the basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and	The SEA assessment framework should include for the protection against excessive noise.	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.	
European Commission (2008), The 2008 ambient air quality di	rective (2008/50/EC)
The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems.	The implementation of the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.
	The sources Directive (2009/28/EC)
This promotes the use of energy from renewable sources.	The SEA should seek to promote the use of renewable energy.
European Commission (2009), Birds Directive (2009/147/EC)	
The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes).	The SEA should seek to protect and conserve important bird habitats.
European Commission, Floods Directive (2007/60/EC)	
The Directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans.	The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the DP.
European Commission, Animal health requirements for aquacu and control of certain diseases in aquatic animals (2006/88/EC	lture animals and products thereof, and on the prevention
 The Directive establishes: Animal health requirements for the placing on the market, importation and transit of aquaculture animals and their products; 	The implementation of the DP may influence biodiversity in the Thames River Basin District and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.
 Minimum measures to prevent diseases in aquaculture animals; Minimum measures to be taken in regenerate suggested. 	
Minimum measures to be taken in response to suspected or established cases of certain diseases in aquatic animals.	
European Commission, Environmental Liability Directive (2004	4/35/EC)
The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage.	The SEA should seek to ensure that the DP avoids causing direct or indirect damage to the aquatic environment or contamination of land that creates a significant risk to human health.
European Commission (2000), The Water Framework Directive	e (2000/60/EC)
This Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater. It also encourages the sustainable use of water resources.	The SEA should seek to promote the protection and enhancement of all water resources.
Key objectives are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water.	
European Commission, Drinking Water Directive (1998/83/EC	
The objective of the Drinking Water Directive is to protect the health of the consumers in the European Union and to make sure the water is clean and of good quality.	The SEA should seek to ensure that objectives address water quality in the region, particularly drinking water quality.
To make sure drinking water everywhere in the EU is healthy, clean and tasty, the Drinking Water Directive sets standards for the most common substances (so-called parameters) that can be found in drinking water. A total of 48 microbiological	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
and chemical parameters must be monitored and tested regularly.		
European Commission, Urban Waste Water Treatment Directiv The Directive's objective is to protect the environment from	e (1991/271/EC) The SEA should seek to maintain, protect and improve	
the adverse effects of urban waste water discharges and discharges from certain industrial sectors and concerns the collection, treatment and discharge of domestic waste water, mixture of waste water and waste water from certain industrial sectors.	water quality across the region.	
European Commission (1992), Habitats Directive (1992/43/EC		
The aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.	The impacts of the DP options on internationally designated sites and species must be considered as part of the SEA.	
European Commission (2006) Thematic Strategy for Soil Protect	tion	
The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive (a European law), and an Impact Assessment.	The SEA assessment framework should include soils.	
European Commission (2005) Thematic Strategy on Air Pollution	on	
This strategy supplements current legislation. It sets out objectives for air pollution and proposes measures for achieving them by 2020.	The SEA should take account of the need to reduce air pollution through the SEA objectives.	
European Landscape Convention (Florence Convention)		
The European Landscape Convention is an international convention focusing specifically on landscape. The UK Government signed the European Landscape Convention in 2006 and it became binding from March 2007.	The SEA should take landscape quality into account and include water quality in the assessment framework.	
Ramsar Convention The Convention on Wetlands of Internation	nal Importance (1971)	
The Convention on Wetlands (Ramsar, Iran, 1971) (the "Ramsar Convention") is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.	The impacts of the DP options on important wetland habitats must be considered as part of the SEA.	
United Nations (1992), Convention on Biological Diversity (CBI))	
 The main objectives are: Conservation of biological diversity Sustainable use of its components Fair and equitable sharing of benefits arising from genetic resources 	The commitment to conserving biological diversity must be considered in any DP options and the SEA should seek to promote the protection and enhancement of biodiversity.	
United Nations Economic Commission for Europe (1998) Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters		
The Aarhus Convention grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary environment. It focuses on interactions between the public and public authorities.	The Convention is designed to improve the way ordinary people engage with government and decision- makers on environmental matters. It helps to ensure that environmental information is easy to get hold of and easy to understand.	
The Aarhus Convention has been ratified by the European Community, which has begun applying Aarhus-type principles in its legislation, notably the Water Framework Directive (Directive 2000/60/EC).	The SEA should seek to provide easily understood information to the public on the environmental implications of the DP and its constituent options.	
United Nations (2002), Commitments arising from the World S	ummit on Sustainable Development, Johannesburg	
The World Summit on Sustainable Development proposed broad-scale principles which should underlie sustainable development and growth.	These commitments are the highest level definitions of sustainable development. The DP should be influenced strongly by all of these themes and should seek to take its aims into account.	
It included objectives such as:		

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
 Greater resource efficiency Work on waste and producer responsibility New technology development Push on energy efficiency Integrated water management plans needed Minimise significant adverse effects on human health and the environment from chemicals by 2020. 	The SEA should seek to promote the achievement of the sustainable development objectives outlined in this plan.
National Ancient Monuments and Archaeological Areas Act 1979	
This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.	The DP and SEA should take account of the need to protect scheduled monuments and archaeological areas.
The Climate Change Act 2008	
This act sets carbon targets for 2050. The net carbon account for 2050 at least 80% lower than 1990 baseline.	This target needs to be taken into account by the SEA.
Conservation of Habitats and Species Regulations 2010 Conserv amended by the Conservation of Habitats and Species (Amendn	vation of Habitats and Species Regulations 2010 (as nent) Regulations 2011 and 2012)
The Conservation of Habitats and Species Regulations 2010 (as amended) are the principal means by which the Habitats Directive is transposed in England and Wales as such its main objective is to promote the maintenance of biodiversity.	The impacts of the DP options species diversity must be considered as part of the SEA.
The Countryside and Rights of Way (CROW) Act, 2000	
The Act provides for increased public access to the countryside and strengthens protection for wildlife.	The DP may have an effect on public access to the countryside.
 Extends the public's ability to enjoy the countryside whilst also providing safeguards for landowners and occupiers 	The SEA should include objectives that take into account public access, protection of SSSIs and the management of relevant landscape designations.
 Creates new statutory right of access to open country and registered common Land Use Consultants Modernices Pictute of Way system 	
 Gives greater protection to SSSIs 	
Provides better management arrangements for AONBs	
Strengthens wildlife enforcement legislation.	
Presumption in favour of sustainable development. Core planning principles include taking account of the development needs of an area; contribute to conserving and enhancing the environment; re-use of previously developed land; conserve heritage assets; deliver sufficient community facilities to meet local needs. Delivering sustainable development includes:	The DP and SEA should take account of the key components of sustainable development, Also, reservoirs contribute to recreation and visual amenity.
 Building a strong competitive economy; Supporting a prosperous rural economy; Promoting sustainable transport; Requiring good design; Promoting healthy communities; Protecting green belt land; Meeting the challenge of climate change, flooding and coastal change; Conserving and enhancing the natural environment; Conserving and enhancing the historic environment; 	
• Facilitating the sustainable use of minerals. Reservoirs are included within the definition of open space - of public value due to opportunities for sport and recreation and providing a visual amenity.	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
Department for Energy and Climate Change (2007) Energy Wh	ite Paper: Meeting the Energy Challenge	
 Meeting the energy challenge', sets our international and domestic energy strategy, in the shape of four policy goals: aiming to cut CO2 emissions by some 60% by about 2050, with real progress by 2020 maintaining the reliability of energy supplies promoting competitive markets in the UK and beyond ensuring every home is heated adequately and affordably 	The implementation of the DP may have an influence upon Thames Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.	
Department of energy and climate change (2011) Planning our e low carbon electricity	lectric future: a White Paper for secure, affordable and	
This white paper outlines a package of reforms so that by 2030 there will be a flexible, smart and responsive electricity system, powered by a range of low carbon sources of electricity. This includes engaging with consumers on energy use. Decarbonsiation is important in meeting the 2050 targets.	The implementation of the DP may have an influence upon Thames Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.	
Defra (2011) Government Review of Waste Policy in England 2011		
The review is guided by the "waste hierarchy", EU obligations and targets on waste management, carbon impacts, environmental objectives and the costs and benefits of different policy options. The Governments vision include a move beyond the current throwaway society to a "zero waste economy" in which material resources are re-used, recycled or recovered wherever possible, and only disposed of as the option of very last resort.	The DP may involve options that involve the generation of waste (e.g. either through construction requirements or operation of supply side options). The SEA should seek to enhance recycling and minimise the amount of waste going to landfill.	
Defra (2012)The UK Climate Change Risk Assessment 2012 Evidence Report		
Five themes are identified that form the priorities for adaptation in the UK.	The SEA should take into account the need for climate change adaptation.	
Defra (2011) Water for Life - Water White Paper		
.The Water White Paper described the Government's intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment. The Water White Paper and subsequent Defra strategic policy supports catchment-based approaches to prevent and manage future risks to drinking water quality from agricultural activities, working in partnership with farming communities. These policy objectives are reflected in regulatory guidance (WRPG) from Government and the regulators. The catchment-based approach has now been implemented across England, with catchment partnerships now in place across the Thames river basin to take forward the approach over the coming years	The DP should take into account the contents of this paper.	
Defra and Environment Agency (2015) How to Write and Publis	h a Drought Plan	
 Inis sets out how to assess the environmental effects of actions to maintain supply and how to mitigate. An environmental assessment must include details of changes as a result of actions to: Water flow or level regimes Water quality Ecology (sensitive features habitats and species) 	Ine SEA must take into account the approach to environmental assessment and what needs to be done to mitigate or reduce adverse effects and provide compensation for effects that remain following mitigation.	
 Designated sites (habitats and species) 		

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
• Fish populations (in particular migratory fish) Additionally an assessment must include effects on WFD status and consider effects on river basin management plans. Assessments should also take into account the Handbook for Scoping Projects: Environmental Assessment and the EcIA Guidelines.	
For SEAs of a DP, guidance should be followed in the DCLG (2005) Practical Guide to the Strategic Environmental Assessment Directive and UKWIR (2012) Strategic Environmental Assessment and Habitats Regulations Assessment: Water Resources Management Plans and DPs.	
Need to identify what needs to be done to mitigate or reduce adverse effects and provide compensation for effects that remain following mitigation. This includes the identification of pre-drought, in-drought and post drought mitigation actions.	
Defra (2011) The Natural Choice: securing the value of nature, The	Natural Environment White Paper
 Addresses the Government's approach to valuing economic and social benefits of a healthy natural environment while continuing to recognise nature's intrinsic value. It describes the vision of the Government for this to be the first generation to leave the natural environment of England in a better state than it inherited, requiring placing the value of nature at the heart of decision-making – in Government, local communities and businesses. Approaches to mainstream the value of nature across society include: facilitating greater local action to protect and improve nature; creating a green economy, in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature; strengthening the connections between people and nature to the benefit of both; and showing leadership in the European Union and internationally, to protect and enhance natural assets globally 	 The DP supports the provisioning service of freshwater through ensuring security of supply during times of drought. The media campaigns that form part of the Demand side DP options may contribute towards increasing the awareness of the population to the value the provisioning services of water. Other related ecosystem services may include: Provisioning Services: Biodiversity Regulating Services: Water Regulation Cultural services: Cultural heritage values Cultural services: Aesthetic The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of DP options during times of Drought.
Defra (2011) UK National Ecosystem Assessment and Defra, 20 Synthesis of Key Findings	14, UK National Ecosystems Assessment Follow on,
Ecosystems services from natural capital contribute to the economic performance of the nation. Information and tools to enable decision makers to understand the wider value of ecosystems and their associated services.	 For the purposes of the readership integrating an ecosystems services approach into the SEA is not being undertaken. However, it is realised that through the 'Objective-led' approach, many of the services relevant to the DP can be considered through the objectives and key questions for example: Provisioning Services: Freshwater Provisioning Services: Biodiversity Regulating Services: Water Regulation Cultural services: Cultural heritage values Cultural services: Aesthetic The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of DP
Defra (2010) Making Space for Natura: A Daviaw of Evaluad's	options during times of Drought. In the event of further guidance being issued on incorporating ESA into SEA, the anticipated approach is sufficiently flexible that it should be able to accommodate this (subject to timing).

This independent review of England's wildlife sites and the connections between them sets objectives and recommendations to help achieve a healthy natural environment that will allow our plants and animals to thrive.
Defra (2009), Safeguarding our soils – A Strategy for England
The new Soil Strategy for England – Safeguarding our Soils – outlines the Government's approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them.
The Governments vision is that: By 2030, all England's soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.
Defra (2015) The Great Britain Invasive Non-native Species Strategy
The Strategy is intended to provide a strategic framework, updated from the 2008 framework, within which the actions of government departments, their related bodies and key stakeholders can be better co-ordinated. Its overall aim is to minimise the risks posed, and reduce the negative impacts caused, by invasive non-native species in Great Britain. The implementation of the DP may influence biodiversity in the Thames River Basin District and the south east and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.
Defra (2008) Future Water: the Government's water strategy for England
• This strategy is the high level Government document which outlines how the Government wants the water sector to look by 2030, considering issues of water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding, greenhouse gas emissions and charging. The SEA should seek to ensure that the themes included in the strategy objectives are also reflected in the SEA objectives, particularly around water quality in the region, the quality of aquatic ecology, drinking water quality, resource use, energy use and greenhouse gas emissions, and adaptation to climate change.
• that "by 2030 at the latest, we have:
Improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from our taps
Sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water
Ensured a sustainable use of water resources, and implemented fair, affordable and cost-reflective charges.
Defra (2007) The Air Quality Strategy for England, Scotland and Wales
This strategy identifies air quality objectives and policy options to further improve air quality in the UK from into the long term. The options are intended to provide important benefits to quality of life and help protect the environment as well as the direct benefits to public health. The implementation of the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.
Defra (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services
 The objective for the next decade is: 'to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.' Four action areas are: A more integrated large-scale approach to conservation on land and at sea The SEA must consider impacts on biodiversity. The implementation of the DP may influence biodiversity in the area and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regards of priority species.
Putting people at the heart of biodiversity policy
Reducing environmental pressures Improving our knowledge
Objectives identified in the Policy, Plan or Programme

Defra (2008) England Biodiversity Strategy -climate change ad
Government strategy presenting five principles that are fundamental to conserving biodiversity during climate change. The precautionary principle underlies all the principles.
Defra (2005) Making space for water: taking forward a new gover management in England
The strategy outlines how to manage the risks from flooding and coastal erosion in the UK. The strategy aims to reduce the threat of flooding to people and their property, and to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.
Defra (2005) Securing the Future: Delivering UK Sustainable D
The strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The strategy places a focus on protecting natural resources and enhancing the environment.
Defra (2004) The First Soil Action Plan for England
This plan is a comprehensive statement on the state of the UK's soils and how Government and other partners were working together to improve them. Ensure that England's soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.
Defra (2004) Rural Strategy
The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include supporting economic and social regeneration across rural England and enhance the value of the countryside and protect the natural environment for this and future generations.
Defra (2002) Working with the grain of nature: a biodiversity st
The Strategy seeks to embed biodiversity considerations into public policy and sets out a programme for the next five years to make the changes necessary to conserve and enhance biodiversity. The strategy sets out a number of indicators for biodiversity which are to be monitored by Defra, including the condition of Sites of Special Scientific Interest, populations of wild birds and progress with implementing biodiversity action plans (BAPs).
Defra (2002) The Strategy for Sustainable Farming and Food – facing the future
This strategy sets out how industry, Government and consumers could work together to secure a sustainable future for our farming and food industries. The strategy's objectives are to support the viability and diversity of rural and urban economies and communities, respect and operate within the biological limits of natural resources (especially soil, water and biodiversity) and achieve consistently high standards of environmental performance by reducing energy consumption, by minimising resource inputs, and use renewable energy wherever possible.
Defra (2013) The Programme: Making the country resilient to a
This contains a number of objectives and actions under the headings of built environment, infrastructure, healthy and resilient communities, agriculture and forestry, natural environment, business and local government. Flooding and pressure on water services are considered to be cross cutting risks that are important to each chapter.

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
Drought is referred to in terms of the risk to health and loss of forest productivity.	
Defra (2015) The government's response to the Natural Capital	Committee's third State of Natural Capital report
 This provides a number of recommendations such as: Agreement for the development of a 25 year plan for a healthy natural economy. This includes helping organisations understand the economic, social and cultural value the impact their actions have on it and how to use the knowledge for better decisions; identify most important and threatened environmental assets; protection of designated areas; address outstanding monitoring and data issues to enable better decisions about strategic investments in natural capital. Assigning institutional responsibility for monitoring the state of natural capital. Organisations that manage land and water assets should create a register of natural capital for which they are responsible. 	Outputs from the SEA process will help to inform any future potential development by Thames Water of Natural Capital Accounting (NCA) approaches to assessing environmental asset performance. Government (led by HM Treasury and Defra) is increasingly using NCA to support future environmental policy and decision-making, and there may be future expectations on water companies to follow suit.
Defra (2015) Climate adaptation reporting second round: South	East Water
 Since the first round there are four areas of development identified in this report: Embedding and quantifying climate change into routine management and monitoring of risks. Updated assessment of climate change impacts on water supply and demand Greater collaborative long term planning and understanding of regional impacts Experience of recent winter storms enabling investigating of the level of resilience and adaptive capacity of current infrastructure and therefore better understanding. 	The SEA should consider the potential to include adaptive measures for climate change.
Defra (2016) Single Departmental Plan 2015-2020	
 The objectives include: A cleaner, healthier environment, benefitting people and the economy. A world leading food and farming industry. A thriving rural economy, contributing to national prosperity and wellbeing. A nation better protected against floods, animal and plant diseases and other hazards, with strong response and recovery capabilities. 	The SEA should take account of these objectives.
Defra (2016) Drought Plan Direction 2016	
The additional matters include a requirement that a DP needs to address 'the measures that may be needed to mitigate any adverse effect on the environment resulting from the implementation of a drought management measure'.	The DP and SEA to take account of this guidance.
Department for Culture, Media and Sport (2001) The Historic E	nvironment – A Force for the Future
This strategy outlines the Governments policy regarding the historic environment. The strategy has key aims and objectives that demonstrate the contribution the historic environment makes to the country's economic and social wellbeing.	The implementation of the DP may have an influence on the heritage of the region, particular if options affect surface water levels in part s of the Thames rich in historic features. The SEA should seek to ensure any adverse effects on heritage assets are minimised or avoided.
The Energy Act 2013	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
This provides the legislative framework for delivering secure, affordable and low carbon energy. It includes provisions for decarbonisation,	The implementation of the DP may have an influence upon Thames Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.
Environment Act, 1995	6
The Environment Act set up the EA to manage resources and protect the environment in England and Wales	The SEA should seek to promote the protection and enhancement of all water resources without having negative effects on other aspects of the Environment.
Environment Agency (2014) Corporate Plan 2014 - 2016	
 This sets out the EA's priorities for the environment between 2014 and 2016. Priority areas include: A changing climate Increasing the resilience of people, property and businesses to the risks of flooding and coastal erosion Protecting and improving water, land and biodiversity 	The SEA should seek to ensure that priorities are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and biodiversity.
Environment Agency (2010), Water Resources Action Plan for H	England and Wales
 The strategy has four main aims: Adaptation to and mitigation of climate change; A better water environment; Sustainable planning and management of water resources; People valuing water and the water environment. 	The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the sustainable management of water resources and protecting the environment.
Environment Agency (2009), Water Resources Strategy for Eng	land and Wales
 This is the national EA strategy for water resource management in the long term. It looks to 2050 and considers the impacts of climate change, the water environment, water resource and valuing water. Aims and objectives include: Ensure water is used efficiently in homes and buildings, and by industry and agriculture Provide greater incentives for water companies and individuals to manage demand Share existing water resources more effectively 	The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives, particularly around water resource use and availability in the region.
Environment Agency (2015) Creating a Better Place: Environme	ent Agency Corporate Strategy 2014-2016
 The strategy sets out the EA's ambitions for the environment between 2014 and 2016. Priority areas include: A changing climate Increasing the resilience of people, property and businesses to the risks of flooding and coastal erosion Protecting and improving water, land and biodiversity Improving the way the EA works as a regulator to protect people and the environment and support sustainable growth 	The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and biodiversity.
Environment Agency (2013), Managing Water Abstraction	
This sets out how the EA manages water resources in England and Wales.	The SEA should consider the range of impacts that changes to abstractions could have on the environment, including water bodies, biodiversity, and water users.
Environment Agency, Shoreline Management Plans	
A large-scale assessment of the risks associated with coastal processes with the aim to help reduce these risks to people	The SEA should seek to promote a reduction of the risks identified in the Shoreline Management Plans.

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
and the developed, historic and natural environments. Coastal processes include tidal patterns, wave height, wave direction and the movement of beach and seabed materials. The second generation of Shoreline Management Plans (SMPs) are in production, covering the entire 6000 kilometres of coast in England and Wales. This generation of plans aim to incorporate sea level rise resulting from climate change and current defences with limited life and improvement requirements.	
Environment Agency (undated) WFD River Basin Characterisat abstraction and flow regulation	ion Project: Technical Assessment Method - River
This paper describes the method used to assess the likelihood of river water bodies achieving the relevant WFD objectives as a result of artificial influences on low river flows.	Implementation of the DP may impact river water quality. The SEA should seek to promote the protection and enhancement of biodiversity and river water quality across the region.
Environment Agency (undated) Hydroecology: Integration for r	nodern regulation
This paper describes clear way forward in terms of hydroecology and a strategic direction to its development and application.	The DP and SEA should ensure relevant ecological considerations are integral to water resource evaluation and management decisions across the range of temporal and spatial scales.
Environment Agency (2016) Drought plan guideline extra infor drought plans	mation, Environmental assessment for water company
This supplements the guidance provided on how to write and publish a drought plan. It provides guidance on how to develop an environmental assessment to support a DP. It includes the need to consider whether an SEA is required for a drought plan.	An SEA is being undertaken for the DP.
Environment Agency (2015) Drought Response: our framework	for England
 The Environmental Damage (Prevention and Kenediaton) (En These regulations amend the 2009 regulations and provide additional protection to habitats and species identified on Annexes 1 and 2 of the EC Habitats Directive (92/43/EEC), SSSIs and, in some cases, classified waterbodies from environmental damage where an operator has intended to cause damage or been negligent to the potential for damage. Applies to the most serious categories of environmental damage, including: Contamination of land that results in a significant risk of adverse effects on human health 	The SEA should seek to ensure that the guidance provided by the regulations is considered when assessing the DP.
Adverse effects on surface water or groundwater consistent with a deterioration in the water's status	
• Adverse effects on the integrity of a Site of Special Scientific Interest (SSSI) or on the conservation status of species and habitats protected by EU legislation outside SSSIs.	
Environmental Protection Act 1990	
This act addresses pollution control, waste (including duty of care), contaminated land, statutory nuisance and clean air.	The DP and actions arising from it such as construction activities must comply with this act.
The Eels (England and Wales) Regulations 2009	
Implement European Council Regulations 1100/2007 establishing measures for the recovery of the stock of European eel. The Regulations will help implement delivery Eel Management Plans. They address eel records and re- stocking, close season and reduction of fishing effort, passage of eels and entrainment.	The SEA should seek to should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species identified. This should include migratory fish species and their migratory passage.
The key objective is to ensure that at least 40% of the potential production of silver eels returns to the sea to spawn.	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
This will be achieved by reducing exploitation of all life-stages of the eel and restoration of their habitats.		
English Heritage (2010) Heritage at Risk		
Heritage at Risk is a national project that aims to identify the endangered sites (historic buildings and places with increased risks of neglect and decay) and then help secure them for the future. Heritage at Risk Registers were most recently published in 2015.	The SEA should seek to protect and enhance heritage and landscape.	
English Heritage (2008) Climate Change and the Historic Envir	onment	
Sets out the current thinking on the implications of climate change for the historic environment. It is intended both for the heritage sector and also for those involved in the wider scientific and technical aspects of climate change; in the development of strategies and plans relating to the impact of climate change; or in projects relating to risk assessment, adaptation and mitigation.	The SEA should seek to assess the implications of the DP in combination with climate change and the potential impacts on heritage and the historic environment.	
Flood and Water Management Act, 2010 as amended		
The Flood and Water Management Act 2010 aims to provide better, more comprehensive management of flood risk for people, homes and businesses. It aims improve efficiency in the water industry, improve the affordability of water bills for certain groups and individuals, and help ensure continuity of water supplies to the consumer.	The DP also aims to ensure continuity of water supplies across the region are maintained.	
Historic England (2013) Strategic Environmental Assessment, S	ustainability Appraisal and the Historic Environment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.	The SEA should consider the potential effects of the DP on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.	
Historic England (2015) Historic Environment Good Practice A	dvice in Planning Note 3	
This provides guidance on managing change within settings of heritage assets. This includes archaeological remains, historic buildings, sites, areas and landscapes.	The SEA should take into account effects on settings of heritage assets.	
HM Treasury (2015) Fixing the Foundations: Creating a More P	rosperous Nation	
 This report refers to the importance of productivity. The government's framework for raising productivity has two pillars: Encouraging long term investment in economic capital, including infrastructure, skills and knowledge; Promoting a dynamic economy that encourages innovation and helps resources flow to their most productive use. 	The SEA should take into account the need to raise productivity via long term investment and a dynamic economy.	
r		
A fifteen point plan for productivity is provided.		
HM Treasury Infrastructure UK (2014) National Infrastructure Plan		
The Plan focuses on economic infrastructure: the networks and systems in energy, transport, digital communication, flood protection, water and waste management. These are all critical to support economic growth through the expansion of private sector businesses across all regions and industries, to enable competiveness and to improve the quality of life of everyone in the UK.	The DP could result in the production of additional waste. The SEA should seek to reduce the production of waste and ensure it is treated in line with the widely adopted 'waste hierarchy' and not sent to landfill. The DP can contribute to the providing resilient water services.	
The objectives for the water sector are to secure a fair deal for customers while enabling water companies to continue to attract low-cost investment needed to provide the high quality, resilient water services customers want.'		

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
Natural England's standing advice on protected species		
This standing advice comprises a number of guides on the following protected species:	The SEA should seek to protect protected species and include this in the SEA objectives.	
• Bats		
Great crested newts		
Badgers		
Hazel dormice		
Water voles		
• Otters		
Wild birds		
Reptiles		
Protected plants		
White-clawed crayfish		
• Invertebrates		
Freshwater fish		
Natterjack toads Ancient weedland and wateren trees		
Ancient woodiand and veteran trees		
Natural England (2014) Site Improvement Plans (SIPs) for Natu	ira 2000 Sites	
SIPs have been developed for each Natura 2000 site in	The SEA should take into account the relevant SIPs for	
England. They provide high level overviews of the issues	Natura 2000 sites that may be affected by the DP and	
sites and outlines the priority measures that are needed to	include the conservation and enhancement of designated sites in the SEA objectives	
improve the condition of the features. SIPs are live documents.	designated sites in the SEA objectives.	
Natural England National Character Area (NCA) Profiles		
Natural England has defined a series of 120 National	The SEA should take account of NCA profiles and	
Character Areas as a means to conserve nature in England.	include SEA objective relating to the protection of	
combination of physical attributes, wildlife, land use and	landscape character.	
culture.		
Relevant NCAs are identified in Appendix D.		
Natural Environment and Rural Communities Act, 2006		
This Act makes provision about bodies concerned with the	The SEA should seek to maintain or enhance the quality	
natural environment and rural communities in connection	of habitats and biodiversity. The impacts of the DP on	
and the Broads	any designated features, as highlighted in the Natural Environment and Rural Communities Act, should be	
The Natural Environment and Rural Communities Act is	addressed.	
designed to help achieve a rich and diverse natural		
environment and thriving rural communities.		
Planning (Listed Buildings and Conservation Areas) Act 1990		
This addresses listed buildings including prevention of	The DP and SEA should take account of the need to	
deterioration and damage and preservation and enhancement	protect listed buildings and conservation areas.	
Salmon and Freshwater Fisheries Act. 1075		
	The Ast Duratidas statutement minute in f	
The Act lays down the present basic legal framework within which salmon and freshwater fisheries in England are	The Act Provides statutory requirements for maintaining fish passage. The SEA will cover fish	
regulated.	passage as an element of at least one sustainability	
Proposals have been made to extend the legislation to apply to	objective. The SEA should seek to address any potential	
more fish species e.g. coarse fish, eel and lamprey species.	issues or effects on existing measures to address fish passage.	
These proposals are currently under review.	Passage.	
The Act covers legislation on fishing methods and related		
offences, obstructions to fish passage, salmon and freshwater		

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
fisheries administration and law enforcement. Proposed extensions to the legislation (under review) include the provision of fish passes and screening of water abstraction and discharge points for coarse fish, eel and lamprev species.		
The Water Act, 2003		
 The Water Act 2003 is in three Parts, relating to water resources, regulation of the water industry and other provisions. The four broad aims of the Act are: The sustainable use of water resources Strengthening the voice of consumers A measured increase in competition The promotion of water conservation. 	The implementation of the DP may have an effect through its role in maintaining supplies of water. The SEA should seek to promote sustainable use of water resources.	
The Water Environment (WFD) (England and Wales) Regulation	ns, 2003	
These Regulations make provision for the purpose of implementing in river basin districts within England and Wales The Water Framework Directive (2000/60/EC) of the European Parliament. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources.	The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.	
Water Resources Act, 1991 (Amendment) (England and Wales)	Regulations 2009 SI3104	
Amends Water Resources Act 1991 by extending the use of Water Protection Zones and Works Notices, in particular to deal with harm to aquatic ecosystems caused by the physical characteristics of a water course or lake, such as quantity, structure and substrate of river/lake bed.	The SEA should include objectives that cover hydromorphological aspects and seek to ensure that hydromorphological features within the plan are maintained or enhanced.	
requirements of the WFD		
Wildlife and Countryside Act, 1981		
The Act is the principle mechanism for providing legislative protection of wildlife in Great Britain. Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule.	Some aspects of the DP may have effects on habitats and species in the TWUL supply area and beyond. The SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species and habitats.	
The Act also improved protection for the most important wildlife habitats.		
UKTAG on the WFD various e.g. Phase 3 Review of Environmental Standards		
UKTAG prepares technical guidance designed to facilitate consistent implementation of the WFD in the UK. This report identifies standards for certain chemicals known as specific pollutants, developments in assessments of risk to groundwater, non-native species, standards for flows in rivers, standards for levels in lakes, standards for acidity in rivers and standards in intermittent discharges.	The SEA should seek to ensure that the guidance provided by the plan are considered when assessing the DP, especially with respect to objectives relating to ecology, water quality and water quantity. The SEA should also ensure the guidance in the plan is used in relation to other related regulations for example the Habitats Directive. The guidance could contribute to the formulation of any criteria for assessing significance of effects.	
UK Climate Projections UKCP09. UKCIP, 2009		
The UKCP09 Projections provide a basis for studies of impacts and vulnerability and decisions on adaptation to climate change in the UK over the 21st century. Projections are given of changes to climate, and of changes in the marine and coastal environment; recent trends in observed climate are also discussed.	The SEA should also use UKCP09 projections in the broader assessment of climate change effects and any potential cumulative effects. For example the ecological requirements of aquatic habitats that may be affected by the DP will also be influenced by climate change.	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
The methodology gives a measure of the uncertainty in the range of possible outcomes; a major advance beyond previous national scenarios The Projections will allow planners and decision-makers to make adaptations to climate change. In order to do so they need as much good information as possible on how climate change will evolve. They are one part of a UK government programme of work to put in place a new statutory framework on, and provide practical support for, adaptation. Water Industry Act 1991 was amended by the commencement of	f Section 36 of the Flood and Water Management Act 2010
This makes provision for general duties of water undertakers including those associated with water resources management plans and sets out supply duties.	The DP must take into account this legislation.
The water Resources Management Plan Regulations 2007	
This provides the legislation for the preparation of water resources management plans.	The DP should take account of these requirements.
Water UK (2016) Water Resources Planning Framework (2015-	2065)
 This study considers public water supply in England and Wales with the combined impacts of the challenges of climate change, population growth and the need to reduce abstractions and protect the environment. It considers the long term water needs (50 years) and the options available. It reports on issues such as: The significant and increasing risk of severe drought Role of drought orders/permits and extent can be relied upon now and in future Impacts of climate change Population growth Reduction in abstraction licenses to protect aquatic environment Future needs uncertainty Twin tracking demand management, new resources and regional transfers Increased use of demand management Strategic supply options Promoting and enabling transfers Social and economic consequences of severe droughts Minimum standard of drought resilience 	The SEA should take account of the environmental issues and the DP should consider these and other relevant findings/conclusions.
Chiltern Hills AONB Management Plan 2014-2019	
Objectives are under the headings of conserving and enhancing natural beauty, landscape, farming, forestry and other land management, biodiversity, water environment, historic environment and development.	The DP operation may have the potential to affect the broad aims and policies identified in the vision of the Chilterns AONB management plan. The SEA will include objectives that take into account the broad aims and policies important to the vision of the Chilterns AONB management plan where relevant (e.g. conserving river and wetland habitats.)
Cotswolds AONB Management Plan 2013-2018	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
Objectives include those associated with conserving and enhancing the AONB.	The DP operation may have the potential to affect several of the objectives for managing the Cotswolds AONB. The SEA will include objectives that take into account the objectives of the Cotswolds AONB management where relevant.
Environment Agency (2011), Water Resources Strategy – A Reg	ional Action Plan for Thames Region.
 The vision of the plan is for more people in London and the South East to enjoy new and improved water related recreation contributing to a better quality of life, health and environment. The strategic priorities are designed to: Encourage action by a range of interested parties and individuals; It is a strategic priority of the plan is a strategic plan. 	The DP operation may have the potential to affect the water environment in London and the South East, such as reducing river levels with potential impacts on recreation activities. The SEA should include objectives that take into account the maintenance of the water environment to ensure access, recreation and enjoyment.
deliver well managed, new and better opportunities for more people to enjoy	
 water environments; 	
• Tackle some of the issues that arise from changes in the demand for recreation,	
 the supply of water bodies and gaps in provision; 	
Ensure everyone can enjoy water environments.	
Environment Agency (2010), Water Resources Strategy – A Res	gional Action Plan for Thames Region.
 Explains how the aims of the EA national strategy will be progressed by regional teams. Brings a sustainable approach to water management, taking into account regional challenges. This plan takes the aims and objectives of the strategy and identifies regional actions that will enable: water to be abstracted, supplied and used efficiently; the water environment to be restored, protected and improved so that habitats and species can better adapt to 	The aims and objectives of the Regional Action Plan for Thames Region would act to strategically reduce the requirement for the operation of a DP. The DP should be aligned to these objectives.
 supplies to be more resilient to the impact of climate 	
change, including droughts and floods;	
• water to be shared more effectively between abstractors;	
• improved water efficiency in new and existing buildings;	
• water to be valued, and for prices to act as an incentive for efficient use, while safeguarding vulnerable sectors of society;	
• additional resources to be developed where and when they are needed in the context of a twin-track approach with demand management;	
• sustainable, low-carbon solutions to be adopted;	
Stronger integration of water resources management with land, energy, food and waste.	
Environment Agency (2006) River Thames Alliance: Thames V	Vaterway Plan 2006-2011
The strategy aims to plan and promote water-related sport and recreation to achieve the maximum economic, social and environmental benefits. The main objectives are based on creating opportunities for recreation on or near our inland and coastal waters:	The SEA must consider the provision of water resources required to support water based sport and recreation across the region.
1. Creating a better place to play by improving	
the environment	
2. Improving access for all 2. Making recreation sustainable	
4. Promoting the outdoors	
Environment Agency (2007) Water for the Future - Managing V	Vater in the South East of England.
A short paper explaining why water resources are going to become an increasingly important issue in the south east of England due to Government proposed development, climate change, available resources and usage patterns.	The aims and objectives of the Regional Action Plan for Thames Region would act to strategically reduce the requirement for the operation of a DP. The DP should

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
 Promotes consumer management of water resources by changing behaviour, and suggests this may preclude the need for some development schemes which have environmental impacts. Mentions a number of ways by which water companies can reduce water demand, including: leakage reduction installation of water meters new tariffs to encourage efficient water use retrofitting water saving devices to existing homes and businesses, designing new homes to be water-efficient sharing of resources by water companies 	be aligned to these objectives where possible. For example, sharing of resource by water companies.
Environment Agency (2006) Thames Regional Fisheries Strateg	y: A Bright Future for Our Fish 2006 – 2011
The regional Fisheries strategy outlines the main issues and pressures for Fisheries across the Thames region and outlines actions to address these issues.	The DP operation may have the potential to impact on fish populations and therefore angling. The SEA should include objectives that take into account ecological requirements of fish and the potential effects of the DP on fisheries and therefore recreation.
Environment Agency and Defra, (2016) Thames River Basin Dis	strict River Basin Management Plan
Updated as 2009 plans superseded by 2015 plans. Reference is made to the environmental objectives of the WFD are: To prevent deterioration of the status of surface waters and groundwater; To achieve objectives and standards for protected areas; To aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status; To reverse any significant and sustained upward trends in pollutant concentrations in groundwater; The cessation of discharges, emissions and loses of priority hazardous substances into surface waters; Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants. Environmental objectives are set for each of the protected	The DP may have an effect on some of the Thames RBMP objectives. The SEA should include objectives that take into account the objectives of the Thames RBMP where relevant (e.g. abstraction and WFD status).
areas and water bodies in the river basin district.	tegies (CAMS)
Environment Agency Catchinent Abstraction Management Stra	
 CAMS is the approach used by the Environment Agency to assess the amount of water available for further abstraction licensing taking account of the needs of the environment. The relevant Catchment Abstraction Management Strategies (CAMS) are: TWUL supply area: Arun and western Abstraction Management Strategies (CAMS) are: TWUL supply area: Arun and western streams Bristol Avon, Axe and North Somerset Streams Cherwell, Thame and Wye Colne Darent Hampshire Avon Kennet and Vale of White Horse Upper Lee Loddon London Medway Mole Roding, Beam and Ingrebourne Severn corridor 	The DP could affect issues identified within in the individual CAMS within the area. The SEA will include objectives that ensure that the effect of the DP on the CAMS issues are assessed.

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
 Severn Vale Test and Itchen Thames Corridor Upper and Bedford Ouse Warwickshire Avon War 		
Cotswolds		
 The aims of the CAMS are to: make information on water resource availability and the catchment licensing strategy more readily available provide a consistent and structured approach to local water resource management 		
 recognise both the abstractor's reasonable need for water and environmental needs provide mechanisms to assess water resources availability provide results which ensure the relevant Water Framework Directive objectives are met provide tools to aid licensing decisions - particularly 		
management of time limited licences.	and rick from Datchet to Teddington	
A managed magnetic of ansists and investment to reducing it	The DD and SEA (for sumulation effects) should take	
A proposed programme of projects and investment to reduce flood risk in communities near Heathrow including Datchet, Wraysbury, Egham, Staines, Chertsey, Shepperton, Weybridge, Sunbury, Molesey, Thames Ditton, Kingston and Teddington. The scheme includes large scale engineering work to construct	into account the projects being undertaken within the options in these areas.	
new flood channels and improvements to existing weirs. Environment Agency, Thames' National Environment Program	ne (NEP) (unpublished)	
The National Environment Programme (NEP) is the mechanism by which the Environment Agency sets out the measures that they would like water companies to implement to improve the environment. The NEP covers both water and waste and the detail in the NEP enables water companies to include specific measures in their business plans for submission to Ofwat so that the environmental improvements can be funded and delivered in the following Asset Planning Period (AMP).	The DP should take this into account.	
Kent Downs AONB Management Plan 2014-2019		
The areas covered by the plan include the overall management of the AONB, sustainable development, landform and landscape character, biodiversity, farmed landscape, woodland and trees, historic and cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding.	The DP operation may have the potential to affect several of the objectives of the Kent Downs AONB. The SEA will include objectives that take into account the AONB objectives where relevant.	
Lee Valley Regional Park Authority (2010) Park Development Framework		
The aims are for a park that is high quality and regionally unique visitor destination and a park that delivers a range of high quality opportunities for sport and recreation.	The SEA should consider any effects on recreation at the Lee Valley Regional Park.	
Mayor of London (2011) The London Plan Spatial Development London Plan 2015	Strategy for Greater London. Minor Alterations to	
The London Plan is a Spatial Development Strategy for London and is the responsibility of the Mayor to produce and keep under review. It replaces government's strategic guidance, and borough's development plan documents must be in 'general conformity' with it. The GLA Act 1999 requires that the Plan	The DP may have an effect on some aspects of the London Plan objectives (such as environmental issues, climate change, air quality and waste). The SEA should include objectives that take into account the objectives and vision of the London Plan where relevant.	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
deals only with matters that are of strategic importance to Greater London, and that it deals with three cross-cutting themes. The overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20– 25 years. The plan brings together the geographic and locational aspects of the Mayor's other strategies – including those dealing with: transport, economic development, housing, culture a range of social issues such as children and young people, health inequalities and food a range of environmental issues such as climate change (adaptation and mitigation), air quality, noise and waste. Mayor has put forward a vision for the sustainable development of London over the period covered by this Plan (to 2031) requiring London to "excel among global cities – expanding opportunities for all its people and enterprises, achieving the highest environmental standards and quality of life and leading the world in its approach to tackling the urban challenges of the 21st century, particularly that of climate change".	
Mayor of London (2011) Managing Risks and Increasing Resilier	nce The Mayor's Climate Change Adaptation Strategy
 This includes a chapter on Drought and refers to 'security of supply' that is met by withdrawing more water from the environment that can be sustained. Less summer rainfall, greater demand for water and greater restrictions on the amount of water removed from the environment in the future threatens the security of supply. Without action, there will be increased frequency of drought management measures in London. Includes reference to reducing London's CO2 emissions by 60% by 2025. London should have a secure supply of water that is affordable and safeguards the environment. Improvements to the sustainability of London's water supply and demand balance to make it more robust to drought by : Promoting measures to enable and sustain long term improvement in water efficiency Lobbying government to integrate water efficiency into housing retrofitting programmes Promoting capturing and using rainwater for nonconsumptive purposes Improving response to drought. 	The DP and SEA should take into account climate change adaptation and the need for security of supply of water.
Local level green infrastructure plans such as: Mayor of London	(2012) Green Infrastructure and Open Environments:
The All London Green Grid, Supplementary Planning Guidance The NPPF defines green infrastructure as 'a network of multi- functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities' (including rivers and ponds). Local planning authorities are required to plan positively for strategic networks of green infrastructure, and take account of the benefits of green infrastructure in reducing the risks posed by climate change. The majority of LAs have therefore developed Green Infrastructure Strategies or Studies addressing these issues. Green infrastructure will often play a large part in local recreational resources.	The SEA should take account of the need to protect the green infrastructure network.
Environments: The All London Green Grid, Supplementary Planning Guidance aims to:	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
 Increase access to open space; Conserve landscapes and the natural environment and increase access to nature; Adapt the city to the impacts of climate change; Make sustainable travel connections and promote cycling and walking; Encourage healthy living; Promote sustainable food growing; Enhance visitor destinations and boost the visitor economy; Promote green skills and sustainable approaches to design, management and maintenance. Eleven area frameworks for delivery at the sub-regional level are identified. 	lavor's Water Strategy
mayor or London (2011) Securing London S water Fullite The W	ayor 5 mater bilategy
 This sets out the water challenges for London and actions needed to manage them. It calls for organisations involved in the city's water management to invest in a water management and sewerage infrastructure system that's suitable for a world class city support and encourage people to take practical actions to save water, save energy and save money off utility bills work in partnership to manage flood risk Demand for water will increase due to population increases and higher seasonal rainfall and hotter summers mean water availability will decreased when required the most. London's supply-demand balance will become increasingly unsustainable and therefore action is required to balance supply and demand. 	The DP and SEA should take into account of the strategy and the need to balance water supply and demand whilst protecting the environment.
Mayor of London, London Infrastructure Plan 2050 A Consultat	tion
Water is a key element of this plan. A variety of demand and supply side measures will be required.	The DP should be aligned to these objectives.
The North Wessex Downs AONB Management Plan 2014-2019	
The objectives of the plan come under the broad headings of Landscape, Land Management; Biodiversity; Historic environment; Natural resources; Development; Communities and Leisure and Tourism.	The DP operation may have the potential to affect several of the objectives of the North Wessex Downs AONB. The SEA will include objectives that take into account the AONB objectives where relevant (e.g. Biodiversity; historic environment, natural resources, leisure and tourism).
South Downs National Park (2013) Partnership Management Pl 2014-2019.	an, Shaping the future of your south downs national park
 This is the five year strategy for the management of the South Downs National Park. It provides a framework for the park wide local plan. Outcomes are under three headings: A thriving living landscape People connected with places Towards a sustainable future 	The DP operation may have the potential to affect several of the ambitions for the management of the South Downs National Park. SEA will include objectives that take into account the ambitions for the management of the South Downs National Park where relevant (e.g. landscape quality and character, historic and cultural features, habitats and biological diversity, climate change and better use of resources).
One of the outcomes compromises 'More responsibility and action is taken by visitors, residents and businesses to conserve and enhance the special qualities and use resources more wisely.	alizarity Former
South East Biodiversity Strategy (2009) South East England Bio	Daiversity Forum

Objectives identified in the Policy, Plan or	Influences on the DP and the SEA objectives		
Programme			
The strategy aims to be a clear, coherent and inspiring vision and framework that guides and supports all those who can impact biodiversity in the south east region. The South East Biodiversity Strategy aims to:	The implementation of the DP may influence biodiversity in the south east and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.		
• Be a clear, coherent and inspiring vision for the south east			
 Provide a framework for the delivery of biodiversity targets that guide and support all those who have an impact on biodiversity in the region 			
• Embed a landscape scale approach to restoring whole ecosystems in the working practices and policies of all partners			
Create the space needed for wildlife to respond to climate change Euclide all encoded in the could exist be set to support and			
Enable an organisations in the south east to support and improve biodiversity across the region Be a core element within the strategies and delivery plans of			
organisations across the south east region.			
Surrey Hills AONB Management Plan 2014-2019			
Policies include those for farming, woodland, biodiversity, historic and cultural heritage, recreation and tourism, land use planning, traffic and transport and community development and the local economy.	The DP operation may have the potential to affect several of the objectives of the Surrey Hills AONB. The SEA will include objectives that take into account the AONB objectives where relevant (e.g. landscape, biodiversity, community).		
Themas Water (2000) Taking are of water Strategia Direction	n Statement 2010, 2025		
- Thanles water (2009), Taking care of water - Strategic Direction	n Statement 2010-2035.		
As a result of the consultation that fed into the Statement, Thames Water will: Take into account future uncertainties caused by climate change, population change in the south-east, and living preferences in provision of water resources and waste-water management. Continue to produce high quality drinking water. Reduce leakage. Improve the quality of the tidal Thames by implementation of the TTS and reduction of overspills. Reduce sewer flooding and odour issues. Improve water efficiency and develop new water resources. Maintain and	The DP and Thames Water Strategic Direction statement should, along with the Thames Water WRMP and Business Plan, work together to maintain levels of service, protect the environment and improve water efficiency.		
improve high levels of customer service and efficiency. Maintain affordability			
Thames Water (2014), Water Resource Management Plan, 2015	-2040		
Thames Water's statutory WRMP under the Water Act, 2003. Sets out plans to manage supply and demand for water in relevant water supply zones, while protecting the environment.	The DP and the WRMP should operate together to maintain levels of service in all scenario's.		
Thames Water (2013) Business Plan. Thames Water 2015 to 2020			
Thames Water's statutory Business Plan to the water regulator, Ofwat.	The DP and Thames Water's statutory Business Plan should, along with the Strategic Direction Statement and Thames Water WRMP, work together to maintain levels of service, protect the environment and improve water efficiency.		
Water Resources Management Plans from adjacent water comp	anies		
These set out the plans to manage water resources by companies in adjacent areas.	The DP should not conflict with the other water company operations especially drought options that may be operated simultaneously.		
Drought Plans from adjacent water companies			
These include:	The DP and SEA to take these into account.		

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives	
Trogramme		
Affinity Water		
Anglian Water		
Essex and Suffolk Water		
Severn Trent Water		
South East Water		
Southern Water		
Sutton and East Surrey		
Wessex Water		
water Resources in the South East (WRSE) Group (forthcoming	g) regional water resources strategy	
The WRSE's group aim is to develop a regional water resources strategy to contain a range of options to determine the best long term solutions for customers and the environment of the south east of England. Once prepared and publicly available this will form the 'building blocks' of water companies' next set of WRMPs.	The DP and SEA should take account of this strategy subject to when it becomes available.	
Environment Agency (2004) Thames Salmon Action Plan (SAP)		
 The Plan details a 5 year programme of work. Eight targets are identified. Which include An average of 250 adult salmon returning to the river each 	The DP operation may have the potential to impact on fish migration. The SEA will cover fish passage as an element of at least one sustainability objective.	
 year Fish passes to be open throughout the fish migration period and operate at greater than 95% efficiency 		
London Climate Change Partnership (2009) Adapting to Climat	e Change. Creating Natural Resilience.	
Sets out actions designed to ensure impacts on biodiversity from climate change are minimised and opportunities are maximised.	The SEA should consider the impacts on biodiversity g into account the potential for future climate change.	
 Sets out three key responses needed to maximise biodiversity benefit in response to climate change: Urban greening and development of ecological networks River restoration and flood storage Appropriate wildlife habitat management to maximise the ability of biodiversity to adapt to climate change 		
London Biodiversity Partnership (2009), London Biodiversity A	ction Plan.	
The London BAP has 26 action plans for habitats and species that are important in London. Of these, key habitats of relevance are Rivers and Streams, Reedbeds and Tidal Thames. The London BAP contains targets to improve the condition and increase the extent of a selected number of habitats found in the capital by 2015.	The implementation of the DP may influence biodiversity in Greater London area and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regards of priority species identified in BAPs	
Public Rights of Way Improvement Plans (ROWIP)		
These plans are prepared by local authorities to describe how improvements to the public rights of way network will be undertaken to provide a better experience for a range of users. ROWIPs are reviewed every ten years.	The DP may affect public rights of way (PRoW) for example due to construction. The SEA should include an objective that protects PRoW.	
Thames Landscape Strategy, 2012 , Our Guidance Document: The Thames Landscape Strategy Review 2012		
• Focussed on the river corridor between Hampton and Kew. The purpose of the Action Plan is to set out how the aims of the Thames Landscape Strategy partnership (TLS) will be achieved. The Thames Landscape Strategy Partnership objectives include:	The DP operation may have the potential to effect on the landscapes and water related archaeological and cultural features of the Thames corridor. The SEA should include objectives that take into	
 To protect and enhance the natural and man-made landscape of the area To protect and improve sites of nature conservation value and create new opportunities for biodiversity and flood 	account landscape, archaeology and cultural heritage.	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
 risk management in the implementation of the Thames Landscape Strategy. To protect and enhance historic buildings, historic parks and gardens, landscapes and ancient monuments. To encourage and maintain a high level of community commitment to the Thames Landscape Strategy vision and encourage community involvement and action to help realise the Thames Landscape Strategy. To facilitate the creation of partnerships between the public, private 	
Thames Waterways Plan 2015 – 2021, EA for the River Thames	Alliance, (2015)
 Developed by the EA in consultation with members of the River Thames Alliance (RTA). The objectives include: To ensure that the best possible flood risk management procedures are being followed and that resources are sufficient. To conserve, improve and restore a natural and biodiverse river environment wherever possible for the benefit both nature and people, as well as maintaining the character of the urban landscapes and countryside within the River Thames corridor. The River Thames and its corridor should be promoted effectively as a visitor destination for the benefit of visitors and the regional economy. To ensure that the non-tidal River Thames remains as navigable as possible for commercial and recreational boats, that the rules around navigation are enforced, that the supporting infrastructure and facilities are fit for purpose and adequate staff are available. To increase the use of the Thames for water-based sport and physical recreation, focussing particularly on better access for people for whom current provision is less readily available. 	The DP operation may have the potential to affect the water environment and river levels and therefore access to the River Thames. The SEA should include objectives that take into account navigation, recreation and tourism.
Port of London Authority (2016) The Vision for the Tidal Thame	28
 The Thames Vision is a 20 year view of the river's future, developed with stakeholders with the goal of making the most of its potential, for the benefit of all. The Vision sees the value of the Thames better understood and its potential realised. The goals and priority actions are as follows: Port of London: More trade, more jobs Inland Freight: More goods off roads onto the river Passenger Transport: More journeys Sport and Recreation: More participants Environment and Heritage: Improved tidal Thames environment Community and Culture: More people enjoying the Thames and its banks 	The DP operation may have the potential to affect the water environment and river levels and therefore access to the River Thames. The SEA should include objectives that take into account navigation, recreation and tourism.
The Port of London Act 1968	
The Port Authority has to maintain the Richmond works and the sluices forming part thereof so as to hold the water upstream of the works to a certain height.	The DP operation may have the potential to affect the water environment and river levels and therefore access to the River Thames.

APPENDIX D ENVIRONMENTAL BASELINE

BIODIVERSITY, FAUNA AND FLORA

Baseline

Biodiversity comprises the variety of plants (flora) and animals (fauna) in an area, and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity has importance in its own right, and has value in terms of quality of life and amenity.

The River Thames catchment area includes a variety of sites that are designated at a European, national or local level as important for biodiversity, flora and fauna, including:

- 5 Ramsar¹ Sites (South west London waterbodies, Lee Valley, Thursley & Ockley Bogs, Benfleet and Southend Marshes, and Thames Estuary & Marshes)
- 7 Special Protection Areas (SPA)²
- 23 Special Areas of Conservation (SAC)³
- 511 Sites of Special Scientific Interest (SSSI)⁴
- 19 National Nature Reserves (NNR)⁵
- 503 Local Nature Reserves (LNR)⁶.

Figure D1 shows the location of these designated sites. **Table D1** presents details of the internationally designated sites including SPAs and SACs. There are no candidate SACs in the Thames catchment.

¹ Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

² Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), also known as the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. www.jncc.org.uk

³ Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). <u>www.jncc.org.uk</u>

⁴ Natural England now has responsibility for identifying and protecting the SSSIs in England under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000).

⁵ NNRs are protected under Sections 16 to 29 of the National Parks and Access to the Countryside Act, 1949 and the Wildlife and Countryside Act, 1981.

⁶ LNRs – places with wildlife or geological features that are of special interest locally.



Legend

 River Thames
Thames Water Supply Area
Special Protection Area
Special Area of Conservation
Ramsar Site
Site of Specific Scientific Interest
Ancient Woodland

Marine Conservation Zone

Thames management catchments

CASCADE 1:600,000 Note: All locations are approximate This drawing incorporates Ordnance Survey Information © Crown copyright and database rights 2016 Project Title: Thames Water Draft Drought Plan SEA Environmental Report Figure Title Designated Sites

Figure Number: Figure D1

August 2016

Date

Name of Site and Type	Thames Water Water Resource Zone (where applicable)	Region(s)
SPA		
Lee Valley (SPA) (Also Ramsar)	London	East of England
South West London Waterbodies (SPA) (Also Ramsar)	London Slough/Wycombe/Aylesbury	South East and London
Thursley, Hankley & Frensham Commons (SPA), also SAC and SSSI	Guildford	South East and London
Thames Estuary & Marshes (also Ramsar)	London (partially)	
Wealden Heaths Phase II (SPA) (constituting Woolmer Forest, Bramshott and Ludshott Commons, Broxhead and Kingsley Commons and Devil's Punchbowl SSSI)	Guildford	South East and London
Thames Basin Heaths (SPA) (constituting Ash to Brookwood Heaths, Bourley and Long Valley, Bramshill, Broadmoor to Bagshot Woods and Heaths, Castley Bottom to Yately and Hawley Commons, Chobham Common (also NNR), Colony Bog and Bagshot Heaths, Eelmoor Marsh, Hazeley Heath, Horsell Common, Ockham and Wisely Common, Sandhurst to Owlsmoor Bogs and Heaths, Whitmoor Common)	London (partially)	South East and London
Benfleet and Southend Marshes		
(also Kallisar)		
Kennet & Lambourn Floodplain (SAC)	Kennet Valley and SWOX	South East, London and South West
Windsor Forest & Great Park (SAC)	Slough/Wycombe/Aylesbury	South East and London
Hackpen Hill (SAC)	SWOX	South East and London
Oxford Meadows (SAC)	SWOX	South East and London
River Lambourn (SAC) Also SSSI	Kennet Valley	South East and London
Cothill Fen (SAC)	SWOX	South East and London
Chiltern Beechwoods (SAC)	Slough/Wycombe/Aylesbury and SWOX	South East, London and East of England
Hartslock Wood (SAC)	SWOX	South East and London
Little Wittenham (SAC)	SWOX	South East and London
Thursley, Ash Pirbright and Chobham SAC (constituting Thursley Hankley and Frensham Commons, Colony Bog and Bagshot Heaths, Ash to Brookwood Heaths, Chobham Common SSSIs	Guildford	South East and London
Burnham Beeches (SAC) (also SSSI)	Slough/Wycombe/Aylesbury	South East and London

Table D1: SPAs and SACs - River Thames Basin

Name of Site and Type	Thames Water Water Resource Zone (where applicable)	Region(s)
Kennet Valley Alderwoods (SAC)	Kennet Valley	South East and London
Aston Rowant (SAC) (also SSSI)	SWOX and Slough/Wycombe/Aylesbury	South East and London
Wormley-Hoddesdonpark Woods (SAC)	London	East of England
Wimbledon Common (SAC) (also SSSI)	London	South East and London
Richmond Park (SAC)	London	South East and London
Epping Forest (SAC)	London	South East, London and East of England
North Meadow & Clattinger Farm (SAC) (also SSSI)	SWOX	South West
Pewsey Downs (SAC)	SWOX (outside zone – 1.5km)	South West
Shortheath Common (SAC)	Guildford (outside zone – 17km)	South East
Mole Gap to Reigate	London/Guildford (outside zones –	South East
Escarpment (SAC)	5km)	
East Hampshire Hangers (SAC)	Guilford (outside zone – 5km)	South East
Woolmer Forest (SAC)	Guildford (outside zone – 10km)	South East

Note: all terrestrial SACs and SPAs are underpinned by SSSIs

Marine Conservation Zones are designated to protect a range of nationally important marine wildlife, habitats, and geology and geomorphology.

Species and habitats of principal importance for the conservation of biodiversity in England are identified in the Natural Environment and Rural Communities (NERC) Act 2006 Section 41. There are 18 habitats⁷ designated within the Natural Environmental and Rural Communities (NERC) Act within the Thames Corridor. These include rivers and streams (e.g. sensitive chalk rivers), reedbeds, fens and water meadows. Important water-related NERC species are listed in below.

- Otter
- Water vole
- Atlantic salmon
- European eel
- Sea/Brown trout
- River lamprey
- White clawed crayfish and
- Snakeshead Fritillary
- Loddon Lilly
- Creeping Marshwort

- Fine-lined Pea Mussel
- Freshwater Pea Mussel
- Depressed River Mussel
- Greater Water Parsnip
- Club-tailed Dragonfly
- Tassel Stonewort
- Desmoulins Whorl Snail
- Snipe
- Lapwing
- Natterer's Bat

⁷ Species or habitats of principal importance for the conservation of biodiversity in England, identified in the Natural Environmental and Rural Communities (NERC) Act 2006 Section 41.

 Narrow-leaved waterdropwort

- Daubenton's Bat
- Pipistrelle Bat

• River water-dropwort

Natural England has defined a series of 160 National Character Areas (NCAs) as a means to conserve nature in England⁸. These are areas of countryside identified by the unique combination of physical attributes, wildlife, land use and culture (National Character Areas (NCAs) that cover the River Thames basin are described in **Table D18** and shown in **Figure D8** under the Landscape and Visual Amenity topic).

Ancient woodlands in England are important habitats that should be protected. An ancient woodland is any wooded area that has contained woodland continuously since at least 1600 AD. They tend to be more ecologically diverse and of a higher nature conservation value than those developed recently, or where cover on the site has been intermittent. They often also have cultural importance. Areas of ancient woodland are shown on **Figure D1**.

The WFD ecological status classification considers the condition of biological quality elements (e.g. aquatic invertebrates, plants and fish), the morphology of the habitat available in each water body (e.g. a defined stretch of river), and concentrations of supporting physico-chemical elements (e.g. oxygen or ammonia and concentrations of specific pollutants). See the 'Water' topic for details on water quality (**Table D10** details the ecological condition of surface water bodies).

Water abstraction and associated infrastructure can sometimes result in adverse effects on water-related sites. Impacts on biodiversity may be caused by the drying out of wetland habitats, lower water levels and slower flows in watercourse, deterioration in water quality, change in water temperature, or the transfer or proliferation of invasive species. The WFD Thames River Basin District River Basin Management Plan (RBMP) identifies barriers to fish passage as one of the major issues affecting the ecology of rivers in the Thames River Basin District, some of which are relate to abstraction impacts on migratory flow conditions and/or abstraction infrastructure (e.g. intakes or weirs).

⁸ Natural England (2014) Natural Character Area Profiles. <u>https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles</u>

Drought options have the potential to affect biodiversity, flora and fauna due to the operational abstraction of water during times of water stress or due to impacts of any construction works required. The sensitivity of environmental features that can be affected by implementing drought options is site specific. A drought is transient and the deployment of a drought option would only be for a limited period of time. Therefore, the duration of effects on sensitive features and reversibility post drought are important considerations.

Future Baseline

It is not expected that many additional sites will be designated under international or national legislation, with the focus therefore on achieving the conservation objectives set for each of these sites. A range of measures are included in the management plans for each site to contribute to these objectives and, assuming sufficient resources are in place, it is likely that the condition of these sites will improve over the next two or three decades to reach the objectives. These timescales recognise the time required for environmental changes to arise following positive interventions. A similar trend is likely for achievement of objectives associated with the NERC priority habitats.

The number of locally designated sites may increase slightly in response to growing community activities and the development of local environmental initiatives. An improving trend in condition of these sites is also anticipated with greater resources (particularly voluntary resources) devoted to their protection and enhancement. It is acknowledged that there is a need to allow wildlife to adapt to the impacts of climate change.

The Natural Environment White Paper⁹ identified the Government's aims to work to achieve more, bigger, better and less-fragmented areas for wildlife, including no net loss of priority habitat and an increase of at least 200,000 hectares in the overall extent of priority habitats and at least 50% of SSSI to be in favourable condition, while maintaining at least 95% in favourable or recovering condition.

More broadly, the White Paper and subsequent Government policy encourages partnership working by a wide range of organisations (including water companies where applicable) to take a catchment and/or landscape-scale perspective to the management of biodiversity, flora and fauna. Catchment-based approaches are likely to be increasingly taken with respect to the delivery of biodiversity and ecological objectives for water-dependent sites and species, with partnership working a key component of the delivery of improvement activities.

⁹ Defra (2011) The Natural Choice: securing the value of nature. Natural Environment White Paper.

Climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. There is therefore a need to allow wildlife to adapt to climate change.

Key Issues

The key sustainability issues arising from the baseline assessment for biodiversity are:

- The need to protect or enhance the region's biodiversity, particularly within designated sites, protected species and habitats of principal importance. The need to avoid activities likely to cause irreversible damage to natural heritage.
- The need to take opportunities to improve connectivity between fragmented habitats to create functioning habitat corridors.
- The need to control the spread of Invasive Non-Native Species (INNS)
- The need to recognise the importance of allowing wildlife to adapt to climate change.
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

POPULATION AND HUMAN HEALTH

Baseline

Population

The greater South East region is a densely populated part of the UK. London, as expected, is the most densely populated area with 5,285 people per square kilometre, compared to an average of 411 per square kilometre in England as a whole¹⁰. Households in England are projected to increase by 10% between 2014 and 2024, from 22.7 million to 25 million¹¹.

Table D2 describes the latest population statistics for the NUTS regions¹² covered by the River Thames basin. Data projections at the regional scale do not generally extend beyond 2030 whereas Thames Water is having to develop water demand forecasts out to 2100 for London WRZ and SWOX WRZ based on uncertain population and household projections.

Region	Population 2014 (mid)	Population 2024 (mid)	% change
London	8.5	9.7	13.7%
South East	8.9	9.6	8.1%
South West	5.4	5.8	7.3%
East of England	6	6.5	8.9%
England	54.3	58.4	7.5%

Table D2: Population¹³ statistics and projections (millions)

Considering the respective purposes of the WRMP and the DP, it is considered that the long term issues relating to population growth represent key issues for the strategic nature of the WRMP rather than the reactive operation of the DP. The awareness of the population in the region to drought conditions and the avoidance of emergency drought measures are considered key issues with respect to the DP and population.

However, the result of the UK's recent Referendum to leave the European Union (EU) has led to greater uncertainty regarding future population and housing growth.

¹⁰ ONS (2013) The 2013 ONS regional characteristics analysis for London. http://www.ons.gov.uk/ons/rel/regional-trends/region-and-country-profiles---key-statistics-and-profiles---october-2013/key-statistics-and-profiles---london--october-2013.html (accessed 23/02/16)

¹¹ ONS (2015) Housing Statistical Release.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407556/Household_Projections_-___012-2037.pdf

¹² Nomenclature of Territorial Units for Statistics (NUTS) areas

¹³ ONS (2014) Subnational population projections for England: 2012-based -

http://www.ons.gov.uk/people population and community/population and migration/population projections/bulletins/subnational population projections for england/2014-05-29

Human Health

The DP has the potential to influence quality of life, including human health, wellbeing, amenity and community, through alterations to the operation of existing infrastructure, the operation of temporary infrastructure (e.g. pumps) and potentially any construction requirements. The DP also sets out measures to ensure that essential water supplies can be maintained to all of TWUL's customers, thereby protecting public health in drought conditions.

Health related sustainability indicators are reported in the annual ONS Sustainable Development Indicators report¹⁴. In general, the health of the population is good in the regions the TWUL supply area covers.

Recreation and Tourism

Drought options have the potential to affect areas with recreation value. Impacts may arise from operational phases resulting in effects on water levels beyond those that may result from the 'natural' drought alone. Any potential construction requirements or any drought options impacts may include indirect reductions in amenity through reduced access or loss of areas of amenity value. Temporary water use restrictions (voluntary and statutory) may also adversely affect some recreational activities.

Figure D2 shows some of the areas that may be used for recreation within the Thames river basin. This includes National Trails, Areas of Outstanding Natural Beauty (AONB) (see Landscape and Visual Amenity topic), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) (see Biodiversity, Flora and Fauna topic). Many of the recreational and cultural offerings are represented in other topic areas in the baseline. For example there are a number of water-related resources of recreation importance including canals (e.g. the Kennet & Avon and Oxford canals), reservoirs for sailing or fishing and river sections of particular importance with respect to navigation (e.g. the River Thames and the River Wey) and angling (e.g. River Kennet), and the Thames Path and Blue Ribbon Network in London. Angling is a popular pastime with over 339,000 rod licences sold in 2014/15 in the South East¹⁵. The River Severn (a potential source of future water supplies) caters for the full range of freshwater angling; traditional river fly fishing for trout in the upper reaches, specimen chub and barbel in the middle reaches, roach and bream in the lower reaches and salmon fishing in some of the upland tributaries.

Public areas of open space, National Parks (see Landscape and Visual Amenity topic),

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/459174/FishStatsReport2014.v4.p df (accessed 23/06/16)

country parks¹⁶, Rights of Way, walking routes and cycle routes are also important with respect to recreation and tourism. Some, for example the Thames Path, form features of particular importance. The National Planning Policy Framework (NPPF) states planning policies should protect and enhance public rights of way and access. All Local Authorities are required to prepare and publish Rights of Way Improvement Plans (ROWIPs). These plans explain how improvements made by local authorities to the public rights of way network will provide a better experience for a range of users, including pedestrians, cyclists, horse riders, horse and carriage drivers, people with mobility problems, and people using motorised vehicles (e.g. motorbikes).

The NPPF defines green infrastructure as 'a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities' (including rivers and ponds). Local planning authorities are required to plan positively for strategic networks of green infrastructure, and take account of the benefits of green infrastructure in reducing the risks posed by climate change. The majority of LAs have therefore developed Green Infrastructure Strategies or Studies addressing these issues. Green infrastructure will often play a large part in local recreational resources.

The Archaeology and Cultural Heritage topic identifies the importance of the Thames River Basin with respect to heritage assets, including 6 internationally-recognised World Heritage Sites and 2,228 Scheduled Monuments.

Tourism is the fifth largest industry in the UK and supports 22 million jobs in England (forming England's third largest employer), contributing nearly £97billion to the economy. London represents one of the most visited cities in the world and 17.4 million tourists were reported to have visited London in 2014¹⁷. With the potential to hold major international events (sporting and cultural), the additional non-domestic population can cause the number of people relying on water supply to swell relatively significantly, although this will be offset to some extent by the number of people on holiday or away from their homes. Many tourist attractions have some connection with the water environment. For example, various waterways were restored as a showcase project for the Olympics and now offer improved recreation value.

¹⁶ Area designated for people to visit and enjoy recreation in a countryside environment

¹⁷ http://www.londonandpartners.com/media-centre/press-releases/2015/150520-london-welcomes-174-million-international-visitors-in-another-recordbreaking-year-for-tourism (accessed 23/02/16)





Economy and Employment

The Greater South East region is a prosperous region of the UK and has relatively low rates of unemployment. The Greater South East as a whole has shown a greater level of resilience to the effects of the recession that followed the banking crisis in 2008 compared to other parts of the UK. This is evident in economic indicators such as house prices and un-employment rates. Compared to a UK average in 2015¹⁸ of 5.1%, the rate in the South East was 3.9%, 3.9% in the East and 3.7% in the South West. The rate in London was considerably higher at 6.3%¹⁹. However, all are considerably lower than in 2010.

The South East region is one of the most densely populated and urbanised parts of the UK, where business services make up a significant proportion of the economy; however, agriculture is also one of the more important industries outside of Greater London. Some businesses that rely on water supply have the potential to be affected by the DP through a Temporary Use Ban or a Drought Order to ban prescribed nonessential water uses. However, the DP also sets out measures to maintain essential water supplies to businesses during drought conditions to ensure most businesses can continue to operate without any disruption.

Future Baseline

Population is projected to grow at a rate between 6.9% and 13% across the Thames river basin area (10 years from 2012 to 2022) with an increasing proportion of people at or above state pension age. There is an estimated annual demand of 243,300 new homes in England (until 2031) as a result of the changing population, of which 152,800 are in the Thames River Basin District²⁰. However, the result of the UK's recent referendum to leave the European Union (EU) may lead to greater uncertainty in the short term regarding future population and housing growth.

In response to recent studies access to the recreational resources, green spaces and the historic environment will have greater importance in future planning²¹. For example the National Ecosystem Assessment and the Marmot Review, Fair Society, Healthy *Lives*, demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a Green Infrastructure²² Partnership with civil society to support the development of green infrastructure in

¹⁸ http://www.statistics.gov.uk/downloads/theme_compendia/RegionalSnapshot/rt43-rc-profiles.pdf.

National Statistics: Regional Trends No.43 2010/11 edition (accessed 21st July).

¹⁹ ONS (2016) Regional Labour Market February 2106. http://www.ons.gov.uk/ons/publications/re-referencetables.html?edition=tcm%3A77-394305

²⁰House of Commons (2014) Housing demand and need (England) SN06921

http://researchbriefings.files.parliament.uk/documents/SN06921/SN06921.pdf 21 Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper

²² Green infrastructure is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas.

England. Improvements to the quality of the water environment and certain potential climate change impacts will present opportunities for an expanding tourist industry in the region²³.

Key Issues

The key sustainability issues arising from the baseline assessment for population and human health are:

- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.
- The need to ensure public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality in rivers is maintained for a range of uses including tourism, recreation, navigation and other use such as agriculture.
- The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to, protecting and enhancing recreation resources, green infrastructure and the natural and historic environment.
- The need to accommodate an increasing population.

²³ Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report.

MATERIAL ASSETS

Baseline

Water Use

In 2015/16, Thames Water put 2,643 million litres of water per day (Ml/d) into its supply system²⁴. Leakage from the water distribution system for 2015/16 was reported as an annual average of 642Ml/d²⁵. This is below the Business Plan and WRMP14 performance commitment target of 649 Ml/d. Average water consumption per capita in the Thames Water supply area is 149 litres/day (2015/16) compared to a national average in England and Wales of 147 litres/day. Thames Water has ongoing programmes to reduce leakage from its network and to encourage more efficient use of water by customers. Thames Water has agreements in place to transfer raw water or treated water to neighbouring water companies (Essex and Suffolk Water, Affinity Water, Sutton and East Surrey Water): the largest transfer is to Essex and Suffolk Water, with an agreement to supply raw water up to 91 Ml/d on average and 118 Ml/d as a peak. The total amount of water transferred to other water companies and through inset agreements amounts to around 25 Ml/d.

Resource use and waste

There is an ongoing need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced.

Waste going to landfill has more than halved over the period 2004/5 to 2014/15 (19,822 thousand tonnes to 6,361 thousand tonnes) and a rate of 24%; household recycling rates have climbed to nearly 44% (2014/15)²⁶; waste generated by businesses declined by 29% in the six years to 2009 and business recycling rates are above 50%²⁷. In line with the widely adopted 'waste hierarchy', best practice for waste management is to reduce, re-use, recycle and recover, and only then should disposal (or storage) in landfill be considered.

Data on waste arisings is collected in a range of categories. The activities of the water industry contribute to construction, demolition and excavation waste (CDEW), through construction of new infrastructure. The water industry also contributes to several waste streams through the operation of facilities. Waste streams include commercial and industrial waste (C&I) (statistics include waste arisings from the power and utilities sector, which includes water supply and sewage removal), and also

²⁴ Thames Water (2016) Thames Water Annual Water Resource Plan Review 2015-16

²⁵ Thames Water (2016) Thames Water Annual Performance Review 2015-16

²⁶ Defra (2015) Local authority collected waste statistics – local authority data.

www.gov.uk/government/uploads/system/uploads/attachment_data/file/481060/LA_and_Regional_spreadsheet_ 2014-15_publication.ods

²⁷ Defra (2011), Government Review of Waste Policy in England 2011

hazardous wastes. **Tables D3 to D6** provide further baseline information regarding waste. **Table D7** shows waste according to waste type in the UK in 2012 (and by region in 2006).

Drought options which require infrastructure may result in the use of raw materials and the production of waste. The operation of DP options may result in additional chemical use and the production of waste through water treatment. Raw water (rainwater, groundwater, water from surface water bodies) could be included in the water treatment, which requires more intense levels of treatment. In 2014/15 TWUL reported that 100% of water treatment waste went to beneficial use (re-use, recycling, incineration with energy recovery) compared with 48% in 2006/07²⁸.

Table D3: Waste arisings by management and Sector, 200629

Waste Figures	East of	London	South East	South West
	England			
Commercial and Industrial	6.3	7.0	8.3	5.3
(C&I) waste arisings produced				
in region (million tonnes)				
Construction & Demolition	11.5	8.0	14.1	9.4
Environmental Waste (CDEW)				
Total waste produced by	23.5	18.7	30.9	44.5
region				

Table D4: Waste generation split by NACE₃₀ economic activity in England ('000 tonnes)₃₁

Waste Figures	2012
Commercial and Industrial (C&I) ('000 tonnes)	38,976
Construction ('000 tonnes)	85,240
Household	22,744
Other	16,291
Total	163,252

²⁹ Defra (2006) Waste Arisings by Management and Sector, Waste Statistic Regulation – Regional Sustainable Development Indicators - not updated.

³⁰ Statistical classification of economic activities developed by the European Community –Nomenclature of Economic Activities (NACE)

³¹ Defra (2015) UK Statistics on Waste: https://www.gov.uk/government/uploads/system/uplos

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487916/UK_Statistics_on_Waste_statistical_notice_15_12_2015_update_f2.pdf 31 Defra (2015)

England	Waste arisings ('000 tonnes)	Recycled ('000 tonnes)	Recycling rate
2010	22,131	9,112	41.2
2011	22,170	9,596	43.3
2012	21,956	9,684	44.1
2013	21,564	9,523	44.2
2014	22,355	10,025	44.8

Table D5: Waste from households in England – 2010-14³²

Table D6: Municipal waste and Biodegradable Municipal Waste (BMW) to landfill in England 2010-2013

England	Municipal waste to Landfill ('000 tonnes)	Of which BMW to Landfill ('ooo tonnes)	BMW to Landfill as % of 1995 target baseline
2010	20,298	10,339	36%
2011	18,421	9,360	32%
2012	16,187	8,129	28%
2013	14,780	7,347	25%

Note: 1995 baseline for England 29,030,000 – no greater than 50% baseline by 2013 and 35% baseline by 2020.

Table D7: Municipal waste and Biodegradable Municipal Waste (BMW) to landfill in England 2010-2013

England	Municipal waste to Landfill ('000 tonnes)	Of which BMW to Landfill ('ooo tonnes)	BMW to Landfill as % of 1995 target baseline
2010	20,298	10,339	36%
2011	18,421	9,360	32%
2012	16,187	8,129	28%
2013	14,780	7,347	25%

Note: 1995 baseline for England 29,030,000 – no greater than 50% baseline by 2013 and 35% baseline by 2020.

Future Baseline

The Government's national aspiration is to reduce water usage to an average of 130 litres per person per day by 2030. In its 2014 WRMP, TWUL forecasts that its customers' per capita water consumption will remain broadly static over the 25 year planning horizon to 2040 due to the effects of increased water metering of household customers suppressing an otherwise upward trend in water consumption.

Water leakage from the TWUL water supply network is forecast to continue to reduce over the next 25 years: a 10% reduction is forecast by 2020 and a further 9% reduction by 2040³³.

³² Defra (2015)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487916/UK_Statistics_on_Waste _statistical_notice_15_12_2015_update_f2.pdf

³³ TWUL (2014) Final Water Resources Management Plan

With the Waste Strategy for England, diminishing landfill capacity and a fast-growing waste recycling and recovery industry, the proportion of waste sent to recovery rather than landfill is set to continue to increase in the future. One of the Waste Framework Directive targets is for at least 70% of construction and demolition waste to go to recovery by 2020.

The Government's first National Infrastructure Plan₃₄ (NIP) (2010) included visions to manage natural capital sustainably; treat water and waste in ways that sustain the environment and enable the economy to prosper; ensure a supply of water that meets the needs of households, businesses and the environment now and in the future and deals with waste in accordance with the waste hierarchy. The plan was updated in 2014, setting out progress to date whilst including detailed delivery plans to 2020 in key economic sectors³⁵.

Key Issues

The key sustainability issues arising from the baseline assessment for Material Assets and Resource Use are:

- The need to minimise the consumption of resources, including water and energy
- The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
- The need to continue to reduce leakage from the water supply system to help reduce demand for water.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.

³⁴ HM Treasury Infrastructure UK (2010) National Infrastructure Plan

³⁵ HM Treasury (2014) National Infrastructure Plan 2014:

 $https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/381884/2902895_NationalInfrastructurePlan2014_acc.pdf$

WATER

Baseline

In the context of the WFD, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. The aquatic environment of the River Thames basin has been characterised as part of the UK Government's reporting obligations to the EU under the WFD and this provides the most appropriate baseline reference³⁶.

The WFD brings together the planning processes of a range of other European Directives. These Directives, listed in **Table D8**, establish protected areas to manage water, nutrients, chemicals, economically significant species, and wildlife, and have been brought in line with the planning timescales of the WFD.

 Table D8: Other EU Directives and Water Framework Directive protected areas³⁷

Directive	Protected area	Number of protected areas
Bathing Waters	Recreational waters	18
Birds	Natura 2000 sites (water dependent special protection areas)	5
Drinking Water	Drinking water protected areas	93
Shellfish Waters	Waters for the protection of economically significant aquatic species	2
Habitats	Natura 2000 sites (water dependent SACs	11
Nitrates – High nitrate in surface water	Nitrate Vulnerable Zones - 66	57% land area
Nitrates – High nitrate in groundwater	21 NVZs	23%
Nitrates – Eutrophication in lakes or reservoirs	1 NVZ	<1
Nitrates – Eutrophication in estuaries or coastal waters	o NVZs	0
Urban Waste Water	Treatment Sensitive areas – eutrophication in rivers	9
Urban Waste Water	Treatment Sensitive areas – eutrophication in lakes / reservoirs	13

Note: Figures for Birds, Drinking Water and Habitats Directives are from the River Thames River Basin District River Basin Management Plan (EA, 2009)

³⁶ Defra (2005) Water Framework Directive: Summary report of the characterisation, impacts and economics analyses required by Article 5, Thames River Basin District

³⁷ Environment Agency and Defra (2016) Thames River Basin District River Basin Management Plan

Surface Waters: Rivers and Canals

Thames Water's supply area (see **Figure 2.2**) lies almost entirely within the catchment of the River Thames and Thames Tideway. The River Thames rises to the west as springs from the limestone of the Cotswolds and flows eastwards to the sea downstream of London. WRZs within the Thames Valley (SWOX, Kennet Valley, SWA and Henley) encompass the major River Thames tributaries: Rivers Cherwell, Kennet, Loddon, Thame and Windrush and the Kennet and Avon Canal. The London WRZ, centred on metropolitan London, includes the lower freshwater River Thames up to its tidal limit at Teddington weir as well as a number of smaller river systems that discharge to the inner Thames estuary (Thames Tideway). These include the River Lee and the River Darent. The Guildford WRZ is based on the upper River Wey.

Surface Water Features for the River Thames Basin are shown in Figure D3.




Surface Waters: Lakes and Reservoirs

There are no significant natural lakes within River Thames catchment area. However there are a series of off-line reservoirs for a variety of purposes and a significant number of flooded former gravel excavations, for example in the River Lee valley and to the west of London. Grimsbury and Farmoor Reservoirs are within the SWOX WRZ. There are also the Lower Thames Reservoirs (in west London) and the Lee Valley Reservoirs (in north London), both within the London WRZ.

Groundwater

Some 77% of Thames Water's supplies are derived from surface water abstraction (largely from the upper, lower Thames and the lower Lee) and the remainder is derived from groundwater abstraction. However, as for most of south east England, during periods of prolonged low rainfall leading to a serious drought water supply is largely sustained by the utilisation of reservoir storage, groundwater abstraction and baseflow within rivers, the latter being derived from the outflow of groundwater from the major aquifers within the catchment.

The Environment Agency considers that licensed groundwater abstraction is fully utilised over much of the Thames river basin. Both the quantity and quality of groundwater is extremely important in maintaining these resources. Groundwater is vulnerable to pollution from surface activities since aquifers underlie up to two-thirds of the land surface in this densely populated area. Groundwater quality issues include high nitrate levels in some aquifers. Implementation of drought plan options which increase the frequency and speed of groundwater abstractions (i.e. at a faster rate than groundwater source can be replenished) is likely to result in a negative impact on groundwater quality.

Under the WFD there are two separate classifications for groundwater bodies: chemical status and quantitative status. A groundwater body will be classified as having poor quantitative status in the following circumstances: where low groundwater levels are responsible for an adverse impact on rivers and wetlands normally reliant on groundwater; where abstraction of groundwater has led to saline intrusion; where it is possible that the amount of groundwater abstracted will not be replaced each year by rainfall. For a groundwater body to be at good status overall, both chemical status and quantitative status must be good. In addition to assessing status, there is also a requirement to identify and report where the quality of groundwater is deteriorating as a result of pollution and which may lead to a future deterioration in status.

Source Protection Zones (SPZ) provide additional protection to safeguard drinking water quality. This is achieved through constraining the proximity of an activity that may impact upon drinking water abstraction. They are defined around large and public

potable groundwater abstraction sites, and the groundwater travel time to an abstraction.

Estuaries

The Thames Tideway (or estuary) is one of the most ecologically diverse estuaries in England and Wales. The Thames River Basin District includes 11 estuarine ('transitional waters'). The Thames Tideway is classified as hypernutrified but there is little evidence of ecological damage as a result the high nutrient status. Natural turbidity resulting in a reduction of light penetration limits adverse impacts. The Thames Tideway does suffer from the impacts of discharges of storm sewage: this is being addressed through the current construction of Thames Tideway Scheme, which is designed to address a significant number of combined overflows.

Monitoring

Thames Water, other water companies and the Environment Agency monitor the ongoing water resources situation in all parts of the Thames catchment using a hydrometric network from which an accurate assessment of the ongoing water resources situation in all parts of the Thames catchment can be established and reliable forecasts undertaken. For Thames Water's supply area the essential data requirements are fulfilled by:

- Measurements of total reservoir storage in the London Reservoirs and Farmoor Reservoir.
- River flow at key locations related to abstractions to principal reservoirs key measurement points are the River Thames above Teddington Weir (limit of freshwater Thames) and the River Thames at Farmoor (see **Table D9**).
- Levels of key groundwater sources/key aquifer monitoring boreholes.
- Demand for each water resource zone.

Key hydrological variables are monitored throughout the catchment such as river flows at a wide range of locations, groundwater levels, rainfall and soil moisture deficits (SMDs).

At the most downstream flow gauge on the River Thames, at Kingston in the London WRZ, long term average (median 1883-2015) flow is recorded as 3,516 Ml/d. This flow gauge is downstream of all abstractions made from the river, including those for potable supply, agriculture and industrial use; and downstream of all discharges including returns from wastewater treatment works and industrial cooling water returns. **Table D9** indicates the main influences on river flows in the catchments upstream of the listed river flow gauge.

Table D9: Measured long term water flows in selected parts of the River Thames catchment

				sured l flow (N	ong- /Il/d)
WRZ	Flow gauge	Influences on flow	Q10 (high flow)	Mean flow	Q95 (low flow)
SWOX	Thames at Days Weir (Lowest gauge on Thames in SWOX)	Runoff reduced by abstraction for public water supply and industrial/ agricultural abstraction; increased by effluent returns. River levels affected by lock movements and gates.	5,961	1,451	286
Kennet Valley	Kennet at Theale (Lowest gauge on Kennet)	A mainly pervious catchment (80% Chalk). High baseflow component but responsive contribution from the River Enbourne. Flows influenced by groundwater abstraction/recharge (West Berkshire Groundwater Scheme). Abstraction for industrial/agricultural purposes. Minor contribution to the Kennet & Avon Canal. Little net impact of abstractions and discharges.	1,512	698	328
Henley	Thames at Bray Weir (Downstream of Henley WRZ)	Baseflow sustained mainly from the Chalk and the Oolites. Reservoirs in catchment affect runoff. Regulation from surface water and/or ground	10,972	1,651	1,318
London	Thames at Kingston (Lowest gauge on freshwater Thames)	water. Runoff reduced by abstraction for public water supply and industrial/ agricultural uses; also influenced by groundwater abstraction/recharge. Runoff increased by effluent returns.	13,910	3,516	669
Guildford	Wey at Weybridge (Upstream of confluence with Thames (only gauge on lower Wey))	Largely permeable upper catchment (Chalk and Upper Greensand of the North Downs). No available information on flow influences.	1,175	440	204

Catchment Abstraction Management Strategies

A national review of abstraction licences was undertaken by the Environment Agency through the CAMS (Catchment Abstraction Management Strategies) process in 2004. This has been updated in subsequent years where applicable and to align the assessment process with the WFD. The latest review was undertaken in 2013 and the outputs for each CAMS area are reported in a set of Abstraction Licensing Strategies.

CAMS areas are based on river catchment boundaries and overlap with Thames Water's supply area. The Environment Agency use the CAMS work to assess and understand water resource availability. A classification system has been developed to indicate the following:

- the relative balance between the environmental requirements for water and how much is licensed for abstraction;
- whether water is available for further abstraction; and
- areas where abstraction may need to be reduced.

The results have been mapped onto WFD Cycle 2 boundaries and are represented by different water resource availability colours showing the availability of water resource for further abstraction. **Figure D4** shows the Environment Agency representation of resource availability based on the worst downstream water body at low flows (the flow percentile called Q95), focusing on the Thames River Basin District and TWUL supply area. It is apparent from **Figure D4** that little water is actually available and the status of most rivers is identified as 'water not available for licensing'.





Water Quality

Historically, water quality has been classified using the Environment Agency General Quality Assessment (GQA) classification. Since 2007 water quality has been classified according to several quality elements in line with the requirements of the WFD.

For surface waters, there are two separate status classifications for water bodies: ecological and chemical. For a water body to be in overall 'good' status both ecological and chemical status must be at least 'good'. Biological status classification considers the condition of biological quality elements, e.g. aquatic invertebrates, plants and fish, the morphology of the habitat available, concentrations of supporting physicochemical elements e.g. oxygen or ammonia and concentrations of specific pollutants.

Of 498 surface water bodies within the Thames River Basin District, with regard to their ecological status or potential 5.4% were classified as 'bad', 22.5% as 'poor', 64.3% as 'moderate', 7.8% as 'good' and 0% as 'high'. 98.9 were classified 'good' for their chemical status (see **Table D10**). For groundwater there are two separate classifications for groundwater bodies: chemical status and quantitative status. Each must be reported in addition to the overall groundwater body status. For a groundwater body to be at good status overall both chemical status and quantitative status must be good. In addition to assessing status, there is also a requirement to identify and report where the quality of groundwater is deteriorating as a result of pollution and which may lead to a future deterioration in status.

Table D10: Ecological and chemical 2015 classification for surface waters– Thames River Basin 38

No. of	Ecological status or potential				Chemical S	tatus	
bodies	Bad	Poor	Mod	Good	High	Fail	Good
498	27	112	320	39	0	5	493

Out of 47 groundwater bodies in the Thames River Basin District, 25 of them are classified as good for quantitative status (53%) and 29 for chemical status (62%). These were 35% and 43% respectively in 2009, so significant improvements have been achieved for both (see **Table D11**). The main reasons for poor status were identified as high or rising nitrate concentrations, with some failures for pesticides and other chemicals. The main reason for poor quantitative status is that abstraction levels, mainly for public water supply, exceed the rate at which aquifers recharge³⁹.

³⁸ Environment Agency and Defra (2015), Thames River Basin District River Basin Management Plan 39 Environment Agency (2015), Thames River Basin District River Basin Management Plan

No. of water	Quantitative status		Chemical status	
boules	Poor	Good	Poor	Good
47	22	25	18	29

Table D11: Chemical and quantitative 2015 classification for groundwaters – Thames River Basin⁴⁰

In terms of the percentage of water bodies with 'good' or better overall status in the Thames River Basin District, rivers, canals and surface water transfers (SWTs) are at 6%, lakes at 15%, estuaries at 50%, surface waters combined at 8% and groundwater at 40%.

Flood Risk

Flooding can result from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources. The Environment Agency's Flood Risk Maps available on its website show what is at risk of flooding, including people, economic activity and natural and historic environment₄₁. Of the nearly 15 million people within the River Basin District, 227,670 are at high risk of flooding. There are two defined flood risk areas – London and Medway. These are areas where there is a significant risk of flooding from local sources, such as surface water, groundwater and ordinary watercourses. The London flood risk area contains 8,225,928 people, of which 140,854 are at high risk₄₂ of flooding. The Medway flood risk area contains 234,260 people, of which 6,639 are at high risk of flooding. In terms of services at high risk of flooding, there are 95 out of 6,699 in the London flood risk areas and 6 out of 246 in the Medway flood risk area₄₃.

The extreme floods of 2007 prompted the Pitt Review (2008) and the subsequent Flood and Water Management Act 2010 which in part regulates the implementation of sustainable drainage systems (SuDS) to increase infiltration and reduce flooding from surface water runoff. In 2008-2009, the Environment Agency spent approximately \pounds 427 million on building, improving and keeping flood defences such as managed river channels, walls and raised embankments, flood barriers and pumps in good condition, which reduced the risk of flooding to over 176,000 households across England. The Government further recognised the importance of investing in flood risk and coastal management and committed to increase public spending on it from £600 million in

⁴⁰ Environment Agency and Defra (2015) Thames River Basin District River Basin Management Plan 41 Environment Agency (2013) Flood Risk Maps – Risk of Flooding from Surface water – Thames River Basin District:

 $https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/456969/LIT8979_FloodRiskMaps_Thames_SurfaceWater_v2.pdf$

⁴² High risk means there is a chance of flooding if greater than 1 in 30 (3.3%)

⁴³ Services have been defined as schools, hospitals, nursing/care/retirement homes, police stations, fire and ambulance stations, prisons, sewerage treatments works and electricity installations

2007-2008 to £800 million in 2010-2011. Climate change may have a significant effect upon future flood risk in the region.

Saltmarsh is an important natural resource and ecosystem service. Through reducing wave energy close to tidal defences, it can provide demonstrable flood and coastal risk management benefits, as well as supporting wildlife habitats and species of national and international significance. Saltmarsh extent is conserved and enhanced through management measures driven in particular by the Habitats and Birds Directives and the WFD. The Drought Plan has the potential to affect saltmarsh extent if any of the following occur: change in drainage patterns, disruption to the estuarine processes and changes in land use on or adjacent to the marsh⁴⁴.

Future Baseline

Originally, the WFD set a target of aiming to achieve at least 'good status' in all water bodies by 2015. However, provided that certain conditions are satisfied, it was acknowledged that in some cases the achievement of good status may be delayed until 2021 or 2027. The primary objective in the short-term is to ensure no deterioration in status between status classes: the 2015 water body classification is the baseline from which deterioration between classes is assessed; no deterioration between status classes is permitted unless certain and specific conditions apply.

Climate change is considered likely to adversely impact on surface and groundwater resources over the longer term, with some modest impacts potentially arising over the medium term to 2040. The Thames Catchment Flood Management Plan (CFMP)₄₅ assumes the following key trends:

- Milder wetter winters resulting in increases in peak river flows of 20%, meaning that flooding will happen more often and large scale severe flooding will be more likely to happen.
- More frequent, short duration intense storms in summer causing more widespread and regular flash flooding from overwhelmed drainage systems and some rivers.

The NPPF₄₆ states that inappropriate development in areas at risk of flooding (in Flood Zone 1₄₇, Flood Zone 2₄₈, Flood Zone 3a₄₉ or Flood Zone 3b - the functional floodplain); should be avoided by directing development away from areas at highest

⁴⁴ Environment Agency (2007) Saltmarsh management manual.

⁴⁵ Environment Agency (2009) Thames Catchment Flood Management Plan – Summary Report 2009.

 $https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293903/Thames_Catchment_Flood_Management_Plan.pdf$

⁴⁶ Department for Communities and local Government (2012) National Planning Policy Framework:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

⁴⁷ Low probability of river or sea flooding (<0.1%) which has critical drainage problems

⁴⁸ Medium probability of river (1%-0.1%) or sea flooding (0.5%-0.1%)

⁴⁹ High probability of river (>1%) or sea flooding (>0.5%)

risk. The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in the Technical Guidance to the NPPF₅₀. The NPPF requires the application of a sequential, risk-based approach (operated through Strategic Flood Risk Assessment) to the location of development to avoid where possible flood risk to people and property and to manage any residual risk, taking account of the impacts of climate change. Following application of the Sequential Test, if it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate. This includes development for water-compatible uses (e.g. water transmission infrastructure and pumping stations) and essential infrastructure (e.g. water treatment works that need to remain operational in times of flood).

The UK Climate Change Risk Assessment (CCRA) 2012 Evidence Report⁵¹ draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Findings of the assessment include:

- Increasing pressure on the UK's water resources due to changes in hydrological conditions, population growth and regulatory requirements to maintain good ecological status. Major supply-demand deficits were identified for five river basin regions including the Thames river basin district.
- Increases in water demand for irrigation of crops.
- Lower summer rivers flows across the UK due to warming and drying conditions.
- An increase in precipitation in winter months due to a combination of greater depths and more frequent heavy rainfall events suggesting larger volumes of runoff with potential negative impacts on flood risk and sewer overflows in urban environments.
- Flash-flooding associated releases from combined sewer overflows (CSO) could in turn increase associated illnesses at the coast due to the varying occurrence of microbial pathogens in the marine environment.

⁵⁰ Communities and Local Government (2012) Technical guidance to the National Policy Planning Framework 51 Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report

Key Issues

The key issues arising from the baseline assessment for water are:

- The need to further improve the quality of the regions river, estuarine and coastal waters taking into account WFD objectives.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply.
- The need to ensure that people understand the value of water.

Flooding is not viewed as a key issue for the SEA water topic, because none of the drought options involve the construction of permanent physical infrastructure within areas at risk of flooding. Two of the drought options included in the Draft DP involve river augmentation: the WBGWS and Hoddesdon Transfer Scheme (River Lee Flow Augmentation). The WBGWS is a strategic drought option, the licence for which is held by the Environment Agency. Operation of the scheme would be managed between TWUL and the Environment Agency, taking into consideration environmental implications. This is detailed in the Environment Agency Drought Plans that were recently updated 2015. The Hoddesdon Transfer Scheme would involve the discharge of up to 19Ml/d of treated sewage effluent into the River Lee via Rye Meads STW. The discharge would only be made at times of low flow by virtue of the operating rules for the scheme and operational management would suspend the transfer if there was an episode of high rainfall/river flow during an otherwise dry period.

SOIL, GEOLOGY AND LAND USE

Baseline

Geology

Geological sites maybe sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices. The River Thames river catchment is geologically diverse and includes a number of major aquifers. The Thames Valley includes areas of limestone in the Cotswolds as well as Chalk and drift deposits in the Thames floodplain. The London area includes major Chalk aquifers and to the south of London, there are Greensand aquifers (towards the North Downs).

Geological Conservation Review (GCR) sites have been highlighted, which relate to geological important sites, related to their scientific elements and understanding of earth sciences, which are important on a national and international level₅₂. GCRS are also designated as SSSIs. Several geological SSSIs are found within the catchments, however some are not directly designated because of geology, although the geological variation does impact on the flora present. The main reason for a geological citation for an SSSI are related to disused quarries and geological important sites such as gravels used to reconstruct climate change. There are 117 GCRs within the Thames catchment.

Soils

The Soil Map of England and Wales⁵³ identifies dominant soil subgroups (which are summarised in **Table D12**). In terms of agricultural land quality, planning policy seeks to protect best and most versatile agricultural land (defined as land in Grades 1, 2 and 3a of the Agricultural Land Classification).

Soil type	Occurrence	Characteristics
Elmton 1 and 3	Dominant bands over	Shallow well drained calcareous fine loamy
	the WRZs	soils over limestone
Newmarket 2	Dominant bands over	Shallow well drained calcareous soils
and Andover 1		
Batcombe and	Widespread and occur in	Fine silty over clayey and fine loamy over
Hornbeam 2	dominant bands from east to west across the WRZs	clayey soils, and deep fine loamy over clayey soils, respectively. Both types are slowly permeable with some slight seasonal waterlogging
Upton 1	Bands to the north of the area covered by the WRZs	Well drained calcareous silty soils over chalk

Table D12: Soil types in the WRZs

⁵² http://jncc.defra.gov.uk/page-2947

⁵³ Produced by the Soil Survey of England and Wales for MAFF

Soil type	Occurrence	Characteristics
Wantage 1	Bands to the south of the area covered by the WRZs	Well drained calcareous silty soils over chalk
Denchworth and Windsor	Narrower ribbons to the north of the area covered by the WRZs	Slowly permeable seasonally waterlogged clayey soils
Kelmscot	Narrower ribbons to the north of the area covered by the WRZs	Calcareous fine loamy soils over gravel, variably affected by groundwater
Coombe 1 and 2	Narrower ribbons to the north of the area covered by the WRZs	well drained calcareous fine silty soils over chalk
Wickham 3 and 4 soils	Narrower ribbons to the south of the area covered by the WRZs	Slowly permeable seasonally waterlogged loamy or silty over clayey soils
Grove and Block	Pockets in the west of the WRZs	Moderately permeable calcareous loamy soils over chalky gravel which are affected by groundwater

The majority of land in the Thames river basin is farmed, and it is noted that agricultural practices have a major influence on soil quality. Good soil structure is beneficial to water retention and crop yield. It can be seen from **Figure D5** that the majority of agricultural land is classified as Grade 3 or higher (with the swathe of agricultural land in the Chilterns being of particularly high quality). Soil quality and structure is affected by changes in land use, groundwater levels and farming practices. Soil quality can influence run-off rates and therefore flooding and water quality.

Contaminated land is defined as land where substances could cause significant harm to people or protected species; or significant pollution of surface waters or groundwaters. Some types of contaminated land can be designated as special sites for a variety of reasons, including land that seriously affects drinking water, surface waters (e.g. lakes and rivers) and important groundwater sites. Data on contaminated land are compiled by the British Geological Society₅₄.

Minerals Safeguarding Areas (MSAs) are designated by Mineral Planning Authorities for areas that include known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.

⁵⁴ https://data.gov.uk/dataset/contaminated-land



Legend				
	River Thames Course			
	Thames Water Supply A	rea .		
	Thames Catchment			
	Environmental Stewards	hip		
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Note: All locations are approximate This drawing incorporates Ordnance Survey Information © Crown copyright and database rights 2016				
Project Title: Thames Water Draft Drought Plan SEA Environmental Report				
Figure Title: Agricultural Land Classification				
Figure Nu	mber:	Date:		
	rigui e Do	August 2010		

Future Baseline

The vision of Defra's Soils Strategy for England⁵⁵ is for all England's soils to be managed sustainably and degradation threats tackled successfully by 2030. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.

The Water White Paper described the Government's intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment₅₆. The Water White Paper also identified that the strategic policy statement for Ofwat and revised social and environmental guidance would give a strong steer on Government support for approaches that offer good value for customers and the potential to prevent and manage future risks to drinking water quality. These policy objectives were reflected in regulatory guidance from Government for the 2014 water resources management planning process and the 2014 water company price review process. The catchment-based approach has now been implemented across England, with catchment partnerships now in place across the TWUL region to take forward the approach over the coming years.

One of the core planning principles of the National Policy Planning Framework (NPPF) is to encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value. The NPPF also places great importance with respect to Green Belt policy, the aim of which is to prevent urban sprawl by keeping land permanently open. Green Belt serves five purposes: to check the unrestricted sprawl of large built-up areas; to prevent neighbouring towns merging into one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns; and to assist in urban regeneration, by encouraging the recycling of derelict and other urban land. Although the NPPF promotes a presumption in favour of sustainable development, this does not apply where proposed developments may affect European or other designated sites covered by specific policies.

Key Issues

The key sustainability issues arising from the baseline assessment for soil, geology and land use are:

• The need to protect and enhance geological features of importance (including geological SSSIs) and maintain and enhance soil function and health.

⁵⁵ Defra (2009), Safeguarding our soils - A Strategy for England

⁵⁶ Defra (2011) Water for Life - Water White Paper

- The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources).
- The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.

AIR AND CLIMATE

Baseline

Local Air Quality

Drought options may involve the operation of abstraction and treatment operations in locations where such operations do not normally take place, with the potential for negative effects, although typically in the short term.

The baseline situation can be best described through reference to the local authorities in the Thames Water WRZs that have declared Air Quality Management Areas (AQMA). A local authority declares an AQMA when UK National air quality objectives are unlikely to be met. The local authorities which have declared an AQMA within their boundaries are illustrated in **Figure D6**. There are 81 AQMAs in total within the Thames River Basin. The figure demonstrates that the two main pollutants of concern are NO₂ and PM₁₀. The majority of the AQMAs in the UK have been declared because of emissions from road transport.

This latest air quality strategy⁵⁷ does not remove any of the objectives set out in the previous strategy or its addendum, apart from replacing the provisional 2010 PM_{10} objective with the exposure reduction approach and anew ozone (O₃) objective to protect ecosystems, in line with the EU target value set out in the Third Daughter Directive.

In April 2015, the Supreme Court ruled that the UK Government must redraft the national nitrogen dioxide (NO_2) air quality action plan, as well as 16 regional action plans, including Greater London, with the aim of ensuring that these areas reach compliance with legal NO_2 limits as soon as possible. In response, the Mayor of London has been engaging with the Government to highlight priorities for action in London, and provide support, data and other information to support the redrafting of the national and Greater London regional NO2 air quality action plans to achieve relevant EU limit values in Greater London.

The Air Pollution Information System (<u>www.apis.ac.uk</u>) will be consulted during the assessment process to help understand the risks of air pollution on habitats/sensitive and or designated sites.

⁵⁷ Defra (2007), The Air Quality Strategy for England, Scotland and Wales





Greenhouse Gases and Climate Change

The predominant greenhouse gas of interest is carbon dioxide (CO_2). National and regional CO_2 emissions totals are provided in **Table D13** and are apportioned to their source categories **Table D14**.

Area Annual CO ₂ Emission million tonnes		Annual CO₂ Emissions (% of UK total)
South East	55.8	12.5%
South West	34.5	7.7%
East of England	40.0	9%
Greater London	41.2	9.2%
UK	445.9	100%

Table D13: Carbon dioxide emissions by area (2013)

Source: DECC (2015) Local Authority Carbon Dioxide Emissions Estimates 2013: Statistical Release

Table D14: Percentage contribution to carbon dioxide emissions by sector (2013)

	Percentage Contribution by Source Sector				
Area	Industry & Commercial % (millions tonnes)	Domestic % (millions tonnes)	Road Transport % (millions tonnes)	Land Use Change % (millions tonnes)	
South East	9.4% (18.6)	13.8% (18.4)	15.5% (18.9)	-0.1	
South West	6% (11.9)	8.1% (10.8)	9.2% (11.2)	0.5	
East of England	7% (13.9)	9.2% (12.3)	10.8% (13.2)	0.6	
Greater London	9.3% (18.3)	11.4% (15.2)	6.2% (7.6)	0.0	
UK	44.2% (196.9)	29.9% (133.3)	27.3% (121.8)	0.38% (-6.0)	

At 4.9 tonnes per person per year, London's CO_2 emissions are the lowest in the country (on a regional basis), well below the UK average of 7 tonnes⁵⁸. This is, in part, due to high usage of the public transport system compared to greater reliance on private cars outside the capital.

Thames Water's absolute GHG emissions increased by 84.8kTCO₂e compared with 2013/14, an increase of 11.5%. Approximately two thirds of this increase was outside of Thames Waters control, due to unexpected rise in Defra's emission factor for grid electricity (increased 11% compared with 2013/14)₅₉. The remaining increase was due to increased electricity consumption from new wastewater treatment works that were required to meet higher effluent quality standards.

⁵⁸ DECC (2015) Local Authority Carbon Dioxide Emissions Estimates 2013: Statistical Release 59Thames Water (2016) Our Carbon Emissions:

 $http://www.thameswater.co.uk/cr/Climatechange/Mitigatingclimatechange/Ourcarbonemissions/index.html \label{eq:limit} the state of the$

Emissions associated with delivering a megalitre (Ml) of drinking water and wastewater service in 2014/15 have both increased compared to 2013/14 - by 9.2% (295.9 kgCO₂e/Ml) and 9.5% (298.4 kgCO₂e/Ml) respectively compared to 2013/14. This increase is less than the 11.5% increase in grid emissions factor due to the delivery of energy efficiencies and renewable self-supply⁶⁰.

Forecast future climate change is likely to influence processes within the hydrological cycle such as runoff and evapotranspiration. The impact of climate change on the water environment and water-related infrastructure is summarised in **Table D15**.

Table D15: Potential impact of climate change on the water environment and water-related infrastructure

Sector	Impact
Water Resources	Reduction in yields, either in total or at certain times of the year.
(i). water supply	Increased evaporation losses from surface water stores
	Increased sediment and pollution runoff into watercourses.
	Increased risk of algal blooms and pollution in reservoirs.
	Increase in demands in summer months leading to increase in
	average and peak requirements.
	Increased pressure on treatment and distribution system.
ii. water demand	Increased requirements for agriculture.
Flood management	Increased riverine storm occurrence and flood risk.
	Improvements and higher specifications required for flood defences,
	urban drainage and rainwater disposal.
Water quality management	Lowered water quality in lowland rivers, with implications for
	instream ecosystems and water abstractions.
	Altered potential for polluting incidents.
	Increased potential for combined sewer overflows due to an increase
	in extreme storm occurrences.
Navigation	Lower summer flows leading to reduced navigation opportunities in
_	rivers and canals.
Aquatic ecosystems	Altered habitat potential, with species at their environmental
	margins most affected.
Water-based recreation	Impacts through changes in river flows and water quality.

Drought options could influence CO_2 emissions through additional pumping and treatment requirements. The DP is a response plan that sets out to address the supply of water during times of drought, which may become more prevalent and intense due to the effects of climate change, although not necessarily over the next five years.

Adaptation to Climate Change

The UK Climate Change Risk Assessment (CCRA) 2012 Evidence Report₆₁ draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100 (next Evidence Report is due July 2016). Overall, the findings of the CCRA indicate that the greatest need for early adaptation action (i.e. within the next 5 years)

⁶⁰Thames Water (2016) Our Carbon Emissions:

http://www.thameswater.co.uk/cr/Climatechange/Mitigatingclimatechange/Ourcarbonemissions/index.html 61Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report

is in the following areas:

- Flood and coastal erosion risk management
- Specific aspects of natural ecosystems, including managing productivity and biodiversity (the management of forest pests and diseases, low summer river flows and the movement of plants and animal species are all highlighted as high priorities for action)
- Managing water resources, particularly in areas with increasing water scarcity
- Overheating of buildings and infrastructure in the urban environment
- Health risks associated with heatwaves and other risks that may affect the NHS
- Opportunities for the UK economy, particularly to develop climate adaptation products and services.

Future Baseline

Government and international targets indicate significant cuts in greenhouse gas emissions will take place by 2027. The UK is currently projected to meet its first three legislated carbon budget targets (until 2022)⁶². Objectives are being achieved for many air pollutants (lead, benzene, 1,3-butadiene and carbon monoxide (CO)). However, measurements show that long-term reducing trends for NO₂ and PM₁₀ are flattening or even reversing at a number of locations, despite current policy measures. Projections suggest with a high degree of certainty that objectives for PM₁₀, NO₂ and O₃ will not be achieved by 2020⁶³.

More local targets for carbon emissions have been set by various local authorities within the TWUL region, notably the Mayor of London's 2025 carbon emission targets for Greater London set out in the London Plan (60% reduction from 1990 levels)⁶⁴.

The 2009 UK Climate Projections (UKCP09) estimate that summers in London are likely, on average, to be hotter and drier which could affect the frequency and severity of drought events.

Key Issues

The key sustainability issue arising from the baseline assessment for air and climate is:

⁶² DECC (2015) Updated energy and emissions projections 2015

 $https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501292/eepReport2015_160205.p~df$

⁶³ Defra (2007), The Air Quality Strategy for England, Scotland and Wales

⁶⁴ https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan [accessed 20.04.2016]

- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to reduce greenhouse gas emissions (industrial processes and transport).
- The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities afforded by climate change.

ARCHAEOLOGY AND CULTURAL HERITAGE

Baseline

Implementation of drought options could affect historic landscape character and historic structures associated with the water environment and the historical context of their setting. Archaeological remains are sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices.

Heritage designations for the Thames River Basin are shown in **Figure D7**. The Thames River Basin includes internationally recognised World Heritage Sites⁶⁵ (for example, the Tower of London, Blenheim Palace, the Royal Botanic Gardens at Kew, the Palace of Westminster, Westminster Abbey and St. Margaret's Church, Maritime Greenwich).

Nationally important archaeological sites are statutorily protected as Scheduled Monuments (SMs)⁶⁶. There are currently around 19,850 entries in the Schedule for the UK⁶⁷. There are approximately 1,765 SMs located within the Thames Management Catchment and approximately 1,298 SMs. Registered Parks and Gardens also make up part of the UK's cultural heritage of national importance (1,633 in 2015 in England). There are approximately 428 sites designated as such in the Thames Management Catchment. An overview of all cultural heritage sites in the four regions encompassing the Thames Management Catchment area is provided in **Table D16**.

Asset	London	South East	East of England	South West
World Heritage Site	4	2	0	4
Scheduled Monuments	158	2,650	1,735	7,009
Listed Buildings	18,936	76,409	57,701	89,746
Registered Historic Parks and Gardens	150	371	212	299
Registered Historic Battlefields	1	6	1	10
Protected Historic Wrecks	0	21	2	24

Table D16: Heritage assets by region, 201568.

67 English Heritage (2015) Heritage counts 2015

⁶⁵ World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972. www.english-heritage.org.uk

⁶⁶ Nationally important archaeological sites designated under the Ancient Monuments and Archaeological Areas Act, 1979, www.culture.gov.uk/historic_environment/scheduled_ancient_monuments/

⁶⁸ English Heritage (2015) Heritage Counts. National heritage List for England: Numbers of Designated Sites by Region. <u>https://content.historicengland.org.uk/content/heritage-counts/pub/2015/map-designated-sites-england-2015.pdf</u>

Conservation Areas are usually designated by the local planning authority, or Historic England (previously known as English Heritage) can designate them in London (in consultation with London Boroughs). They are designated for their special architectural and historic interest. Conservation Areas can include historic town and city centres, fishing and mining villages, 18th and 19th century suburbs, model housing estates, country houses set in historic parks and/or historic transport links and their environment. There are over 8,000 conservation areas in England. Individual local authorities provide details on specific conservation areas.

Historic England collects data on buildings at risk. There were 5,534 designated assets on the Heritage at Risk (HAR) register in 2015. 604 were removed from the Register since 2014, and 327 added. One third of sites on the 2010 Register have now been removed from the Register⁶⁹.

For other types of heritage assets, the long-term trends are not yet firmly established but a very small reduction in the number of sites on the Register between 2009 and 2010 has been reported. The source of risk to SMs resulting from water abstraction or dewatering is 1.71% nationally¹⁰⁰. However, other assets such as those composed of organic material and preserved in waterlogged or anaerobic conditions are proportionately more at risk (e.g. palaeoenvironmental deposits).

Historic Environment Record (HER) databases linked to a Geographic Information System (GIS) are held by County Councils, District Councils or Unitary Authorities. They represent unique repositories of, and signposts to, information relating to landscapes, buildings, sites and artefacts spanning from the Palaeolithic period to modern times. Presenting this wealth of information for the TWUL supply area would be difficult, however, it can be interrogated where the Drought Plan options have the potential to affect such assets.

In relation to unknown assets, there are a number of floodplains within the Thames Water supply region which are either known or suspected to be of high importance for waterlogged archaeology. Such evidence includes both material (wooden artefacts and structures such as trackways) and evidence of past environmental change from the deposits themselves. The waterlogged conditions that preserve these remains may be rain-fed or groundwater fed. If the latter, then clearly abstraction levels can be a critical factor in maintaining conditions in which preservation of the remains is viable within the same location or impacted reach. In addition, there are waterlogged deposits that are specifically associated with chalk, such as springs and their intimately associated wetlands which again can contain important archaeological information, especially palaeo-environmental evidence. Approximate locations of areas important for palaeo-environmental deposits were identified according to a spreadsheet supplied

⁶⁹ English Heritage (2015) Heritage counts 2015



by English Heritage⁷⁰.

⁷⁰ English Heritage (2011) National Monument Record Wetland Heritage List Data 111006.



Legend

- River Thames Course
- Thames Water Supply Area
- Thames Management Catchment
- Scheduled Monument
- Registered Park and Garden
- Registered Battlefield
- Listed Buildings





Note: All locations are approximate This drawing incorporates Ordnance Survey Information © Crown copyright and database rights 2016

Project Title: Thames Water Draft Drought Plan SEA Environmental Report

Figure Title: Heritage Designations and Features

)ate

Figure Number: Figure D7

August 2016

Future Baseline

The NPPF was introduced in 2012 to replace the Planning Policy Statements. The NPPF aimed to make the planning system less complex and more accessible, and changed the emphasis on planning to have a presumption in favour of development. However, core planning principles include those aiming to protect heritage assets, including "conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations"⁷¹.

Recent and ongoing national economic difficulties may have a negative effect on removing heritage assets from the heritage at risk register. Climate change could have variable impacts on heritage assets in the future. Some types of assets and landscapes have already experienced and survived significant climatic changes in the past and may demonstrate considerable resilience in the face of future climate change. However, many more historic assets are potentially at risk from the direct impacts of future climate change⁷².

Key Issues

The key sustainability issue arising from the baseline assessment for archaeology and cultural heritage is:

- The need to protect and improve the natural beauty of the region's AONBs, National Parks and other areas of natural beauty.
- The need to protect and improve the character of landscapes and townscapes.

⁷¹ CLG (2012) National Planning Policy Framework, Communities and Local Government. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf 72 English Heritage (2010) Climate Change and the Historic Environment

LANDSCAPE AND VISUAL AMENITY

Baseline

The landscape character network⁷³ defines landscape character as 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. Some landscapes are special because they have a particular amenity value, such as those designated as Areas of Outstanding Natural Beauty (AONB). Others may have an intrinsic value as good examples or be the only remaining examples of a particular landscape type. Some landscapes are more sensitive to development whereas others have a greater capacity to accommodate development. Assessments of landscape character and landscape sensitivity enable decisions to be made about the most suitable location of development to minimise impacts on landscapes.

Nationally designated landscape sites (including AONBs, National Parks and Green Belt) and Natural England National Character Areas (NCAs) are shown on **Figure D8** for the Thames River Basin.

Nationally Designated Sites

AONBs are defined as 'precious landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them'⁷⁴. They are designated under National Parks and Access to the Countryside Act, 1949, strengthened by the Countryside and Rights of Way Act, 2000. The primary purpose of the AONB is 'to conserve and enhance the natural beauty of the landscape.' There are five AONB within, or partially within, the River Thames management catchment. This is summarised in **Table D17**.

⁷³ www.landscapecharacter.org.uk, accessed 14th July 2006

Name of	Water Resource	Region(s)	Key Characteristics
Site and Type	Zone and Distance		
Chilterns	SWOX, SWA, Henley, Kennet Valley (AONB within each WRZ)	South East, London and East of England	 Part of the Chalk ridge extending from Dorset to Yorkshire. Heavily wooded character. Important diversity of habitats from chalk grassland to beech woodland. Major recreation resource – used for scenic drives, walking and riding.
Cotswolds	SWOX (AONB within WRZ)	London, South East, West Midlands, South West	 Jurassic limestone creating distinctive character. Nationally important for limestone grassland and ancient beechwood. Recreation resource – includes the Cotswolds National Trail.
Kent Downs	London (AONB within WRZ).	London and South East	 Traversed by three river valleys – Darent, Medway and Stour. Chalk ridge – unimproved chalk grassland is an important habitat. Orchards, hop gardens, horticulture & arable farmland. River valleys, ancient lanes and wooded foreground of upland ridges.
North Wessex Downs	SWOX, Kennet Valley (AONB within WRZ)	London, South East and South West	 Includes the uplands of Marlborough, Berkshire and North Hampshire Downs. Richly farmed landscapes including Pewsey Meadows. Includes the Neolithic stone circle at Avebury. Recreation resource – at Avebury, also Ridgeway National Trail and Kennet and Avon Canal.
Surrey Hills	London and Guildford (AONB within WRZ)	South East and London	 Links together a chain of upland landscapes. Chalk landscape – chalk landscape and unimproved heath, deciduous woodland. Recreation resource – Box Hill and Devil's Punch Bowl, Greensand Way and North Downs National Trail.

Table D17: AONBs within Thames WRZs

National Parks are areas protected due to their beautiful countryside, wildlife and cultural heritage. The South Downs National Park covers a small part of the southern Thames river basin within the Guildford WRZ. Water supply for the Guildford WRZ is based on the upper River Wey. Most of the River Wey valley falls within the boundary of the Surrey Hills AONB.

The main characteristics of Green Belt is their openness and their permanence. The main aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open. The Green Belt therefore aims to check the unrestricted sprawl of large built-up areas; prevent neighbouring towns merging into one another; assist in safeguarding the countryside from encroachment; preserve the setting and special character of historic towns; and assist in urban regeneration nu encouraging the recycling of derelict and other urban land.

Natural England National Character Areas

Natural England National Character Areas take account of landscape features (also referred to in the Biodiversity, Flora and Fauna topic). These are shown geographically in **Figure D8** and **Table D18** summarises the key features.



Legend

- Watercourse
- Thames Water Supply Area
- River Thames Catchment
- AONB
- National Park
- Greenbelt
- NCA



Figure D8

August 2016

Table D18:	Natural Englar	nd National	Character Areas	(NCAs)
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National Character Area	Key Messages
Chilterns	 The Chilterns NCA is a predominantly wooded and farmed landscape with an underlay of chalk bedrock rising from the London Basin and offering wide views over adjacent vales. River Thames breaches escarpment to the south at Goring Gap, flowing past riverside towns such as Henley. The surrounding countryside is an area utilised for agriculture interspersed with woodland and hedged boundaries. Parts of Chilterns area furthest from London are recognised as special and attractive, falling within the Chilterns AONB. Major urban fringe and growth areas such as Luton and Hemel Hempstead are located within the Chilterns NCA although outside of these AONBs.
South Suffolk and North Essex Claylands	 The NCA stretches from Bury St Edmunds to Ipswich following the line of the A14 through Gipping Valley. The landscape is gently undulating with a chalky boulder clay plateau as a result of multiple small-scale river valleys dissecting the plateau. The area is one dominated by its ancient landscape of wooded arable countryside, with a noticeable feeling of enclosure throughout and a complex network of hedgerows, meadows and parklands extending eastwards. The soils within the area are moderately fertile, chalky clay soils which provide vegetation with a calcareous character. Irregular field patterns can still be seen despite enlargements in the second half of the 20th century.
Northern Thames Basin	 Area extends from Hertfordshire to the west to Essex coast in the east and include notable areas such as the suburbs of North London, St. Albans and Colchester. Arable agriculture is a large part of the industry in the area, although despite this, soil quality ranges from good to poor, with the London clay often waterlogged in winter and cracking in summer. The area is rich in geodiversity, archaeology and history with landscapes spanning from the Hertfordshire plateau to the more open arable sections of the Essex heathlands. Rapid urban expansion since the mid-19th century has led to an increase in housing developments, schools and amenities for local populations, leading to a detrimental effect on tranquillity.
North Kent Plain	 The North Kent Plain is a strip of open, low and gently undulating land between the Thames Estuary to the north and the chalk of the Kent Downs to the south. It is a highly productive agricultural area with good quality soils used predominately for arable farming. Ancient woodland surrounds Blean, with additional woodland further west. Despite this, the landscape is mostly open and expansive, leading to the area being called as the "Garden of England".
North Downs	 Forming a chain of chalk hills, the North Downs NCA extends from Hogs Back in Surrey to the famous White Cliffs of Dover. The settlements in the area consist of traditional small villages and farms while twisting sunken lanes cut across the scarp and are a feature of much of the dip slope. The beauty of the area is reflected by its location within the Kent Downs and Surrey Hills AONB.
Thames Basin Lowlands	 The Thames Basin Lowlands is a low lying plain situated within the London Basin between the suburbs of South Norwood and Hale, located on the Surrey/Hampshire border. Overall the landscape is largely flat, with small sections of gently undulating land. The underlying geology consists mostly of London Clay, with small outcrops of Bracklesham and Barton Group sand, silt and clay between Esher and Cobham. Part of the North Downs Chalk bedrock, fringed with Thanet Formation and

National	Key Messages		
Character			
Area			
	Lambeth Group sediments, underlies Crovdon and Sutton.		
High Weald	• High Weald NCA is covered by ancient countryside and cited as one of the best		
_	surviving medieval landscapes in northern Europe.		
	• It encompasses the ridged and faulted sandstone core of the Kent and Sussex		
	Weald and comprises a mixture of fields, small woodlands and farmsteads with		
	extensive connections to these areas through historic tracks and paths. The majority of the area (-90) is covered by the High Woold AONB with		
	• The high weak AONB with prominent medieval patterns of small pasture fields enclosed by thick		
	hedgerows and shaws (narrow woodlands) remaining fundamental to the		
	character of the landscape.		
Low Weald	• A broad area of low lying clay which wraps around the northern, western and		
	southern edges of the High Weald.		
	• Mostly agricultural land able to support pastoral farming as a result of the neavy clay soils, although lighter soils can be found to the east		
	• The landscape is predominantly covered by densely wooded areas with a large		
	amount of ancient woodland.		
	• Approximately 9% of the NCA is situated within the adjacent designated Surrey		
	Hills, Kent Downs and High Weald AONB with 23% of the land categorised as		
147 11	greenbelt.		
Greensand	 Around 25% of the area contains extensive belts of woodland, including ancient woods and more recent conjfer plantations. Area also features open areas of 		
Greensand	heath on acidic soils, river valleys and mixed farming with areas of fruit		
	growing.		
	• Over half of area covered by South Downs National Park, Kent Downs AONB		
	and Surrey Hills AONB and serves as a significant place of interest for		
	landscape, geology and biodiversity.		
	 Underlying geology has snaped the scarp-and-dip slope topography with clear links apparent between vernacular architecture, industry and local geology. 		
	 The area accommodates a mix of internationally and nationally designated sites 		
	related to biodiversity, including 3 SPAs 2 RAMSAR sites and 8 SACs.		
Thames Valley	• Majority of the landscape is urban with low lying land situated within a wedge		
	shaped area. It widens from Reading, including Slough, Windsor, the Colne		
	Valley and the southwest London Fringes.		
	• Hydrological features are the most prominent within the area and include the Thames and its tributaries, the Grand Union Canal and the reservoirs which		
	form the South- West London Waterbodies SPA and Ramsar site. These		
	features are vital for providing water supply services to London and		
	surrounding suburbs whilst also being crucial for wildlife and recreation.		
	• Due to the flood risk, flows and water levels in the River Thames are managed		
	upstream of feddington. Both flood defence and water quality improvement		
	the NCA.		
Berkshire and	A vast area containing arable fields stretching across rolling Chalk hills with		
Marlborough	scattered settlements. The escarpment provides wide views of the Berkshire and		
Downs	Marlborough Downs with visible landmarks including chalk-cut horse figures,		
	beech clumps and ancient monuments.		
	• Avebury stone circle is a popular visitor destination and part of a world Heritage Site with numerous other Scheduled Monuments and heritage		
	features across the landscape, although Heritage features are at risk from		
	damage by cultivation and animal burrowing.		
Upper Thames	• An area characterised by its open, gently undulating lowland farmland on		
Clay Vales	mostly Jurassic and Cretaceous clays.		
	• The World Heritage site of Blenheim Palace falls within the NCA boundaries,		
	coupled with 5000 na of the North Wessex Downs AONB and smaller sections of the Chilterns and Cotswolds AONB		
	• The landscape is contrasting, with enclosed pastures of the clay lands with wet		
	valleys, mixed farming, hedge trees and field trees opposed by more open,		
	arable lands.		
Midvale Ridge	A band of low lying limestone hills stretch from east to west across the area		

National Character Area	Key messages		
	 from the Vale of Aylesbury to Swindon. It is surrounded by the flat lands of the Oxfordshire clay vales, which allows for extensive views across the countryside. Swindon and Oxford are the main towns within the area; outside of this the remaining settlements are mostly small nucleated villages along the top of the ridge and the springline. The majority of the area is agricultural with a mixed arable/ pastoral farming landscape, cereals being the most important arable crop. The soil types are made up of heavy rendzinas, stagnogleys and lighter sandy brown earths with small patches of sandy soils. It is an area of significant importance for its geological sites, yielding fossils of international importance. 		
Cotswolds	 An area known for its predominantly oolitic Jurassic Limestone belt that stretches from the Dorset coast to Lincolnshire. The limestone within the area has been widely used in buildings and walls. The pattern of the landscape is steep scarp crowned by a high, open wold. The scarp provides a backdrop to the major settlements of Cheltenham, Gloucester, Stroud and Bath and provides expansive views across the Severn and Avon Vales to the west. Smaller settlements are located at the scarp foot linked by a network of roads and public rights of way. 		
Avon Vale	 A landscape of mixed, largely pastoral agriculture and small limestone built towns. Over 80% of the area is used for agricultural purposes and less than 10% for urban, although development has occurred rapidly from the late 20th century onwards. It is an undulating and low lying area cut by the River Avon (Bristol) and surrounded to the west, south and east by higher land. Smaller settlements and farmsteads are clustered along streams and lesser rivers, linked by narrow winding lanes. Ancient patterns of flood meadows and drainage ditches dominate these valley floors, with wet grasslands and woodlands. 		
Salisbury Plain and West Wiltshire Downs	 An area dominated by its gently rolling chalk downland which forms part of the sweep of Cretaceous Chalk spanning the Dorset coast and across the Chilterns to north of the wash. The area is sparsely populated with a main focus on agriculture. There are few settlements, leading to a vast, open landscape and a strong sense of remoteness The plain is predominantly covered by its chalk grassland, one of the largest remaining areas of calcareous grassland in north western Europe The area is well protected with SPA, SAC and SSSI designations due to its rich populations of stone curlew, hen harrier and rare bumblebee species 		
Northampton- shire Uplands	 Rounded undulating hills with many long, low ridgelines. Great variety of landform with distinctive local features, such as Hemplow Hills. Dominant Jurassic scarp slope of limestone and Lias clay hills capped locally with ironstone-bearing Marlstone and Northampton Sands. Glacial boulder clay covers the northern and eastern areas, with sands and gravels along river valleys. The Upper Nene Valley divides the gently undulating Northamptonshire Heights to the north from the hillier Cherwell/Ouse plateau (the 'Ironstone Wolds') to the south and has been exploited for sand and gravel. Rivers rise and flow outwards in all directions, including the rivers Cherwell, Avon, Welland, Tove, Ouse, Nene and Ise, and the area forms the main watershed of Middle England. Sparse woodland cover, but with scattered, visually prominent, small, broadleaved woods, copses and coverts, particularly on higher ground. Mixed farming dominates with open arable contrasting with permanent pasture. Typical 'planned countryside' with largely rectangular, enclosed field patterns surrounded by distinctive, high, often A-shaped hedgerows of predominantly hawthorn and blackthorn, with many mature hedgerow trees, mostly ash and oak. Some ironstone and limestone walls in places and some localized areas of 		

Draft

National Character Area	Key Messages	
	oorly irragular on aloguro	
Bedfordshire and Cambridge- shire Claylands	 early irregular enclosure. A landscape which is broad and gently undulating, with a lowland plateau dissected by shallow river valleys This is contrasted by the Bedfordshire Greensand Ridge, a narrow and elevated outcrop of Greensand with acidic soils and grassland, heathland and woodland habitats. The Forest of Marston Vale is located within the NCA, as well as a small section of the Chilterns AONB. The area is visible from the elevated ground of the Yardley Whittlewood Ridge, Bedfordshire Greensand Ridge, East Anglian Chalk and Chilterns NCAs Semi natural habitats supporting an array of rare species can be found within the predominantly arable and commercially farmed landscape The River Great Ouse and its tributaries run through the site and are visible across the landscape. 	
Greater Thames Estuary	 A largely remote and tranquil landscape between the North Sea and rising ground inland, consisting of shallow creeks, drowned estuaries, mudflats and broad tracts of tidal salt marsh. Despite proximity to London, the NCA only has a few major settlements and small villages towards the higher ground. It contains some of the most scarcely populated sections of the English coast and is vastly different to the densely populated urban areas towards London. Sea defences protect large areas of reclaimed grazing marsh and its associated ancient fleet and ditch systems, and productive arable farmland. Historic military landmarks are characteristic features of the coastal landscape. 	
Hampshire Downs	 Part of the central southern England belt of chalk, the Hampshire Downs rises 297m in the north-west and is located on the Hampshire-Wiltshire border. A steep scarp to the north delineates the Downs. The area overlooks the Thames Basin the Weald to the east. It is characterised by its elevated, open and rolling landscape covered by large arable fields with low hedgerows on thin chalk soils, scattered woodland blocks and shelterbelts. The Chalk is a large and important aquifer; hence groundwater protection and source inerrability designations cover most of the area. Catchment sensitive farming to control pollution, run-off and soil erosion is a vital activity. The aquifer feeds a number of small streams flowing north and east, although the dominant catchments are those of the rivers Test and Itchen, which flow in straight sided with relatively deeply incised valleys across most of the area. The Itchen is a SAC and the Test a designated SSSI. These rivers, with the watermeadows, peat soils, mires and fens of their flood plains, are the most important habitats of the area. The valleys are home to the main settlements, the local road system and important provide and the field of the area. 	
South Wessex Downs	 The area is characterised by its "whale-backed" spine of chalk and stretches from the Hampshire downs in the west to the coastal cliffs of Beachy Head in East Sussex. Its location falls largely within the South Downs National Park. 8% of the area is classified as urban, with the coastal conurbation of Brighton and Hove situated in the east of the NCA The landscape is diverse and complex with significant variation from physical, historical and economic influences Much of the landscape today has been formed and maintained by human activities, most notably agriculture and forestry 	
Severn and Avon Vales	• Diverse range of flat and gently undulating landscapes, united by broad river valley character. Riverside landscapes with little woodland, often very open. Many ancient market towns and large villages along the rivers. Prominent views of hills – such as the Cotswolds, Bredon and the Malverns – at the edges of the character area.	

'Tranquillity' can be defined as the quality of calm that is experienced by people in places full of the sites and sounds of nature. The Campaign for Rural England (CPRE) developed tranquillity mapping for England to identify areas that are either disturbed or undisturbed by urban areas (towns and cities), traffic (road, rail and airports), power stations, pylons, power lines and open-cast mines75.

Implementation of drought options has the potential to influence landscape and visual amenity, for example, effects on water levels in rivers beyond those occurring naturally as a result of the drought alone. These effects are likely to be experienced locally, close to the area of water abstraction, rather than for the National Character Area as a whole.

Future Baseline

It is envisaged that landscape and designated sites will be maintained and enhanced for the enjoyment of the public (although not through the DP itself), although with the pressures for housing in many parts of the Thames river basin, there are likely to be some threats to visual amenity more broadly beyond designated landscape areas (including within Green Belt). Climate change and land use change (e.g. due to agricultural reform associated with the UK's exit from the EU and Common Agricultural Policy) may also, in the longer term, lead to changes to landscape character.

Key Issues

The key sustainability issue arising from the baseline assessment for landscape and visual amenity is:

- The need to protect and improve the natural beauty of the region's AONBs, National Parks and other areas of natural beauty.
- The need to protect and improve the character of landscapes and townscapes.

⁷⁵ CPRE tranquillity mapping for England: http://www.cpre.org.uk/what-we-do/countryside/tranquil-places
APPENDIX E ASSESSMENT TABLES

M TT ca Lo	Media/Wat This option campaigns London and	ter Efficienc comprises in 2003 anc d 0 and 3.99	cy Campaign wide-scale : d 2005/6, an % for Thame	ો media activ id the data કેડ Valley. Th	ity and adv obtained o iis figure is	vertising to e ver that peri based on inf	incourage vo iod has beer formation gr	oluntary rec n analysed. ained in the	duction in w The assump 2005 and 2	rater usage. htion includ 2006 drougi	. The deman led in the LT ht periods.	d savings th OA / FCD as	at are likely part of the	r to accrue f savings ach	rom a medi ieved when	a campaign the trigger	are very di is reached i	fficult to est is that there	:imate. TWU ⊧ would be s	IL has imple aving of bet	mented me ween 0 and	dia 2.2% for
Summary commentary of scheme adverse effects	No adverse	· impacts ha	ave been ide	entified for t	this drough	ıt plan optio	n.															
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Summary commentary of scheme beneficial effects m	Beneficial i manageme	mpacts incl nt of abstra	lude reducin actions and (ıg demand 1 enabling lor	for water, s ng term imp	ecuring sup provements	ply of water in water eff	່ for custom ficiency. Red	ers/busines ducing wate	sses. Reduc	ing the dem will also hel	and for wat p to improve	er will also e the resilie	have benefi nce of wate	cial effects r supplies to	on maintain o drought.	ing surface	water and p	groundwate	r levels/flov	vs, sustainal	ble
SEA Objectives Beneficial Effects Assessment Summary		None		None		None								None	None	None	None	None			None	

SEA	topics and objectives	Assessment methodology				Assessment of option	ı				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it affect wFD compliance e.g. good recological potential/status? Will it affect wFD compliance e.g. good ecological potential/status? Will it affect wFD compliance e.g. good ecological potential/status? 	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements. Such methods of publicity are considered to have no impact on biodiversity, flora or fauna, or designated sites of nature conservation interest other than the potential to reduce consumer demand for water and subsequent reduced requirement for abstraction at source (and therefore, potential for positive impacts on flow sensitive habitats/species).	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water wil collaborate with catchment groups on climate change resilience.	n/a II	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	There is the potential for the media/water efficiency campaign to raise awareness of the importance and value of water environment for biodiversity and ecosystem services.	Low (beneficial)	Medium	Medium	Low	Short-term	Temporary	None	Minor beneficial
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements. Such methods of publicity are considered to have no impact on avoiding the introduction or spreading of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The media/water efficiency campaign will result in water savings which will contribute towards improving the security of supply for customers in TWUL's supply region. There is potential for the media/water efficiency campaign to raise awareness of the importance and value of water environment for health and well-being.	Low (beneficial)	High	Medium	High	Short-term	Temporary to permanent	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	No impacts on recreation, tourism or navigation are anticipated as a result of the media/water efficiency drought option.	d n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The media/water efficiency campaign will result in water savings which will contribute towards improving the security of supply for businesses in the region.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements and as such will not involve any increased material resource use. This option will reduce the amount of water used in the region. It will not involve any increased waste production.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements and as such will result in promoting the sustainable management of natural resources including efficient and sustainable use of water, ensuring a supply of water to homes/businesses.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements. Such methods of publicity are considered to have beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source, minimising impacts on levels and flows.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance?	Reductions in demand for water would result in reduced requirement for increased abstraction at source, avoiding associated impacts on surface water and groundwater quality.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements. Such methods of publicity are considered to have beneficia impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial

SEA	topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements. Such methods of publicity are considered to have beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source. This may have long term impacts on consumer water usage.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the media/water efficiency campaign.	f n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	e n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	No impacts on air quality are anticipated as a result of the media/water efficiency drought option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	The media/water efficiency campaign is assumed to be communicated through radio and newspaper advertisements and as such will not involve any increased resource use, or increased greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Demand management measures are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The media/water efficiency campaign is considered to have no direct impact on the historic environment, heritage assets and their settings and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing any impacts of drought related archaeology and cultural heritage impacts.	Low (beneficial)	Low	Medium	Moderate	Short-term	Temporary	None	Negligible beneficial
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctivenes? Will it improve access to valued areas of landscape character? 	The media/water efficiency campaign is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing any impacts of drought related landscape or visual impacts. There is the potential for the media/water efficiency campaign to raise awareness and understanding of natural occurrence of drought its impacts and function on the countryside or wildlife compared to those of unsustainable abstraction during times of drought.	Low (beneficial)	Low	Medium	Moderate	Short-term	Temporary	None	Negligible beneficial

Drought Plan option	Leakage R Thames W sustainabl	eduction: 'ater maint e leakage r	ains an ong eductions.	oing leakage	e activity an	id network p	ressure mar	agement p	programme.	In addition	to a find an	d fix' appro	ach to leak r	epair, Than	nes Water is	s working to	replace ma	ny old wate	r mains in c	order to ma	ke long-terr	n,
Summary commentary of scheme adverse effects	Minor adv	erse effect:	s identified	are associat	ed with em	issions to ai	r (air polluta	nts and gre	eenhouse ga	as emission	s) as a result	of construc	tion activiti	es and vehi	cle moveme	ents. All othe	er adverse e	ffects ident	ified are ne	gligible.		
SEA Objectives Adverse Effects Assessment Summary		None	None	None		None	None		None	None		None	None		None	None			None		None	
Summary commentary of scheme beneficial effects	Minor to n considered	noderate b d to be long	eneficial efi g term and g	fects have be permanent ir	een identifi n nature.	ed with resp	pect to susta	inable prov	vision of wa	ter through	water savin	gs that wou	ld have oth	erwise beer	n lost to lea	kage after h	aving been a	abstracted a	at source. Th	nese effects	are genera	lly
SEA Objectives Beneficial Effects Assessment Summary		None	None	None		None								None	None	None	None			None	None	None

SEA topics and objectives	Assessment methodology				Assessme	ent of option				
Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/larg e)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Construction activities associated with leakage detection and repair activities may result in disturbance to local habitats and species during the works. The majority of works are anticipated to be in an urban setting. Assuming best practice construction methods, impacts of the construction phase are anticipated to be negligible. The reduction in water lost through leakage will result in reduced requirement for abstraction at source and therefore, potential for positive impacts on flow and sensitive habitats/species.	Low (beneficial)	Low (adverse) Medium (beneficial)	Medium	High	Long term	Permanent	Negligible adverse	Minor beneficial
1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA topics and objectives	Assessment methodology				Assessme	nt of option				
1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Leakage detection and repair activities will not affect the spread of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well- being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well- being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)?	The drought option will help to ensure levels of service are maintained through enabling provision of water that would have otherwise been lost to leakage. Construction activities associated with leakage detection and repair activities may result in nuisance effects associated with traffic and noise. However, these will be short term at any one location (likely to be urban) and assuming best practice construction methods, effects will be minimal.	Low (beneficial) Low (adverse)	High (beneficial) Low (adverse)	Medium (beneficial) Small (adverse)	Medium	Long-term (beneficial) Short-term (adverse)	Permanent (beneficial) Temporary (adverse)	Negligible adverse	Moderate beneficial
2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	It is assumed that public rights of way will be maintained during repair activities and there will be no effects on recreational opportunity.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Low	Long-term	Temporary	None	Moderate beneficial

SEA topics and objectives	Assessment methodology				Assessme	nt of option				
3.1 To reduce, and make more efficient.	Will it minimise the use of energy	Increased leakage	Low (beneficial)	Low	Medium	High	Long-term	Permanent	Negligible adverse	Negligible beneficial
the domestic industrial and commercial	and promote energy efficiency?	detection and renairs	Low (adverse)	2011	mediam		Long term	remanent	inegingible durense	Hegigible beneficial
consumption of resources, minimise the	Will it make use of existing	and network pressure	zon (daverse)							
generation of waste encourage its re-	infractructure?	management ('fix and								
generation of waste, encourage its re-	• Will it help to appourage sustainable	find() will result in the								
use and eliminate waste sent to ianumi.	• Will it help to encourage sustainable	ind) will result in the								
	design or use of sustainable materials	reduction of water lost								
	(e.g. supplied from local resources)?	in the supply network								
	 Will it reduce the amount of waste 	and therefore the								
	generated and increase the proportion	energy and chemicals								
	sent to reuse or recycling?	used to treat it. It								
	 Will it encourage the productive 	utilises existing								
	reuse of waste including energy	infrastructure.								
	recovery?									
		Repairs may require raw								
		materials. It has been								
		materials. It has been								
		assumed that any								
		materials required								
		would be obtained								
		locally.								
3.2 To promote the sustainable	 Will it help to minimise the demand 	Increased leakage	Low (beneficial)	High	Medium	High	Long-term	Permanent	None	Moderate beneficial
management of natural resources	for resources (including water)?	detection and repairs								
including efficient and sustainable use	· Will it enable efficient water resource	and network pressure								
of water; ensure resilient water	management and ensure maintenance	management ('fix and								
supplies for homes and industry in the	of water supplies?	find') will result in the								
area is maintained	of water supplies:	reduction of water lost								
area is manicalieu.		in the supply potwork								
		In the supply network ,								
		reduce the requirement								
		for abstraction at source								
		and therefore enable								
		more efficient water								
		resource management								
		and ensure maintenance								
		of supply.								
									1	
									1	
4.1 To avoid adverse impact on surface	Will it lead to a change in river flows	The drought option will	Low (beneficial)	Medium	Medium	Moderate	Long-term	Permanen*	None	Minor beneficial
and groundwater levels and flow	worked width or river level?	ne drought option Will	LOW (Deficicial)	weulum	meulum	wouerate	Long-Lenn	remanent	None	winor beneficial
and groundwater levels and flows,	wetted width or river level?	not directly result in, or								
including when this impacts on habitats	 Will it alter the flow regime or 	modify any abstraction								
and/or navigation.	residence time of surface waters?	(surface water or								
	 Will it lead to changes in 	groundwater) and								
	groundwater levels and recharge?	therefore will not effect								
		surface water or								
	1	groundwater levels								
	1	However, the reduction								
	1	in water last through								
	1	in water lost through								
	1	leakage will result in								
	1	reduced requirement for								
1		abstraction at source.								
									1	
	<u> </u>									

SEA topics and objectives	Assessment methodology				Assessme	nt of option				
4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Construction activities associated with leakage detection and repair activities may result in the potential for impacting on local surface and groundwater quality. Assuming best practice construction methods, impacts of the construction phase are anticipated to be negligible. The reduction in water lost through leakage will result in reduced requirement for abstraction at source, and therefore also mitigate any surface water quality effects associated with abstraction.	Low (beneficial) Low (adverse)	Low	Medium	High	Short-term (adverse) Long-term (beneficial)	Temporary (adverse) Permanent (long term)	Negligible adverse	Negligible beneficial
4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	The option will contribute to more sustainable abstractions by reducing the amount of water already abstracted that is lost through leakage.	Low (beneficial)	Medium	Medium	High	Long-term	Permanent	None	Minor beneficial
4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	The option will improve the efficiency of the water supply network. There may be some effect on customer water use if it is seen that leakage 'find and fix' is being undertaken.	Low (beneficial)	Medium	Medium	Medium	Long-term	Permanent	None	Minor beneficial

SEA topics and objectives	Assessment methodology				Assessme	ent of option				
5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Construction activities associated with leakage 'find and fix' activities may result in localised disturbance to geology and land use. However, repair activity will be on pipelines which are already in situ.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	Vehicle trips necessary for leakage detection and repair will cause emissions affecting air quality, including some within the London Low Emissions Zone.	Low (adverse)	High	Small	Low	Short-term	Temporary	Minor adverse	None
6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Vehicle trips necessary for leakage detection and repair will cause emissions of greenhouse gas emissions. Leakage detection and repairs will result in the reduction of water lost in the supply network and long term energy savings associated with this reduction (decreased greenhouse gas emissions associated with decreased need for water treatment and pumping).	Low (beneficial) Low (adverse)	Medium	Medium	Moderate	Short-term (adverse) Long-term (beneficial)	Temporary (adverse) Permanent (beneficial)	Minor adverse	Minor beneficial

SEA topics and objectives	Assessment methodology				Assessme	ent of option				
6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? 	Demand management measures are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Long-term	Permanent	None	Minor beneficial
7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water- dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Leakage 'find and fix' activity will be on pipelines which are already in situ, and as such, it is not anticipated that any sites of archaeological or cultural heritage importance will be affected. The setting of any surrounding heritage assets may be impacted for the short term, however, considering the option is an acceleration of ongoing leakage reduction activity this is considered negligible.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water- dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA topics and objectives	Assessment methodology				Assessme	ent of option				
8.1 To protect, enhance the quality of	 Will it avoid adverse effects and 	The majority of works	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
and improve access to designated and	enhance designated landscapes?	are anticipated to be in								
undesignated landscapes, townscapes	 Will it help to protect and improve 	an urban setting.								
and the countryside.	non-designated areas of natural	Assuming best practice								
	beauty and distinctiveness (e.g.	construction methods,								
	woodlands) and avoid the loss of	impacts of the								
	landscape features and local	construction phase are								
	distinctiveness?	anticipated to be								
	 Will it improve access to valued areas 	negligible. The scheme								
	of landscape character?	will have no direct effect								
		on landscape and visual								
		amenity in operation.								
	1									

Drought Plan option	Sprinkler F Overview: achieved v periods.	ያan and ሀn Demand sa vhen the m	attended Ho avings that a reasure is im	sepipe Ban re likely to plemented	accrue from is that there	१ a sprinkler e would be :	and unatten saving of bet	ided hosepi ween 0 an	ipe ban are d 7% for Lo	e difficult tc ndon and C	e estimate. T and 9.4% fo	WUL had n or Thames \	ot had a hos /alley, depei	epipe ban si nding on the	ince 1990 p time of ye	rior to 2006 ar. This figu	. The assun re is based	nption incluc on informat	ded in the L ion gained i	TOA / FCD fc n the 2005 ና	or the saving and 2006 dro	ıs ought
Summary commentary of scheme adverse effects	No major a work (e.g.,	adverse effi , landscapir	ects have be	en identifie ıre).	ed for this of	ption. A min	ior adverse e	ffect has b	een identif	ied in term	s of promoti	ing a sustai	nable econo	my due to tł	he sprinkler	ban affecti	ng some bu	isinesses tha	ıt rely on sp	rinklers/hos	epipes in th	eir line of
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None		None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Summary commentary of scheme beneficial effects	Beneficial manageme	impacts inc	clude reducir ractions and	ng the dema enabling lo	and for wate	er, securing provements	supply of wa in water effi	ater for cusi iciency. Rec	tomers/bus ducing wate	sinesses. Re er demand	educing the c will also help	demand for p to improv	r water will a /e the resilie	also have be nce of wate	neficial effe r supplies t	ects on mair o drought.	ntaining sur	rface water a	and groundv	vater levels/	flows, susta	iinable
SEA Objectives Beneficial Effects Assessment Summary		None	None	None		None	None							None	None	None	None	None			None	

Sprinkler Ban and Unattended Hosepipe Ban - 1

SE	A topics and objectives	Assessment methodology				Assessment of optio	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	A sprinkler ban is considered to have no impact on biodiversity, flora and fauna, other than to acknowledge that reduced consumer demand for water will result in reduced requirement for abstraction at source (and therefore, potential for positive impacts on flow, sensitive habitats/species etc.).	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The sprinkler ban is likely to have no impact on avoiding the introduction or spreading of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	A sprinkler ban will provide water savings which will contribute towards improving security of supply of water in the TWUL's supply region. Drinking water quality will not be affected by the restrictions.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Reducing the demand for water is unlikely to have any adverse impacts for recreation, tourism and navigation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	There are likely to be impacts on domestic customers as the ban would preclude the use of sprinklers or unattended hosepipes to water private gardens or wash cars. The option carries the risk of economic impact on businesses that benefit directly or indirectly from sprinkler systems. For example, landscape companies that work on private gardens will be banned from using sprinklers or unattended hosepipes, and so may suffer some loss. There may be some impact on the horticultural business sector in general as plant buying patterns change during a drought.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	A sprinkler ban will reduce the demand for water in the region, improving the efficiency of existing resource use. It will not result in any increase in the generation of waste.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	A sprinkler ban will reduce the demand for water in the region, promoting sustainable resource use.	Low (beneficial)	High	Moderate	High	Short-term	Temporary	None	Moderate beneficial
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	This option will not directly result in, or modify any abstraction (surface water or groundwater). Reduction in demand for demand for water will result in reduced requirement for abstraction at source, minimising impacts on levels and flows.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Reductions in demand for water would result in reduced requirement for increased abstraction at source, avoiding associated impacts on surface water and groundwater quality.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial

Sprinkler Ban and Unattended Hosepipe Ban - 2

SEA	topics and objectives	Assessment methodology				Assessment of optio	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	This option will not directly result in, or modify any abstraction (surface water or groundwater), Reduction in demand for demand for water will result in reduced requirement for abstraction at source	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	This option will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source. This may have medium to long-term impacts on consumer water usage.	Low (beneficial)	Medium	Medium	Moderate	Medium term	Temporary to permanent	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the sprinkler ban.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	No impacts on air quality are anticipated as a result of the sprinkler ban.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	The sprinkler ban will not involve any increased resource use, or increased greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Demand management measures are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The sprinkler ban is considered to have no direct impact on the historic environment, heritage assets and their settings and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing any impacts of drought related archaeology and cultural heritage impacts.	Low (beneficial)	Low	Medium	Moderate	Short-term	Temporary	None	Negligible beneficial
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The sprinkler ban is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing any impacts of drought related landscape or visual impacts.	Low (beneficial)	Low	Medium	Moderate	Short-term	Temporary	None	Negligible beneficial

Drought Plan option	Temporary The demai and 4.2% f	y Use Ban. nd savings 1 or London	that are likel and 0 and 4.	ly to accrue 7% for Than	from a tem nes Valley,	porary use l depending d	oan are very on the time c	difficult to f year. This	estimate. T ; figure was	he assump reviewed a	tion include and updated	d in the LTC I based on i	DA / FCD for information	the savings gained in th	achieved w ee 2005 and	/hen the me 2006 droug	asure is im ht periods.	plemented i	is that there	would be s	aving of bet	ween 0
Summary commentary of scheme adverse effects	No major a (e.g., lands	adverse eff caping/ho	ects have be rticulture).	en identifie	d. A minor	adverse effe	ect has been	identified i	n terms of	promoting	a sustainabl	e economy	due to the t	emporary u	se ban affe	cting some l	businesses	that rely on	sprinklers/ł	nosepipes in	their line o	f work
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None		None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Summary commentary of scheme beneficial effects	Beneficial sustainabl	impacts ind e managen	clude reducin nent of abstr	ng the dema actions and	and for wat enabling lo	er, resulting ong term im	in securing t	he supply o	of water for ficiency. Re	r customers ducing wat	s/businesses er demand t	s. Reducing will also he	the demand lp to improv	for water v e the resilie	vill also hav nce of wate	e beneficial er supplies t	effects on o drought.	maintaining	surface wa	ter and grou	indwater lei	/els/flows,
SEA Objectives Beneficial Effects Assessment Summary		None	None	None		None	None				None			None	None	None	None	None			None	

SE	A topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h gh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	f Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Blodiversity, flora and fauna	 To conserve and enhance biodiversity, including edispaneted siles of nature conservation interests and protected habitats and species (with particular regards to avoiding the effects of over- abstraction on sensitive sites, habitats and species). 	• Will it protect and enhance the most important sites for nature contervation? • Will it protect and enhance aquity: transitional and terrestrial species and habitats? • Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? • Will it affect WFD compliance e.g. good ecological potential/status? • Will it affect WFD compliance e.g. good ecological potential/status? • Will it affect WFD compliance e.g. good ecological potential/status? • Will it ensure maternance of support provision of flish passage with respect to migratory fish functioning habitat connectivity?	A temporary use ban is considered to have no impact on biodiversity, flora and fauna, other than to acknowledge that reduced consumer demand for water will result in reduced requirement for abstraction at source (and therefore, potential for positive impacts on flow, sensitive habitats/species etc.).	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of invasive Non-Native Species (INNS)?	The temporary use ban is likely to have no impact on avoiding the introduction or spreading of INNS.	e n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will the bit on some provision of access to a secure resilient access to a secure and affordable supply of drinking water pailty? Will the bit portect or improve drinking water quality? Will the bit portect of the importance and value of the water environment for health and well-being? Will the bit portect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, drugurpton to safe and healbed water/evenage service)? 	A temporary use ban will provide water savings which will contribute towards improving security of supply of vater in the TWUL's supply region. Drinking water quality will not be affected by the restrictions.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	• Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navglandino? • Does it protect and enhance the green infrastructure network?	Reducing the demand for water is unlikely to have any impacts for recreation, tourism and navigation.	r n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to assertial services, including a resilient, high quality and affordable supply of water over the long term.	WIII It assist in ensuring provision of essential services to support health and well-being?	The principal impact will be on domestic customers as the bain would preclude use of horespices for thore use categories set out under the temporary bain powers. The temporary use bain would include an exemption for commercial buindinssis in respect of the washing of private cars and washing of windows. The elderly and dislable would also be exempted from the measures imposed under the temporary use bain. There may be come impact on the horicultural buildings set car general, as plant buying patterns have the potential to change during the imposition of a temporary use ban.	Low (adverse)	High	Medium	Moderate	Short to medium-tern	n Temporary	Minor adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use deschig infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local reasource)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling?	A sprinkler ban will reduce the demand for water in the region, improving the efficiency of existing resource use. It will not result in any increase in the generation of waste.	Low (beneficial)	High	Medium	Moderate	Medium-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it helps de efficient water resource management and ensure maintenance of water supplies? 	A temporary use ban will reduce the demand for water in the region.	Low (beneficial)	High	Moderate	High	Medium-term	Temporary	None	Moderate beneficial
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will I it ated to a change in river flows, wetted width or river level? Will it ated to have regime or residence time of surface waters? Will it it lead to changes in groundwater levels and recharge?	This option will not directly result in, or modify any abstraction (surface water or youndwater), Reduction in demand for deman for water will result in reduced requirement for abstraction at source, minimising impacts on levels and flows.	Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary	None	Minor beneficial
Water	14.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration Of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, BBMP objectives? Will it present arisk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it prevent water quality compliance? 	Reductions in demand for water would result in reduced requirement for increased abstaction at source, avoiding associated impacts on surface water and groundwater quality.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SE	A topics and objectives	Assessment methodology				Assessment of ontion					
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services	This option will not directly result in, or modify any abstraction (surface water or groundwater), Reduction in demand for demand for water will result in reduced requirement for abstraction at source	Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary	None	Minor beneficial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Incourse, agriculture): • Will It promote measures to enable improvements in water efficiency and assist in balancing supply and demand? • Will Ic contribute towards improving the awareness of water sustainability and its true value?	This option will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source. This may have medium to long-term impacts on consumer water usage.	Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the queblic of club? Will it protect and enhance the queblical SSSs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the temporary use ban.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	No impacts on air quality are anticipated as a result of the temporary use ban.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	The temporary use ban will not involve any increased resource use, or increased greenhouse gas emissions .	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risk associated with climate change effects (e.g. reduce the adverse effect of doughts and doubdo)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create potnitises to benefit (from potential effects of climate change? Will it make use of renewable energy?	Demand management measures are a key component of Thames Water's Dought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Long-term	Permanent	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heir settings and protect archaeologically important sites.	Will it would damage to and protect the historic environment, heritage assets and their settings, pikes and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo environmental deposits? Will be hydrological setting of water-dependent assets be altered, such as important wellink areas without and or palaeo environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	The temporary use ban is considered to have no direct impact on the historic environment, heritage assist and herir settings and archaeologically important sites. There is the potential for reduced consume demand for vater to result in reduced requirement for abstraction at source, potentially reducing the magnitude of any drought related archaeology and cultural heritage impacts.	Low (beneficial)	Low	Medium	Moderate	Medium-term	Temporary	None	Negligible beneficial
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and portect the historic environment, heritage assets and their settings, pikes and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaee environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wethand areas with potential for palee-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or engyment of hergas assests and culturally/historically important assets have been identified for this option.	n/a	n/à	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscopes? Will it work to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	The temporary use ban is considered to have no direct limpact on landcape and vulual amenity or any changes to access to the countryide or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing the magnitude of any drought related landscape or visual impacts.	Low (beneficial)	Low	Medium	Moderate	Medium-term	Temporary	None	Negligible beneficial

Drought Plan option	Ordinary I Applicatio are assum	Drought Orn in to Defra ied as part i	der to ban N to grant Nor of TWUL's di	on-Essentia 1 Essential I rought plan	al Use: Use Bans, as ning proces:	part of an o s.	ordinary drou	ight order a	application.	Savings of	between 5 a	nd 8% are	predicted to	be possible	e depending	on the time	e of year. A	conservativ	e estimate d	of savings be	etween 2.5	and 4%
Summary commentary of scheme adverse effects	No major moderate	adverse eff respective	fects are pre- ly. They may	dicted relat v also be mi	ting to the ir	nplementati effects on h	ion of the or neritage asse	dinary drou ts, such as	ıght order. visual impa	Adverse ef acts on parl	fects associa cs and garder	ted with re as and/or g	striction of f	water use a ted buildin	nd impacts o gs. All adver	on recreatio	n and touri identified a	sm assets, a re short-terr	nd business n and temp	ses/econom lorary.	y, may be n	ninor and
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None			None	None	None	None	None	None	None	None	None	None	None	None		None	None
Summary commentary of scheme beneficial effects	Beneficial	effects inc	lude a reduc	tion in the	demand for	water and a	associated ef	ficient resc	ource use, n	naintenanc	e of water fl	ows/levels,	. maintenan	ce of supply	to consume	ers, and imp	proving the	resilience of	water supp	olies to drou	ght.	
SEA Objectives Beneficial Effects Assessment Summary		None	None	None		None	None				None			None	None	None	None	None			None	

SEA	A topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence o effect (permanent/ temporary)	f effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including degranded sites of nature conservation interest and protected habitats and species (with particular regards to avoiding the defects of over- abstraction on sensitive sites, habitats and species).	Will ip protect and enhance the most important sites for nature conservation? Will ip protect and enhance aquitz, transitional and treatrial species and habitat? Will ic notribute to the sustainable management of natural habitat and ecosystems, Le within there limits and capacities taking into account climate change adaptatility? Will it affect WPD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity?	The use of an ordinary drought order to ban non-essential use is considered to have no impact on biodeventy, flora and fauna, other than to acknowledge that reduced consumer demand for water will result neduced requirement for abstraction at source (and therefore, potential for positive impacts on flow, sensitive habitat/species etc.).	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between peopl and nature have been identified for this option.	e n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of invasive Non-Native Species (INNS)?	The use of an ordinary drought order to ban non-essential use is lawly to have no in inpact on avoiding the introduction or spreading of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raised) awareness of the importance and value of the water environment for health and well-being).	Will The bit on ensure provision of access to a secure resilient access to a secure and affordable support of mixing water 20 will it help to protect or improve drinking water quality? Will it help to protect or improve drinking water quality? Will it help to protect or improve drinking water and water environment for health and well-being? Will it help to promote healthy communities and protect from trisks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/severage services)?	The use of an ordinary drought order to ban non-essential will provide water sching which will combute towards improving security of supply of water in the TWUL's supply region. Drinking water quality will not be affected by the restrictions.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including mavigation? Does it protect and enhance the green infrastructure network? 	There may be potential for minor impacts upon recreational opportunity due to any restrictions on filling of swimming pools, vatering of sports piches etc. There may be minor impacts associated with the setting of tourist attractions for example visual impacts on the grounds of popular tourist sites.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The option carries the risk of economic impact on businesses that benefit directly or indirectly from water usage (e.g. window cleaning businesses, sports and leisure facilities, garden and landscape orientated businesses.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it make use oncurage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	An ordinary drought order to ban non-essential use will reduce the demand for water in the region. It will not result in any increase in the generation of waste.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it heable efficient water resource management and ensure maintenance of water supplies?	The use of an ordinary drought order to ban non-essential use will reduce the demand for water in the region.	Low (beneficial)	High	Moderate	High	Short-term	Temporary	None	Moderate beneficial
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will it lead to a change in river flows, wetted width or river level? Will it lead to a change in river flows, wetted width or river wetter? Will it lead to changes in groundwater levels and recharge?	This option will not directly result in, or modify any abstraction (surface water or groundwater). Reduction in demand for water will result in reduced requirement for abstraction at source, minimising impacts on levels and flows.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will a first WTD compliance e.g. good ecological potential/status, prevent deterioration Of WTD status between status classes Will it minimise impacts on, or contribute to achievement of, BMMP objecthes? Will it prosent a risk to water quality droundwater, and surface water or estuarine water? Will prove water polyticio? Will prove water polyticio?	The reduction in demand for water will result in reduced requirement for advanced normal model and therefore any water quality impacts associated with surface water quality.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence o effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	This option will not directly result in, or modify any abstraction (surface water or groundwater), Reaction in demand for demand for water will result in reduced requirement for abstraction at source	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	This option will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source. This may have long term impacts on consumer water usage.	Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soli? Will it protect and enhance geological SSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the ordinary drought order to ban non-essential use.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	No impacts on air quality are anticipated as a result of an ordinary drought order to ban non-essential use.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	The use of an ordinary drought order to ban non-essential use will not involve any increased resource use, or increased greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce th adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create optimities to benefit from potential effects of climate change? Will it make use of renewable energy?	a Demand management measures are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilienc of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, hearing a soster and their settings and protect archaeologically important sites.	Will lavoid damage to and protect the historic environment, hertage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wethand areas with potential for place-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	There may be minor impacts associated with the setting of heritage assets, for example, visual impacts on registered parks and pardens and /or the grounds of listed buildings. Notwithstanding these impacts, an originary drought order to ban non-essential use is considered to have no direct impact on the historic environment, heritage assets and their settings and archaeologically important sites. There is the potential for reduced consumer domand for water to result in reduced requirement for abstraction at source, potentially reducing the magnitude of any drought related archaeology and cultural heritage impacts.	Medium (adverse) Low (beneficial)	Low (Adverse) Low (beneficial)	Medium	Moderate	Short-term	Temporary	Minor adverse	Negligible beneficial
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historica and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, hertage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will it herdrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of therate assest and curuarly/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and underlayated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it wold adverse effects and enhance designated areas on fautural beauty and distinctiveness (e.g. woodflands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	An ordinary drought order to ban non-estential use is considered to have no direct impact to inducicape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source potentially reducing the magnitude of any drought related landscape or visual impacts. This option is not anticipated to have any implications for access to the countryside.	Low (beneficial)	Low	Medium	Moderate	Short-term	Temporary	None	Negligible beneficial

Drought Plan option	Emergency An Emerge yet implen	/ Drought O ency Drough nented an E	nder: ht Order will mergency D	be used as Drought Ord	a last resort er.	, when all o	ther reason	able drough	t options h	ave been in	nplemented	. The dema	nd savings t	hat are like	ly to accrue	from an em	ergency dr	ought order	are very dif	ficult to esti	mate. TW	UL has not
Summary commentary of scheme adverse effects	Significant effects incl	adverse efi lude potent	fects are pre iial minor in	edicted rela apacts on he	ting to the ir pritage asset	nplementat s (e.g. visua	ion of the e I impacts on	mergency da a parks and g	rought ord gardens an	er, restrictir d/or ground	ng water use Is of listed b	with impar uildings).	cts for recre	ation and to	ourism asse	ts, and busin	nesses/econ	nomy (popul	lation and h	uman healti	n. Other ad	dverse
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None			None	None	None	None	None	None	None	None	None	None	None	None		None	None
Summary commentary of scheme beneficial effects	Beneficial	effects inclu	ude a reduc	tion in the c	lemand for v	vater and a	ssociated ef	ficient resou	irce use, m	aintenance	of water flo	ws/levels, ı	maintenanc	e of supply	to consume	rs, and imp	oving the r	esilience of	water supp	lies to droug	ht.	
SEA Objectives Beneficial Effects Assessment Summary		None	None	None		None	None				None			None	None	None	None	None			None	

SEA to	opics and objectives	Assessment methodology				Assessment of optio	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservatior interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	An emergency drought order is considered to have no impact on biodiversity, flora and fauna, other than to acknowledge that reduced consumer demand for water will result in reduced requirement for abstraction at source (and therefore, potential for positive impacts on flow, sensitive habitats/species etc.).	t Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will work with catchment groups in the long term to collaborate on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	An emergency drought order is likely to have no impact on avoiding the introduction or spreading of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	An emergency drought order will provide water savings which will contribute towards improving security of supply o water in the TWUL's supply region. Drinking water quality will not be affected by the restrictions.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as , public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Depending on the scale of the requirements of the required demand and supply restrictions, there could potentially be significant impacts on recreation and tourism, particularly activities that may benefit directly or indirectly from water usage (e.g. swimming pools, sports pitches, the setting of tourist attractions and visual impacts on the grounds of popular tourist sites). In the worst case scenario, publicity regarding water restrictions may cause a loss of tourism revenue, as tourists delay or cancel trips to the affected area	Medium (adverse)	High	Medium	Moderate	Short-term	Temporary	Major adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Depending on the scale of the requirements of the required demand and supply restrictions, there could potentially be significant impacts on businesses/economy, particularly those that benefit directly or indirectly from water usage (e.g. window cleaning businesses, sports and leisure facilities garden and landscape orientated businesses.	Medium (adverse)	High	Medium	Moderate	Short to medium-terr	n Temporary to Permanent	Major adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. susplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An emergency drought order to ban non-essential will reduc the demand for water in the region. It will not result in any increase in the generation of waste.	e Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary to permanent	None	Minor beneficial

SEA to	ppics and objectives	Assessment methodology				Assessment of optio	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	The use of an emergency drought order will reduce the demand for water in the region.	Low (beneficial)	High	Moderate	High	Medium-term	Temporary to permanent	None	Moderate beneficial
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	This option will not directly result in, or modify any abstraction (surface water or groundwater). Reduction in demand for water will result in reduced requirement for abstraction at source, minimising impacts on levels and flows.	Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary	None	Minor beneficial
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The reduction in demand for water will result in reduced requirement for abstraction at source and therefore any water quality impacts associated with surface water quality.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	This option will not directly result in, or modify any abstraction (surface water or groundwater), Reduction in demand for demand for water will result in reduced requirement for abstraction at source.	Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary	None	Minor beneficial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	This option will have a beneficial impact on water, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at source. This may have medium to long-term impacts on consumer water usage.	Low (beneficial)	Medium	Medium	Moderate	Medium-term	Temporary to permanent	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the use of an emergency drought order.	r n/a r	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	No impacts on air quality are anticipated as a result of the use of an emergency drought order.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	The use of an emergency drought order use will not involve any increased resource use, or increased greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA to	opics and objectives	Assessment methodology				Assessment of optio	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Demand management measures are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There may be minor impacts associated with the setting of heritage assets, for example, visual impacts on registered parks and gardens and /or the grounds of listed buildings. Notwithstanding these impacts, an ordinary drought order to ban non-essential use is considered to have no direct impact on the historic environment, heritage assets and their settings and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing the magnitude of any drought related archaeology and cultural heritage impacts.	Medium (adverse) Low (beneficial)	Low (Adverse) Low (beneficial)	Medium	Moderate	Medium-term	Temporary	Minor adverse	Negligible beneficial
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultura assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their l settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	An ordinary drought order to ban non-essential use is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at source, potentially reducing the magnitude of any drought related landscape or visual impacts. This option is not anticipated to have any implications for access to the countryside.	Low (beneficial)	Low	Medium	Moderate	Medium-term	Temporary	None	Negligible beneficial

Drought Plan option	North Lone Artificial restored for Recharges reduced. C	don Artifici echarge (Af use at a lat scheme (CH Over extend	al Recharge R) is the tech ter date, wh IARS), which ded periods	Scheme: nnique of in en it is abst n is essentia of use (mor	creasing the racted eithe Ily a subset e than 16 m	e rate of recl er at or down of NLARS wi nonths) the s	harge of an a nstream froi ith slightly d icheme will	aquifer whi m the recha ifferent ope require exte	ch generall Irge site. AR erational ru ended peric	y contains r R is based or Iles) 48 bore ods of recha	easonably go n overall cato choles along rge. Therefo	bod quality v chment wat the Lee Val re yield is v	water and f er balances ley are invo ulnerable to	irom which ; ;, and is use lved. The cu o severe mu	groundwate d to preven urrent peak llti-year dro	er abstractio t over-abstr yield for NL ughts or suc	n already or action of na ARS is 190N ccessive dro	ccurs. Treate tive ground Al/d, howev ughts.	ed water is water. Toge er, after su	pumped int other with C stained use	to the aquif Chingford Ar yield would	er and tificial I be
Summary commentary of scheme adverse effects	Adverse ei result of ti	ffects ident he addition	ified are ass al pumping	sociated wit and treatm	th energy us ent require	se and mater ments.	ials require	d for the re-	-abstractior	n of stored v	water and its	: treatment.	Adverse ef	ffects are als	so likely wit	h respect to	emissions t	to air (air po	illutants an	d greenhou	se gas emis	sions) as a
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None		None	None		None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Major ben	eficial effe	cts are ident	tified with r	respect to su	ustainable pr	rovision of a	large quan	tity of wate	er (at a rate	of up to 190	MI/d) durin	g periods o	f drought, a	nd improvir	ng the resili	ence of wate	er supplies t	o drought.			
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None		None	None	None	None	None	None		None	None	None

SEA topics and objectives	Assessment methodology				Assessment of option					
Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The drought option abstracts from the confined aquifer under north London and so has no impact on surface water levels. No operational impacts on SSSIs, other designated or undesignated habitats or species have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The artificial recharge option will not introduce or affect the spread of INNS, as it involves clean treated water pumped and stored in groundwater for re-abstraction.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Vill it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The drought option will help to ensure levels of service are maintained through provision of up to 190MI/d of water.	High (beneficial)	High	Medium	High	Short-term	Temporary	None	Major beneficial
2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	No impacts on recreation, tourism and navigation, or green infrastructure are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	/ High (beneficial)	High	Medium	High	Short-term	Temporary	None	Major beneficial
3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	The option utilises existing infrastructure. An increase in energy use is envisaged due to re-abstraction of aquifer-stored water. Materials would be required outside of the environmental drought period associated with the treatment of water for recharge.	Medium (adverse)	Low	Medium	High	Short-term	Permanent	Minor adverse	None
3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Groundwater levels will be drawn down during the operation of this scheme. However, the drought option abstracts from the confined aquifer and so no impact on surface water levels are anticipated. Recharge to the aquifer is made during times of surplus water supply, which is drawn from multiple sources including surface water from Rivers Lee and Thames and groundwater from New River wells. Water is drawn at times when the abstraction will cause no significant impact on surface water flows.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	AR at sites where the chemistry of the recharge water and the groundwater are compatible should not have adverse effects on groundwater quality. There is a low risk of groundwater deterioration during extended pumping under severe drought conditions. Recharge to the aquifer is made during times of surplus water supply. No impacts on water quality downstream of abstraction points are anticipated. Recharge water would be potable water sourced from local WTW.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None
4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	The option will contribute to more sustainable abstractions by undertaking recharge to the aquifer during times of surplus water supply, to allow for re-abstraction during times of drought with no significant impacts on surface water WFD status.	Low (beneficial)	Medium	Medium	High	Long-term	Permanent	None	Minor beneficial

SEA topics and objectives	Assessment methodology	1		1	Assessment of option	1	1	1	1	1
Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficia effect significance (likely to remain a reasonable mitiga
4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	With no land take and no identified hydrological impacts no effects on geology, geomorphology or soils are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
5.3 To promote a catchment-wide approach to	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have	n/a	n/a	n/a	n/a	n/a	n/a	None	None
catchment land management. 6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	been identified for this option. An increase in emissions is envisaged due to the re-abstraction of aquifer-stored water. The boreholes associated with the drought option are located in the London Boroughs of Enfield and Haringey, both of which have declared AQMAs for nitrogen dioxide and particulate matter. The local area surrounding some of the boreholes may be urban.	Medium (adverse)	Medium	Small	Low	Short-term	Temporary	Moderate adverse	None
6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	An increase in emissions is envisaged due to the re-abstraction of aquifer-stored water. Therefore there will be a associated short term increase in greenhouse gas emissions associated with the additional pumping and treatment requirements. An increase in energy use, emissions and CO ₂ are also envisaged outside of the environmental drought period associated with the provision, treatment and storage of water for recharge.	Medium (adverse)	Low	Medium	High	Short-term	Temporary	Minor adverse	None
6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	High (beneficial)	High	Medium	High	Short-term	Temporary	None	Major beneficial
7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	Abstraction from the boreholes is within existing licence limits. In order for the drought option to be feasible requires maintaining groundwater levels at the abstraction locations via Artificial Recharge. Over the long term the option is not anticipated to adversely effect the historic environment, sites of archaeological or cultural heritage importance or palaeo-environmental remains or their setting.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
8.1 To protect, enhance the quality of and improve access to designated and undesignated andscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	With no construction requirements, long term adverse hydrological effects there will be no adverse effects to the quality or access to designated or undesignated landscapes, townscapes and the countryside.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Thames Ga TGWTW is a maximur increased 1	iteway Wat a desalinat n output of to full outp	ter Treatmer tion plant th f 150 Ml/d. 1 out from zero	nt Works (Ti iat uses brai There is an (> output.	'GWTW): ckish water Operating A	abstracted f	irom the Tha	ames Tidew e of the sch	ay and trea eme. The T	its the wate GWTW wou	er to potable ıld take betv	standard. veen 4-6 w	The source h reeks to ram	nas an abstra p up to full d	action licen output, how	ce for 200 N vever the sc	VII/d peak ar :heme is mai	nd 200 MI/d intained in ត	average, ar	nd the wate adiness so i	r treatment t does not r	t plant has need to be
Summary commentary of scheme adverse effects	The scale c greenhous should be :	of water ab e gas emiss short term	istraction, tre sions. The tre and tempor	eatment inc eatment pro ary, assumi	cluding RO, i ocess would ing the plant	and waste si I also have n I was only ra	tream pump ninor waste Imped up to	oing require manageme o full output	d for imple nt impacts, : in drought	mentation , due to disc situations.	of this optio charge of bri	n will have ne from th	moderate a e desalinatio	dverse effec n plant and	ts on air en generation	nissions, mo	oderate effe from clarific	ects on resou	ırce consurr iltration uni	nption, and I	minor effec 1embranes.	ts on Impacts
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None					None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Use of the	TGWTW w	rould have m	1ajor benefi	icial effects	regarding m	aintenance	of supply re	liability in	drought cor	nditions thro	ugh provis	ion of up to	150MI/I sup	ply, the ava	ailability of	which is not	t influenced	by the effe	cts of droug	ht.	
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No operational impacts of the option on European designated sites have been identified. Impacts on flows are negligible and th waste stream is released via STW effluent outfall so that it is diluted by the effluent from Beckton STW before discharge to th Thames. Dilution and dispersion were appropriately considered i the design of the TGWTW, and the discharge is a small volume when compared to that in the tideway. Compliant intake screens are in place. Therefore no operational impacts on SSSIs, other designated or undesignated habitats or species have been identified.	n/a e n	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The desalination option will not introduce or affect the spread of INNS, as impacts on flows are negligible and the waste stream is released via STW effuent outfalls on that it is diluted by the effluent from Beckton STW before discharge to the Thames. Dilution and dispersion were appropriately considered in the design of the TGWTW.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being?	The drought option will help to ensure levels of service are maintained through enabling provision of 150Ml/d of water.	High (beneficial)	High	Medium	High	Short-term	Temporary	None	Major beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network?	 The drought option is not expected to impact on other users, including recreation, tourism and navigation. 	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	High (beneficial)	High	Medium	High	Short-term	Temporary	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	Energy use required for water abstraction, treatment including RO, and waste stream pumping is considered significant.	High (adverse)	Low	Medium	Medium	Short-term	Temporary	Moderate adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	The RO process would produce a waste stream of approximately one third (75Ml/d) of the initial intake (200Ml/d), which would be composed of a high concentration of salts and other contaminants removed from the raw water. The darification and filtration units and RO membranes would be backwashed periodically to prevent clogging. Sludges produced by this proces would require disposal.	Low (adverse)	Low	Medium	High	Short-term	Temporary	Negligible adverse	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	There is the potential for changes to estuarine flow, including at low water spring tides. However, any potential impacts are considered negligible.	Low (adverse)	Low	Low	Medium	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	There is the potential for a change in estuarine water quality due to discharge of the concentrated waste stream. However this is mitigated through the release of the waste stream via STW outflows so that it is diluted by the effluent from Beckton STW before discharge to the Thames. Dilution and dispersion were appropriately considered in the design of the TGWTW and therefore adverse effects to the Tideway and WFD status are considered negligible.	Low (adverse)	Low	Low	Medium	Short-term	Temporary	Negligible adverse	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it freework the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	The option will not affect the sustainability of other surface wate or groundwater abstractions.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	No impacts on land use and geology are anticipated. The plant has already been commissioned.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	An increase in air emissions is envisaged due to the amount of power required for water abstraction, treatment including RO, and waste stream pumping. TGWTW is in relatively (dose proximity (less than 2km) to Newham AQMA, declared with respect to nitrogen dioxide and particulate matter (therefore considered of medium sensitivity to the effects). However, there is an agreement with London Borough of Newham, as part of the planning conditions, to buy the same amount of energy used at	Medium (adverse)	Medium	Small	Low	Short-term	Temporary	Moderate adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	There will be a significant volume of greenhouse gas emissions associated with this drought option due to the amount of power required for water abstraction, treatment including RO, and waste stream pumping. However, the fuel will be derived from renewable source and electricity generated on site.	Medium (adverse)	Low	Medium	Medium	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy?	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of wate supplies to drought.	High (beneficial)	High	Medium	High	Short-term	Temporary	None	Major beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	The drought option is not anticipated to impact any sites of archaeological or cultural heritage importance or palaeo- environmental remains.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically importan assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	No impacts on landscape and visual amenity are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Hoddesdoı The Hodde discharged 12.5MI/d i	n Transfer S Isdon Transi I to augmen In any mont	icheme (Rivi ifer Scheme 1t flow in th th. The impl	er Lee Flow is an indire ie River Lee, Jementatior	Augmental ct re-use sc , which will 1 time for th	tion): :heme that ir increase the nis supply-sir	nvolves trans ≥ volume of v de measure i	sferring flor water in the is between	w from Dee e River Lee (14-28 days.	phams STW diversion cl	/ to Rye Mea hannel and a	ads STW for Illow increas	treatment (sed abstract	via an 18.9k tion during _l	m, 600mm (periods of d	diameter pij Irought. It ha	peline and a as an estima	ı new sewaş ıted net ber	ge pumping nefit to the	station. Tre London wat	ated water er resource	would be system of
Summary commentary of scheme adverse effects	There is pc	itential for a	a minor red	luction in fle	ow in this re	each. All oth	er adverse e	ffects iden!	tified were :	negligible i	n significanc	e, and all ad	lverse effec	ts are short	-term and to	emporary.						
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None					None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate resilience (beneficial e of water su	effects are a pplies to dro	issociated w ought.	vith mainte	nance of wa	ter supply, a	ınd minor b	eneficial efi	fects are ex	spected with	regard to p	romotion o	f sustainabl	e managem	ent of wate	r resources	by enabling	; reuse of tri	eated water	r, and impro	ved
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None		None	None	None	None	None	None		None	None	None

SI	A tonics and objectives	Assessment methodology				Assessment of ontion					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	f effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No operational impacts of the option on European designated sites were identified. No operational impacts on SSSIs, other designated or undesignated habitats or species have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The scheme is unlikely to have an impact on introduction or spread of INNS, as any present would be removed during water treatment.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The drought option will help to ensure levels of service are maintained through enabling provision of 12.5MI/d of water in any month.	d Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities, such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	The additional effluent discharge from Rye Meads STW would be small relative to that that would already be being discharged . No impacts on recreation are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An minor increase in energy use is envisaged due to pumping required to transfer effluent from Deephams STW to Rye Meads STW.	I Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	An negligible increase in production of waste associated with a dditional abstraction and treatment of water may occur. This has been assessed as negligible considering TWUL send the majority of water treatment waste to beneficial use.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The effluent discharge from Rye Meads would be enhanced by a relatively small volume in comparison with the volume that is discharged under normal operating conditions. However, there would be a minor reduction in flow in the lower River Lee downstream of the Deephams discharge, due to transfer of 12.5MI/d of effluent.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The effluent discharge from Rye Meads would be enhanced by a relatively small volume in comparison with the volume that is discharged under normal operating conditions. However, there is potential for adverse water quality impacts in the lower River Lee downstream of Deephams discharge as a result of reduced flows and dilution of other water quality pressures.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	The option will contribute to sustainable management of water resources by enabling reuse of treated water in times of drought.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	With no land take and no identified hydrological impacts no effects or geology, geomorphology or soils are anticipated.	n n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	Small increases in air emissions are envisaged due to pumping and water treatment. However, the area of influence does not include any AQMAs, so effects are expected to be negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non- drought conditions? 	A small increase in energy use and greenhouse gas emissions is envisaged due to pumping and water treatment.	Low (adverse)	Low	Medium	High	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The Rye House moated enclosure and gatehouse scheduled monument is within the area of influence. However, the scheme does not require any construction (the pipeline has already been constructed) and effects on flow in surface water resources are no more than minor, thus no archaeology and cultural heritage are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	The area of influence is within the London Area Greenbelt. However, the scheme does not require any construction (the pipeline has already been constructed) and effects on flow in surface water resources are no more than minor, thus no impacts on landscape and visual amenity are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Chingford Artificial re stored for The Chingf be used ur from four side measu	Artificial Re echarge (Af use at a lat ford Artifici nder any co boreholes i ure is 7-14 (echarge Sche R) is the tech ter date, who ial Recharge onditions alti in the Lee Va days.	eme (CHARS inique of inc en it is abstr Scheme is a rough its us alley. The no	i): creasing the racted eithe a similar sch e is primaril ormal opera	e rate of reci er at or down eme to Nori ly to meet p ting strateg	narge of an a Instream from th London A eak demann y for CHARS	aquifer whit m the recha Intificial Rec ds and drou i is to suppo	ch generally Irge site. AR harge Scher ght demand rt meeting	/ contains ro is based or me (NLARS) is. CHARS w peak demai	easonably go n overall cate North Lond vhich is esse nds in non-d	ood quality chment wat on Artificial ntially a sul rought peri	water and f ter balances Recharge S Isset of NLAR ods, but it is	rom which g , and is used cheme but IS with sligh s also a sour	groundwate d to prevent on a smaller tly differen ce that wou	r abstractio : over-abstra : scale. It is i t operationa ild be used i	n already or action of na not restricte al rules. The in the event	ccurs. Treat tive ground ed to use un scheme is l t of drought	ed water is Iwater. Ider the NLA licensed for t. The imple	pumped int ARS Operati 16MI/d ma mentation t	to the aquife ng Agreeme uximum abst time for this	er and ent but can traction s supply-
Summary commentary of scheme adverse effects	Minor adv quality. Ho	erse effect: owever, all	s may occur adverse effe	due to air e ects identifie	missions as ed are short	sociated wit	h energy us emporary.	e for the re	-abstraction	n of stored n	water and it	s treatment	. Negligible	adverse im	pacts are po	ssible with	respect to g	greenhouse	gas emissio	ns, materia	l use and gr	oundwater
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None		None	None		None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial	effects are in	dentified wi	th respect t	o sustainab	le provision	water (up t	o 12MI/d),	thus provid	ling improve	ments in th	e resilience	of water su	ipplies to dr	ought.						
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None		None	None	None	None	None	None		None	None	None

	SFA topics and objectives	Assessment methodology				Assessment of optio	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to instruct the function to be that percent is the supervision of th	The drought option abstracts from the confined aquifer under north London and so has no impact on surface water levels. No operational impacts on SSSIs, other designated or undesignated habitats or species have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The artificial recharge option will not introduce or affect the spread of INNS, as it involves clean treated water pumped and stored in groundwater for re-abstraction.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health 	The drought option will help to ensure levels of service are maintained through provision of up to 16MI/d of water.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	No impacts on recreation, tourism and navigation, or green infrastructure are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	² The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply fo customers and economic activity.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	The option utilises existing infrastructure. An increase in energy use is envisaged due to re-abstraction of aquifer- stored water. Materials would be required outside of the environmental drought period associated with the treatment of water for recharge.	Low (adverse)	Low	Medium	High	Short-term	Permanent	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Groundwater levels will be drawn down during the operation of this scheme. However, the drought option abstracts from a confined aquifer and so no impact on surface water levels are anticipated. Recharge to the aquifer is made during times of surplus water supply, which is drawn from multiple sources including surface water from Rivers Lee and Thames and groundwater from New River wells. Water is drawn at times when the abstraction will cause no significant impact on surface water flows.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it prevent a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	AR at sites where the chemistry of the recharge water and the groundwater are compatible should not have adverse effects on groundwater quality. There is a low risk of groundwater deterioration during extended pumping under severe drought conditions. Recharge to the aquifer is made during times of surplus water supply. No impacts on water quality downstream of abstraction points are anticipated. Recharge water would be potable water sourced from local WTW.	Low (adverse)	Low	Medium	Low	Medium-term	Temporary	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	The option will contribute to more sustainable abstractions by undertaking recharge to the aquifer during times of surplu- water supply, to allow for re-abstraction during times of drought. Abstraction during drought events will be from the confined chalk aquifer, so no adverse effects on other water resources are anticipated.	Low (beneficial)	Medium	Medium	High	Short-term	Permanent	None	Minor beneficial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Topic Ob Soil, geology and land use 5.1 the Soil, geology and land use 5.2 function Soil, geology and land use 5.3 function	Dbjective 1 To protect and enhance geology, geomorphology and the quality and quantity of soils. 2 To protect and enhance the ecosystem services anctions of land, soils and geology, including carbon	• Will it avoid damage to and protect geologically important sites? • Will it protect and enhance the quality of solis?	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor	Scale of effect: geographica	Certainty of	Short-	Permanence of	Residual adverse	Residual beneficial
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Soil, geology and land use 5.1 the Soil, geology and land use 5.2 functions for the Soil, geology and land use 5.3 Soil, geology and ge	.1 To protect and enhance geology, geomorphology and the quality and quantity of soils2 To protect and enhance the ecosystem services anctions of land, soils and geology, including carbon	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance the quality of soils?			(low/medium/ high)	&/or population affected (small/medium/large)	effect (low/moderate/h igh)	term/medium- term/long-term	effect (permanent/ temporary)	(likely to remain after reasonable mitigation)	effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use 5.2 functions for the sequence of t	.2 To protect and enhance the ecosystem services unctions of land, soils and geology, including carbon	Will it protect and enhance geological SSSIS of similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	With no land take and no identified hydrological impacts no effects on geology, geomorphology or soils are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use 5.3	utrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
land	3 To promote a catchment-wide approach to catchment ind management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate 6.1	1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	An increase in emissions is envisaged due to the re- abstraction of aquifer-stored water. The boreholes associated with the drought option are located in the London Boroughs of Enfield and Haringey, both of which have declared AQMAs for nitrogen dioxide and particulate matter. The local area surrounding some of the boreholes may be urban.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate 6.2	.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	An increase in emissions is envisaged due to the re- abstraction of aquifer-stored water. Therefore there will be a associated short term increase in greenhouse gas emissions associated with the additional pumping and treatment requirements. An increase in energy use, emissions and CO ₂ are also envisaged outside of the environmental drought period associated with the provision, treatment and storage of water for recharge.	Low (adverse)	Low	Medium	High	Short-term	Temporary	Negligible adverse	None
Air and climate 6.3 Clim	.3 To adapt and improve resilience to the threats of imate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural 7.1 Heritage arch	.1 To conserve and enhance the historic environment, eritage assets and their settings and protect rchaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Abstraction from the boreholes is within existing licence limits. In order for the drought option to be feasible requires maintaining groundwater levels at the abstraction locations via Artificial Recharge. Over the long term the option is not anticipated to adversely effect the historic environment, sites of archaeological or cultural heritage importance or palaeo- environmental remains or their setting.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural 7.2 Heritage app sett dist	.2 To protect, enhance and manage the character and ppearance of historic and cultural assets and their ettings including maintaining and strengthening local istinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual 8.1 Amenity to d and	.1 To protect, enhance the quality of and improve access designated and undesignated landscapes, townscapes nd the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	With no construction requirements, long term adverse hydrological effects there will be no adverse effects to the quality or access to designated or undesignated landscapes, townscapes and the countryside.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Reduction To reduce The Lower relative to mean that reductions reductions	in the Lowe the minimu Thames Of the prevail Tames Wa is in the TTF is to 400MI/	est residual um pass-forn perating Agr ling seasona ter's abstrac in a stepwis d and then 3	flow (300N ward flow o reement (L1 Il reservoir ctions canno se fashion. 300MI/d . In	MI/d to 200N over Tedding TOA) provide storage of th ot cause the Each step re n advance of	II/d): ton Weir to a guide to the Thames Va pass-forwar quires the in a drought p	200MI/d. day-to-day d alley and Led d flow to dro nplementati ermit applic	operational e Valley res op below th ion of great :ation, whic	decisions c ervoir grou he TTF agree er demand h would be	on Thames ps. Four pa ed for that control me to reduce	Waters abst ass-forward day. Norma easures by T the TTF to 2	raction from flow values Illy there is a WUL, for exa 00MI/d, TW	n the lower are include a minimum ample, hose UL would a _l	River Tham d in the LTC residual flo pipe bans. gree with th	es. The agro A, known a w of 800MI, This stepwi ne Environm	eement is b s Teddingto /d. Howeve ise reduction isent Agency	ased on ens in Target Flo r, as the vol n progresse to adopt th	ouring that s pws (TTF) . ume of ava s from 8001 ne lower TT	sufficient flo Under norm ilable reserv VII/d to 6001 F of 200MI/i	w passes ov al periods, f voir storage MI/d, follow d as set out	rer Tedding the LTOA co reduces, th red by furth in the M2 l	ton weir, Inditions is triggers Ier icence.
Summary commentary of scheme adverse effects	If impleme effects are Moderate navigatior	ented, the d e predicted adverse eff	drought opti on water qu fects are exp	on would h uality in the pected on a	ave modera fluvial Than range of aq	te adverse e nes (reduced uatic ecologi	ffects on flo dissolved o cal receptor	ows in the lo xygen satur rs, such as n	owest reach ration and r nacroinvert	es of the fl educed ph ebrates, m	uvial Thame osphate dilu acrophytes a	es, mainly in Ition), which and fish. The	terms of ve a may exace e adverse ef	locity reduc rbate wate fects includ	ction. Fresh r quality issi e those assi	water flows ues in the u pociated with	to the uppe pper Tidewa n fish, includ	er Thames 1 ay with the ding migrati	Fideway will potential fo on. Modera	reduce. Mo or moderate te adverse e	oderate adv adverse efi effects may	erse iects. occur on
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None			None	None		None	None			None		None	None
Summary commentary of scheme beneficial effects	If impleme resilience	ented, the c of water su	Irought opti pplies to dro	on would h ought.	ave a major	beneficial ef	ffects for po	pulations a	nd human H	nealth in te	rms of ensu	ring supply o	of water and	d other cust	omers/busi	nesses. Maj	jor beneficia	al effects ar	e also expe	cted in rega	rd to impro	ved
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Moderate to major hydrological reductions in velocity upstream of Teddington Weir are expected, as are moderate water quality effects in the tideway (forms part of the Thames Estuary Marine Conservation Zone). The result is a wide range of effects on a large number of ecological receptors. Designated sites identified as potentially impacted at lower pass forward flows (Langham Pond SSS), Dumsey Meadow SSSI and Syon Park SSSI) are identified as of low sensitivity in the Lower Thames EAR and therefore are considered to be of even lower sensitivity with respect to this drought option. Adverse effects relating to freshwater species of the lowest reaches of the fluvial River Thames and the transitional species of the Tideway range from minor to moderate. The types of effects are greater regarding fish communities. Moderate temporary adverse effects include localised water quality deterioration, increased predation, habitat fragmentation and impacts on migration affecting species such as migratory salmonids, European eel, lamprey and brown trout. Moderate adverse effects to fish communities relate to a moderate risk of deterioration regarding the fish component of the WFD waterbody GBS30603911403 Thames Upper. Moderate adverse effects to macroinvertebrates are also identified.	Moderate (adverse)	Moderate	Large	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and 	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non- Native Species (INNS)?	The changes to flow velocity and water quality as result of the drought option are considered likely to have minor effects on the distribution of a wide range of INNS, including zebra mussel, Chinese mitten crab and spionid worm (<i>Marenzelleriawiréni</i> <i>sp.</i>)	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it health a compath bealthy computing and	Implementation of the drought option will help to maintain essential public water supplies (provision of up to an additional 100Ml/d of water) during drought conditions and therefore help maintain public health.	High (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Major beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network?	The River Thames is highly valued for its navigational and recreational uses. In the fluvial River Thames, restrictions on lock use would be imposed both as a result of natural drought conditions (to maintain critical water levels) and the requirements to keep Moseley Weir and Teddington Weir closed (at least for most of the time) in order for the drought option to operate effectively. There may be impacts on boats that are navigating between the Tideway and the lower freshwater River Thames. There is also potential for additional risks to navigation as a result of increased sedimentation in the navigation channel in the upper Tideway as fewer and fewer vessels use the navigation channel, with implications on maneourvability for larger boats. Overall, impacts on navigation are considered moderate adverse. Anglers may be affected by any reduction in the presence of fish species as a result of the adverse impacts to fish communities.	Moderate (adverse)	Medium	Large	Moderate	Short-term	Temporary	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. However, adverse impacts to navigation are expected, which may present temporary adverse effects to the businesses such as marinas, passenger boats and hire boat operators.	Medium (adverse) High (beneficial)	Medium (adverse) High (beneficial)	Medium	Moderate	Short-term	Temporary	Moderate adverse	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling?	An increase in abstraction (100MI/d) is likely to result in a proportional increase in the use of energy, chemicals and generation of waste. However, this is a temporary increase in abstraction that occurs at high volumes under normal operating conditions.	High (adverse)	Low	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The drought option would have a moderate to major hydrological impact. The lowest reaches of the River Thames (Datchet abstraction to Teddington Weir) would experience a reduction in river flow during natural low flow periods. As the river is impounded with river levels (and wetted area) maintained for navigation, the flow reduction would only lead to a reduction in velocity, which is considered major from Penton Hook lock to Teddington Weir. The drought option would result in a major reduction in freshwater flow that enters the Upper Tideway over Teddington Weir. This would have limited impact on river levels, however, due to the reduction in freshwater flow, there would be estuarine water quality implications (decreasing with distance downstream to London Bridge). Overall significance is considered to be moderate as implementation of the option is within normal licensed operations.	Moderate (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it affect water quality compliance? 	In the adversely impacted reach of the fluvial River Thames there would be a minor to moderate water quality risk for dissolved oxygen concentration (increasing downstream) during drought option implementation. Implementation of the drought option could have moderate risk of short-term deterioration to related freshwater WFD waterbodies (GB106039023231 and GB106039023232) in terms of the macroinvertebrate community. The drought option would result in a major reducting in freshwater flow that enters the Upper Tideway over Teddington weir, resulting in estuarine water quality implications, however, some flows would be maintained. The risk to dissolved oxygen is considered moderate to in the impacted reach of the Thames Tideway. Consented discharges to the River Thames and its tributaries are considered to present moderate pressures in the lowest reaches of the fluvial Thames (ammonia and dissolved oxygen) and upper Tideway (dissolved oxygen).	D Moderate (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and sensices (including anticulture)?	Local resource availability is described as 'water not available for licensing'. However, the drought option will not reduce the amount of water available for other licence holders to abstract in the freshwater River Thames and it is not anticipated that the drought option will limit the feasibility of other abstractors in the Tideway.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
water	improvement in water efficiency.	water efficiency and assist in balancing supply and demand?	identified for this option.	II/a	ii/a	ii/a	11/a	ii/a	ii/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and	Minor impacts on geomorphology are anticipated with respect to in-channel structures, such as weirs/locks, and their influence on sediment dynamics by creating ponded areas upstream of structures. It is anticipated that there would be low amounts of sediment in transport during a drought.	Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No impacts on land use or soil are anticipated, and no opportunities to enhance ecosystem services have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	This measure would cause temporary increases in emissions associated with the abstraction and treatment of water (up to 100MI/d). The option is in close proximity (or within) a number of AQMAs, including Spelthorne AQMA and Richmond AQMA.	Medium (adverse)	Medium	Small	Low	Short-term	Temporary	Moderate adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced	This measure would cause temporary increases in energy use and greenhouse gas emissions associated with the abstraction and treatment of water (up to 100MI/d).	Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	High (beneficial)	High	Small	High	Short-term	Temporary	None	Major beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? 	The length of the impacted reach of the River Thames includes a wealth of archaeology and cultural heritage assets. However, water levels will not be significantly affected adjacent to these assets due to the requirement to maintain levels for navigation. Assuming water levels are maintained, the potential impact of this drought option on the setting of the heritage assets associated with the Thames, including sub-surface water dependent heritage assets, is considered negligible.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	No designated landscape areas are within the area of influence, and no effects on non-designated areas of natural beauty or access to values areas of landscape character are anticipated. There is no land take associated with the scheme.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Earlier red The Lower relative to mean that reductions reductions The Earlier	uction in re Thames Op the prevail Tames Wa in the TTF s to 400MI/ r reduction	esidual flow perating Agr ling seasona iter's abstrac 'in a stepwis /d and then : in residual 1	on the LTCI reement (LT al reservoir : ctions canno se fashion. 300MI/d . flow on the	D: FOA) provide storage of th ot cause the Each step re LTCD droug	Is a guide to he Thames Vi pass-forwar quires the in th option pro	day-to-day o alley and Le d flow to dr nplementat ovides gain i	operational e Valley res rop below th tion of great in abstractio	decisions o ervoir grou ne TTF agre eer demand on capabilit	on Thames ips. Four pa ed for that control me cy that wou	Waters abst ass-forward day. Norma easures by T ld be equal f	raction from flow values illy there is WUL, for ex to the differ	n the lower are include a minimum ample, hose rence in red	River Tham d in the LTC residual flo epipe bans. uction agree	es. The agr A, known a w of 800Ml This stepwi ed at each s	eement is b is Teddingto /d. Howeve ise reductio tage on the	based on ens on target flo er, as the vol on progresse e LTCD, for th	uring that s ws (TTF) . U ume of avai s from 800M ne period wh	ufficient flo Inder norma ilable reserv AI/d to 6001 hen that flo	w passes or al operation roir storage VII/d, follov w band is o	ver Teddingt , the LTOA (reduces, th ved by furth perable.	ton weir, conditions is triggers ier
Summary commentary of scheme adverse effects	If impleme extensions Tideway. <i>F</i> issues in th may occur	ented, the m s of what cc As a result t he upper Ti- on navigat	measure wor ould occur u there is pote ideway. Min tion as a rest	uld result ir Inder baseli Ential for mi Ior adverse ult of exten	n minor adve ne condition inor adverse effects are e ıded periods	erse effects d is. In addition effects rega expected on a of restrictio	lue to reduc n to the flov rding exten a range of a ms on lock u	ced flows pa w impacts (r Ided periods quatic ecolc use than wo	issed forwa nainly in th of water q ogical recep uld have of	ird over Teo ie form of v juality impa itors, such a ccurred wit	ddington We relocity redu acts in the flu as macroinve hout the opt	eir earlier ar ction) in the uvial Thame ertebrates, H cion.	nd for longe e fluvial Lov es (reduced macrophyte	r than would ver Thames, dissolved ox s and fish, a	d be the cas minor adve ygen satura s a result o	se without i erse effects ation and re f the extend	implementat relate to the educed phos ded periods	tion of the n e reduction phate diluti of flow and	neasure. Th in freshwat on), which i water quali	erefore, all er flows to may exacerl ity impacts.	identified e the upper T bate water (Minor adve	:ffects are 'hames quality ≥rse effects
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None			None	None		None	None			None		None	None
Summary commentary of scheme beneficial effects	If impleme	ented, the r	measure wo	uld have a ı	moderate be	aneficial effe	cts regardin	ıg ensuring :	supply of w	ater to cus	tomers and l	businesses.	Minor bene	ficial effect	s are also e:	xpected thr	ough improv	ved resiliend	ce of water	supplies to	drought.	
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological 	The measure would allow greater abstraction from the Lower River Thames to be brought forward by a short period. Changes in abstractions and resulting effects on hydrology (velocities and water quality) have the potential to impact on macroinvertebrates, macrophytes and fish for a slightly longer duration than would have occurred without this drought option. Considering the effects are limited to an extension of what would occur without the option the sensitivity of the system is considered moderate and overall effects are considered minor adverse.	Low (adverse)	Moderate	Large	Moderate	Short-term	Temporary	Minor adverse	None
Biodiversity, flora and fauna	 1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy. 	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and 	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non- Native Species (INNS)?	As the anticipated effects of the measure are limited to extended durations of each step reduction in TTF, which would occur anyway, potential effects regarding INNS are considered to be negligible.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water nuality?	Implementation of the drought option will help to maintain essential public water supplies (earlier availability of increased abstraction rates).	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	The River Thames is highly valued for its navigational and recreational uses. In the fluvial River Thames, restrictions on lock use would be imposed as a result of natural drought conditions (to maintain critical water levels). The drought option would extend the duration of these impacts on navigation. Considering effects are limited to an extension of what would occur without implementation of the measure, the sensitivity of navigation related receptors to the effects is considered low.	Moderate (adverse)	Low	Large	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Implementation of the drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. However there is potential for minor adverse impacts to navigation which may present temporary adverse effects to the businesses such as marinas, passenger boats and hire boat operators.	Moderate (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Medium	Moderate	Short-term	Temporary	Minor adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and	The earlier increase in abstraction is likely to result in a small proportional increase in the use of energy, chemicals and generation of waste. However, this is a temporary increase in abstraction that occurs at high volumes under normal operating conditions.	1 Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The drought option would extend the duration of hydrological effects associated with each step-wise reduction of pass-forward flows over Teddington Weir. Therefore, periods of reduced velocity in the lowest reaches of the River Thames (Datchet abstraction to Teddington Weir) would be extended, as would reduced freshwater flows into the Upper Tideway over Teddington Weir.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	In the adversely impacted reach of the fluvial River Thames, there would be extensions to the duration of water quality effects associated with each step-wise reduction in TTF. At the lowest TTFs (300MI/d) there could be increased risk of short- term deterioration to related freshwater WFD waterbodies (G8106039023231) and G8106039023232) in terms of the macroinvertebrate community. The drought option would result increased duration of reduced freshwater flows into the Upper Tideway over Teddington weir, resulting in extended periods of estuarine water quality implications.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of sunnly with 	The measure will not reduce the amount of water available for other licence holders to abstract in the freshwater River Thames, and the measure is not expected to limit the feasibility of other abstractors in the Tideway.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	other functions and services (including agriculture)? • Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

itive receptors (assuming good Commentary Magnitude of (low/medium/ morphology are anticipated, these relate :ks and their influence on sediment ild be low amounts of sediment in transport Low (adver ited. n/a ited. n/a ithere are no opportunities for catchment- proximity to or within a number of AQMAs, AQMA. However, considering the drought d abstraction, overall effects are Low (advertice)	de of effect dium/high) Value/ sensitivity of receptor (low/medium/ high) v (adverse) Medium n/a n/a n/a n/a v (adverse) Low	Scale of effect: geographical (&/or population affected (small/medium/large) Medium n/a n/a Small	Certainty of effect (low/moderate/h ter index in	nort- rm/medium- rm/long-term Short-term n/a	Permanence of effect (permanent/ temporary) Temporary n/a	Residual adverse effect significance (likely to remain after reasonable mitigation) Minor adverse	Residual beneficial effect significance (likely to remain after reasonable mitigation) None
omorphology are anticipated, these relate Low (adver cks and their influence on sediment	v (adverse) Medium n/a n/a n/a n/a v (adverse) Low	Medium n/a n/a Small	Moderate n/a n/a Low	Short-term n/a n/a	Temporary n/a n/a	Minor adverse	None
ated. n/a n/a d there are no opportunities for catchment- n/a with the additional abstraction and proximity to or within a number of AQMAs, 1AQMA. However, considering the drought d abstraction, overall effects are	n/a n/a n/a n/a v (adverse) Low	n/a n/a Small	n/a n/a Low	n/a n/a	n/a n/a	None	None
d there are no opportunities for catchment- I with the additional abstraction and proximity to or within a number of AQMAs, J AQMA. However, considering the drought d abstraction, overall effects are	n/a n/a v (adverse) Low	n/a Small	n/a Low	n/a	n/a		1
J with the additional abstraction and Low (adver proximity to or within a number of AQMAs, J AQMA. However, considering the drought d abstraction, overall effects are	v (adverse) Low	Small	Low			None	None
				Short-term	Temporary	Negligible adverse	None
s emissions would be associated with the Low (adver-	v (adverse) Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
it of Thames Water's Drought Plan. The Low (benefit water supplies to drought.	(beneficial) High	Small	High	Short-term	Temporary	None	Minor beneficial
ver Thames includes a wealth of towever, water levels will not be jets due to the requirement to maintain is are maintained, the potential impact of ieritage assets associated with the Thames, iritage assets, is considered negligible.	v (adverse) Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
, understanding or enjoyment of heritage n/a t assets have been identified for this	n/a n/a	n/a	n/a	n/a	n/a	None	None
	n/a n/a	n/a	n/a	n/a	n/a	None	None
	he area of influence, and no effects on	he area of influence, and no effects on n/a n/a access to values areas of landscape take associated with the scheme.	he area of influence, and no effects on n/a n/a n/a n/a access to values areas of landscape take associated with the scheme.	he area of influence, and no effects on access to values areas of landscape take associated with the scheme.	he area of influence, and no effects on access to values areas of landscape take associated with the scheme.	he area of influence, and no effects on access to values areas of landscape take associated with the scheme.	he area of influence, and no effects on access to values areas of landscape take associated with the scheme. None

Drought Plan option	East Londo ELRED con saving/dej	on Resource nprises a nu ployable ou	e Developmu umber of gro ttput 18MI/4	ent (ELRED): bundwater a d average ar	: abstraction nd 20.57Ml	locations alo /d peak.	ong the route	e of the Cha	annel Tunne	el Rail Link v	which can b	e used to me	et water su	ipply dema	nd in Londo	n, as well as	s contribute	to the man	agement of	groundwat	er level rise	s. Demand
Summary commentary of scheme adverse effects	Negligible emissions) and tempo	adverse efi) as a result prary.	fects identif of the addi	ied are asso tional pump	ociated with bing and tre	ı energy use atment requ	and materia Jirements. T	ils required here is also	for the re-a the potenti	ibstraction ial for mino	of stored w	ater and its t y adverse ef	reatment. A	Adverse eff ner abstract	ects are also ors, howeve	o likely with er, these eff	i respect to diects are unc	emissions t ertain. All a	o air (air pol adverse effe	lutants and cts are sho	greenhouse t to mediur	e gas n-term
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None		None		None		None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial (effects are i	dentified wi	ith respect	to sustainab	le provision	of a moder	ate quantit	y of water (at a rate of	up to 21MI/	d) during pe	eriods of dr	ought, and I	minor impro	ovements in	the resilier	nce of water	supplies ta	drought.	
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE/	A topics and objectives	Assessment methodology				Assessment of optic	'n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The scheme abstracts from the confined chalk aquifer under north London and so has no impact on surface water levels. No operational impacts on SSSIs, other designated or undesignated habitats or species have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy. 	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Abstraction from the confined aquifer has no impact on surface waters and therefore will not introduce or affect the spread of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The drought option will help to ensure Levels of Service are maintained through enabling provision of 18MI/d of water. There are no construction requirements.	Low (beneficial)	High	Medium	Moderate	Medium-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	There are no construction requirements and no effects anticipated on surface water flows. No impacts of the drought option on other users of the water environment are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Moderate	Medium-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An increase in energy use and chemicals for water treatment is envisaged due to increased water abstraction. An increase in production of waste associated with additional abstraction and treatment of water would also occur.	Low (adverse)	Low	Medium	High	Medium-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Groundwater levels will be drawn down during the operation of this scheme. As the scheme abstracts from the confined chalk aquifer no impact on surface water levels are anticipated.	Low (adverse)	Low	Small	Moderate	Medium-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	There is a low risk of the scheme resulting in saline intrusion into the chalk aquifer, however, considering the distance to saline sources, no effects are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	As groundwater levels will be drawn down during the operation of this option. It is noted that the option would be operating within licence and therefore any potential impacts on other licences have been assessed, with none impacts on other licences identified	Low (adverse)	Medium	Small	Low	Medium-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of optic	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	As no impacts on surface waters are anticipated, no impacts on geomorphology are anticipated. No construction is required for implementation of this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cvcling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	There would be increases in air emissions associated with abstraction of water. The option is within close proximity of Newham AQMA.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	There would be small, short-term increases in greenhouse gas emissions associated with abstraction of water. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no construction requirements. Abstraction from the borehole is within existing licence limits and from the confined chalk aquifer with no effects on surface water levels anticipated. Therefore effects on the historic environment, heritage assets or their setting are not expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	There are no construction requirements. Abstraction from the borehole is within existing licence limits and from the confined chalk aquifer with no effects on surface water levels anticipated. Therefore no potential for effects on landscape and visual amenity are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Stratford E Stratford E SMI/d pea	Box: Box is a grou Ik. The sche	undwater so me is licens	ource in East ed for 8MI/	t London wl d but it is o	nich is run at perated at a	: low level of baseload at	f baseload o	output in or of approxim	rder to keep ately 3MI/c	o groundwat i to control g	er levels sup groundwater	pressed to levels at S	protect Str tratford Bo	atford Inter x. The optio	national Sta n available (tion. Demai during a dro	nd savings/ ught is to in	deployable ncrease the	output Up 1 output fror	o 5MI/d ave n 3MI/d to t	erage, 8MI/d.
Summary commentary of scheme adverse effects:	Minor adv	erse, tempo	orary effects	s identified	are associal	ted with emi	issions to air	(air polluta	ants) as a re	sult of the	additional p	umping and	treatment	requiremen	nts and prox	timity to sen	nsitive recep	otors (AQM/	As).			
SEA Objectives Adverse Effects Assessment Summary [completes automatically]	None	None	None	None	None	None	None		None		None		None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial e	effects are in	dentified w	ith respect t	to sustainab	le provision	of water (a	t a rate of u	ıp to 5MI/d) during peri	iods of droug	ght, and mi	nor improv	ements in th	ne resilience	e of water su	upplies to d	rought.			
SEA Objectives Beneficial Effects Assessment Summary [completes automatically]	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	topics and objectives	Assessment methodology				Assessment of opti	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it affect wFD compliance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No operational impacts of the option on European designated sites were identified by the Review of Consents. The scheme abstracts from the confined chalk aquifer under north London and so has no impact on surface water levels. No operational impacts on SSSIs, other designated or undesignated habitats or species have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Abstraction is from the confined aquifer has no impact on surface waters and therefore will not introduce or affect the spread of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 to protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through outsace or resulting from traffic or transport changes) 	The drought option will help to ensure Levels of Service are maintained through enabling provision of 8MI/d of water. There are no construction requirements.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	There are no construction requirements and no effects anticipated on surface water flows. No impacts of the drought option on other users of the water environment are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	An increase in energy use and chemicals for water treatment are envisaged due to increased water abstraction. An increase in production of waste associated with additional abstraction and treatment of water.	Low (adverse)	Low	Medium	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Groundwater levels will be drawn down during the operation of this scheme. As the scheme abstracts from the confined chalk aquifer, no impact on surface water levels are anticipated. It is noted that the option would be operating within licence and therefore any potential impacts on other licences associated with groundwater levels have been assessed, with no impacts on other licences identified.	Low (adverse)	Low	Small	Moderate	Medium term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance?	No adverse effects on surface water or groundwater quality are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	As groundwater levels will be drawn down during the operation of this option groundwater abstractions in the vicinity of the abstraction could be temporarily impacted. Further information on location and depth of abstractions would be required for a better estimate of impact. However, it is noted that the option would be operating within licence.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None

SEA	A topics and objectives	Assessment methodology				Assessment of opt	ion				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	As no impacts on surface waters are anticipated, no impacts on geomorphology are anticipated. No construction is required for implementation of this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	There would be increases in air emissions associated with abstraction of water. The option is within close proximity of Newham AQMA.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	There would be small, short-term increases in greenhouse gas emissions associated with abstraction of water. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy?	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Medium-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no construction requirements. Abstraction from is within existing licence limits and from the confined chalk aquifer with no effects on surface water levels anticipated. Therefore no potential for effects on the historic environment, heritage assets or their setting.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	There are no construction requirements. Abstraction is within existing licence limits and from the confined chalk aquifer with no effects on surface water levels anticipated. Therefore no potential for effects on landscape and visual amenity are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Old Ford: Old Ford is source is o	s a groundw operated in	vater source conjunction	in East Lon with Stratf	don which a ord Box. Th	ibstracts fro e implemen	m the confi tation time	ned chalk a is 7-14 day:	quifer. Den ;.	nand saving	s/deployabl	e output: 4.	5MI/d avera	age, 4.5MI/(d peak. This							
Summary commentary of scheme adverse effects	Minor adv temporary	verse, tempo y adverse ef	orary effect: ffects on oth	s identified her abstract	are associat ors, howeve	ed with emi r, these effe	issions to ai ects are unco	r (air pollut ertain.	ants) as a re	esult of add	litional pumj	ping and tre	atment requ	uirements a	ind proximit	ry to sensitiv	ve receptors	: (AQMAs).	There is als	o the poten	tial for minc	ər,
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None		None		None		None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial o	effects are i	dentified w	ith respect t	o maintaini	ng public he	ealth and su	staining the	economy,	as are mino	r benefits d	ue to impro	ved resilien	ice of water	supplies to	drought.			_		
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	: Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No operational impacts of the option on European designated sites were identified. The scheme abstracts from the confined chalk aquifer under north London and so has no impact on surface water levels. No operational impacts on SSSIs, other designated or undesignated habitats or species have been identified	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified for this option, however Thames Water will work with catchment groups in the long term to collaborate on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Abstraction is from the confined aquifer has no impact on surface waters and therefore will not introduce or affect the spread of INNS	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? will it help to protect or improve drinking water quality? will it raise awareness of the importance and value of the water environment for health and well-being? will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The drought option will help to ensure Levels of Service are maintained through enabling provision of 4.5MI/d of water. There are no construction requirements.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public, rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	 There are no construction requirements and no effects anticipated on surface water flows. No impacts of the drought option on other users of the water environment are anticipated. 	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An increase in energy use and chemicals for water treatment are envisaged due to increased water abstraction and the potential for the requirement to treat water of poor water quality. An increase in production of waste associated with additional abstraction and treatment of water. This has been assessed as negligible considering that the majority of water treatment waste is sent to beneficial use.	Low (adverse)	Low	Medium	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natura resources were identified for this option.	al n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will It lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Groundwater levels will be drawn down during the operation of this scheme. As the scheme abstracts from the confined chalk aquifer, na impact on surface water levels are anticipated. It is noted that the option would be operating within licence and therefore any potential impacts on other licences associated with groundwater levels have been assessed, with no impacts on other licences identified.	: Low (adverse)	Low	Small	Moderate	Medium-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Monitoring of the groundwater quality is required around the site to assess whether the site is at risk from contamination arising from th contaminated land around the site. This is principally for source protection rather than environmental impact.	e n/a						None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	As groundwater levels will be drawn down during the operation of this option groundwater abstractions in the vicinity of the abstraction could be temporarily impacted. Further information on location and depth of abstractions would be required for a better estimate of impact. However, it is noted that the option would be operating within licence.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	As no impacts on surface waters are anticipated, no impacts on geomorphology are anticipated. No construction is required for implementation of this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	There would be increases in air emissions associated with abstraction of water. The option is within close proximity of a number of AQMAs (e.g. Tower Hamlets AQMA).	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	There would be small, short-term increases in greenhouse gas emissions associated with abstraction of water. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Medium-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no construction requirements. Abstraction is within existing licence limits and from the confined chalk aquifer with no effects on surface water levels anticipated. Therefore no for effects on the historic environment, heritage assets or their setting are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	There are no construction requirements. Abstraction is within existing licence limits and from the confined chalk aquifer with no effects on surface water levels anticipated. Therefore no potential for effects on landscape and visual amenity are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	West Berk The WBGV abstraction The WBGV and operat days. The s	shire Grour VS is a strat n locations. VS is owned te the scher scheme also	ndwater Sch tegic drough d and operat me once res o provides b	eme (WBG t scheme u ted by the E ervoir stora enefit to th	WS): nder which Environmen age has drav te Fobney al	groundwate t Agency in a wn down to t bstraction du	r is discharg accordance the Level 2 d uring a seve	ed into trib with the We control curv re drought.	utaries of tl est Berkshir e on the Lor	he River Th e Groundw wer Thame	ames (incluc ater Scheme s Control Dia	ling the Rive Agreement agram. The c	er Lambourr : (2015) bet option prov	n an upstrea ween TWUI ides up to 6	am tributary . and the En 6MI/d bene	y of the Rive wironment / efit to Londo	er Kennet) ir Agency. TW on. The imp	n order to in UL may requ lementation	crease the f uest the Env time for fu	low to the N ironment A Il operation	Nest Londor gency to sw is between	ז reservoir itch on 14-21
Summary commentary of scheme adverse effects	Minor adv groundwat Screening conditions temporary	erse short-1 ter may cau Report, tha with the re	term effects use impacts at the droug eduction of a	associated to river wat nt option is an existing	with exten ter quality. I unlikely to licence and	sive pumpin Moderate ac have a signil a new sluice	g is likely to lverse affec ficant effect e to maintai	lead to sup ts associate on the desi n flows to tl	pressed gro d with the p ignated feat he SAC. Min	oundwater potential to tures of the nor adverse	levels in the impact on c e Kennet and effects due	months foll other abstra I Lambourn I to air emissi	owing the o ctors. Negli Floodplain S ions associa	drought, wh gible advers SAC and the ated with ac	ich might ca se impacts a : River Lamb Iditional ab:	ause a reduc ire anticipat pourn SAC a straction an	ction in groo ted on biodi s water leve ad proximity	undwater le versity, flora els could be to nature c	vels at some a and fauna, maintained onservation	e sites, and o , as it was co more effect sites. All ac	Jischarge of onsidered in tively during lverse effect	the HRA 3 drought ts are
SEA Objectives Adverse Effects Assessment Summary		None	None	None	None	None	None		None				None	None	None	None			None		None	
Summary commentary of scheme beneficial effects	Moderate and may a	beneficial d	effects on pe eclines in wa	opulation a ater quality	nd human h 'in affected	nealth are an resources.	ticipated d	ue to mainte	enance of w	vater suppli	ies for custor	ners and eco	onomic acti	vity. Mainta	aining flow i	in watercou	irses during	a prolonged	l drought ma	ay have a m	inor benefic	ial effect,
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None				None	None			None	None	None	None	None	None	None			None	

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The WBGWS comprises seven separate wellfields located in the Kennet and Pang Valleys. Without mitigation there is the potential to affect the Kennet and Lambourn Floodplain SAC and River Lambourn SAC. For the Kennet and Lambourn Floodplain SAC this was due to the lowering of groundwater levels under the Thatcham Reedbeds, with the potential for adverse impact on the surface water regime on which the habitat assemblage in the reedbeds is dependent. The Appropriate Assessment identified two measures to avoid or mitigate this impact. The first was the reduction of the Speen licence, which has been implemented by Thames Water. The second was augmenting the groundwater supply to Thatcham Reedbeds. Thames Water have now implemented the latter being in the form of sluice to allow a small offtake from the Kennet into the Kennet and Lambourn Floodplain SAC. The HRA Screening Report concluded that once the operational licence is in place it is considered unlikely that the drought option would have a significant effect on the designated features of the sites as water levels could be maintained more effectively during drought conditions.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The option comprises abstractions from a series of well fields and water is discharged to watercourses in Berkshire during times of drought, therefore will not introduce INNS and is unlikely to result in the spread of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional 66MI/d of water) during drought conditions and therefore help maintain public health. Regarding nuisance, there is no construction proposed for this option therefore no adverse effects are expected to public health.	Medium	High	Small	High	Short-term	Temporary	None	Major beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	This option supplements flows in a number of watercourses in Berkshire during times of drought, therefore there is potential for beneficial effects with respect to recreation (e.g. angling) and enjoyment of local public rights of way.	Low (beneficial)	Medium	Medium	Low	Short-term	Temporary	None	Minor beneficial
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of supply reliability in drough conditions, ensuring a resilient supply for customers and economic activity.	: Medium (beneficial)	High	Medium	Medium	Short-term	Long	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (66 MI/d) will likely result in proportional increases in energy use and waste generation.	Medium (adverse)	Low	Medium	Medium	Short-term	Temporary	Minor adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The scheme abstracts from a series of well fields and water is discharged to watercourses in Berkshire and so has a beneficial environmental impact on these watercourses during a prolonged drought. However, the impact of extensive pumping is likely to lead to suppressed groundwater levels in the months following the drought which might cause adverse environmental impact through reduction in groundwater levels at some sites.	Low (adverse) Low (beneficial)	High	Medium	Low	Short-term	Temporary	Minor adverse	Minor beneficial

SE/	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The option is likely to have beneficial effect as a result of the option supplementing flows with local groundwater over the short term which will reduce the potential water quality impacts that can be exacerbated during low flows. Discharging groundwater into river water bodies could impact upon the water quality of the rivers, however the impact is considered to be minor as the groundwater is unlikely to be of lesser quality. This would be subject to further study and therefore is assessed with low certainty.	Low (adverse) Low (beneficial)	Medium	Medium	Low	Short-term	Temporary	Minor adverse	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	The impact of extensive pumping is likely to lead to suppressed groundwater levels in the months following the drought which might cause adverse environmental impact through reduction in groundwater levels at some sites. This may mean other groundwater abstractors may find that their ability to abstract is affected if groundwater levels fall to very low levels.	Medium (adverse)	Medium	Medium	Low	Short-term	Temporary	Moderate adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Impacts on geomorphology are unlikely if the option is operated carefully.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required, and no opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will increase air emissions associated with abstraction and treatment of water (up to 66 MI/d). However, no AQMA are in proximity to the option.	Medium (adverse)	Low	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Medium (adverse)	Low	Medium	Moderate/high	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threat: of climate change.	 • Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? • Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? • Will it create opportunities to benefit from potential effects of climate change? • Will it make use of renewable energy? 	Supply-side measures are a key component of Thames Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	Medium (beneficial)	High	Small	Medium	Short-term	Temporary	None	Major beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are a number of heritage assets in close proximity to the watercourse that would receive flow form this option during times of drought (numerous Listed Buildings and Donnington Grove Registered Park and Garden). Therefore there is the potential for small scale temporary beneficial effects regarding their character and appearance. However, the impact of extensive pumping is likely to lead to suppressed groundwater levels in the months following the drought may delay the recovery in flows. Overall the sensitivity of the assets to these effects is considered to be low.	Low (beneficial) Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	Negligible beneficial

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	t Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	During operation water is discharged to watercourses in Berkshire and so may be considered to enhance visual amenity in the North Wessex Downs AONB. However the impact of extensive pumping may lead to suppressed groundwater levels in the months following the drought and may delay the recovery in flows which could impact on visual amenity. Overall the impacts are considered to be negligible as the local distinctiveness is unlikely to be affected.	Low (beneficial) Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	Negligible beneficial

Drought Plan option	Sundridge maximum The drougi	1: Water is daily peak ht order inv	abstracted I of 8MI/d. rolves relaxin	by Thames \ ng the annu	Water from Ial average I	boreholes d	Irilled into t	he Hythe Ad	quifer at Su s of the dro	ndridge The	e current lic	ence (Licenc Id be abstrad	e number 9	/40/1/123/ ay (1,470Ml	GR) allows a over 6 mon	an annual a' iths). Benef	verage abstr it of up to 81	⁻ action rate MI/d.	of 1.36MI/d	d (equivaler	1t to 489MI/	y) with a
Summary commentary of scheme adverse effects:	Major adv effects to limited wir reduction inhibiting likelihood reduction	erse short-t water quali th the droug in suitabilit migration. I of interacti in river or la	erm effects ty, as one re ght order in y or distribu Moderate ac ion between ake level wil	are predicte each has mo place, a mo ition of habi dverse impa signal and Il have a vis	ed due to re re variable o derate adve itats which s icts on WFD the native v ual impact o	educed of flo dissolved ox erse short-te support Corc status are li white clawec on the lands	ows, velociti rygen satura erm impact. dulia aenea. ikely based o d crayfish (N cape setting	ies and leve tions with a Moderate a The signific on the impa IERC species g of the area	Is in three r clear asso dverse sho ance of im ct of the du), resulting and the Da	eaches of t ciation bett rt term eff pacts on N rought opti in a high m arent Valle	the River Dai ween low co ects are anti ERC fish spe on on fish. M nagnitude in y Path Natio	rent (Impact incentration icipated on t icies were id Major advers npact that is nal Trail, wh	s are major s and low ri he Sevenoa entified as e effects du considered ich may be	on one rea iver flows. T iks Gravel P moderate fr ue to increa irreversible noticeable	ch, minor or he feasibilit its SSSI due or brown/se sed distribu e. Minor adv by walkers.	n one reach ty of the sur to reductio ra trout and tion of the i verse short f	and negligib face water a n in lake lev eels based i invasive spe term effects	ole on one r abstraction els, potenti on fragmen cies signal c ; may occur	reach). This at Sevenoal ial impacts o itation of ha crayfish in tl on landscap	would resu ks Wildfowl in breeding ibitats, with he catchme be values, a	It in minor a Reserve ma birds, and p reduced riv nt, increasin s a significan	idverse ay being iotential ier flows g the nt
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects asso	ociated with	the mainte	nance of es	sential publi	ic water sup	plies and in	nproved res	silience of v	water suppli	es to drougt	ıt.	I	I							
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protectet habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies moderate adverse effects on a national designated site. The impact of a reduction in lake levels on the Sevenoaks Gravel Pits SSSI is likely to be of low magnitude for breeding birds as the extent of the hydrological impact will be small and the impacts will not extend outside of the drought implementation period. Impacts on the ecological integrity of the site is not likely to occur as the ponds will not dry up completely. There is potential for a reduction in suitability or distribution of habitats which support Cordulia aenea, for which the site is designated, causing a decline in ecological status of the site. Moderate adverse effects are expected to aquatic habitats and species including NERC habitats/species and ecologically significant species. The significance of impacts on NERC fish species were identified as a moderate for brown/sea trout and eels based on the fragmentation of habitats, with reduced river flows inhibiting migration. The EAR identifies moderate impact on WFD status based on the impact of the drought option on fish, and minor for macroinvertebrates and macrophytes.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	 No opportunities for enhancing connections between people and nature were identified for this option. 	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EARs assessed the impact of the drought option on the distribution of invasive non-native flora and fauna species including Signal crayfish, Spiny- checked crayfish, Zebra mussel, Australian swamp stonecrop, Floating pennywort and Parrot's feather. The sensitivity of the river reaches to INNS overall is considered to be medium as there are a number of invasive species known to be present in the catchment. Implementation of a drought order could encourage movement of crayfish in the catchment increasing the likelihood of interaction between signal and white clawed crayfish (NERC species), resulting in a high magnitude impact that is considered irreversible. Due to the permanence of this effect the overall assessment is major adverse. Mitigation includes direct removal and appropriate disposal of invasive species if identified during monitoring.	High (adverse)	Medium	Small	Moderate	Long-term	Permanent	Major adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect fron risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 8 MI/d of water) during drought conditions, and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	A significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. It is unlikely that bird information sites and hides would be removed or lead to a reduction in bird watchers to the area. The river or lakes will not dry out as a result of the drought order, therefore, there will be a minor impact on recreation. The Darent contains a wide diversity of coarse fish including roach, chub, perch, pike, eels, gudgeon, carp and tench. The close proximity to central London makes the catchment very popular with anglers. Any impacts of the drought order on fish population or distribution may impact anglers and therefore impacts on angling are considered to be minor adverse.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Impacts of the drought order on navigation are unknown, but would be of major significance if there was a reduction in lake level that considerably disrupted saling activity, particularly on Chipsted Lake. this impact is assessed as moderate adverse based on navigation having medium sensitivity. Implementation of the drought option may restrict the feasibility of the surface water abstraction at Sevenoaks Wildfowl Reserve. This has been assessed as a moderate adverse based on the abstractor having medium sensitivity. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. This is considered a moderate beneficial effect as people and businesses have a high sensitivity to access to water during times of drought.	Medium (adverse) Low (beneficial)	Medium (adverse) High (beneficial)	Small	Low	Short-term	Temporary	Moderate adverse	Moderate beneficial

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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimis the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (up to 8 MI/d) over and above what occurs under normal operation will typically result in proportional increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies a major impact on one reach of the River Darent which will remain drier for longer based on reduced groundwater levels, and a minor and negligible effects on two other reaches of the river. The impact would be limited to the duration of the drought order only (which can theoretically be implemented at any time year). The impact would manifest as reductions in water flows, velocities and levels.	l High (adverse)	High	Medium	Moderate	Short-term	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The risk of the drought order to dissolved oxygen saturation levels has been assessed as low in one reach and medium in the second reach of the River Darent. The second reach has more variable dissolved oxygen saturations with a clear association between low concentrations and low river flows. The risk of the drought order to total ammonia concentration levels was identified as negligible. The reaches are considered to be medium sensitivity to changes in water quality and therefore the overall risk is minor adverse.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing' by the EA. The feasibility of surface water abstraction at the Sevenoaks Wildfowl Reserve may be limited with the drought order in place. This has been assessed as a moderate impact.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	The EAR suggests major temporary impacts to geomorphology in one reach and negligible in other reaches, overall assessed as moderate adverse. This is due to reductions in flow and potentially large changes in wetted width and depth. No land take is required for the option and therefore there is no impacts on land use, soil or geology are anticipated as a result of the operation of this option.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will result in minor increases in air emissions associated with abstraction and treatment of water (up to 8 MI/d). The drought option is located less than a 1km from the M25 AQMA, therefore the sensitivity to changes in air quality is medium and the overall significance is assessed as minor adverse with low certainty.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	There are heritage assets in proximity to the option and zone of influence, including the Scheduled Ancient Monuments A major Roman Villa, an Anglo- Saxon settlement and prehistoric remains 600m SSE of Darent Court Farn – A Preceptory of the Knights Hospitallers, known as St. John's Jerusalem, and an associated fish pond at Sutton-at-Hone and the registered park and garden Combe Bank. However they are unlikely to be impacted over the duration of the drought permits' implementation and therefore the impact is considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction activities are required for this option. The option is located within the Kent Downs AONB and a significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. However, the river or lakes will not dry out as a result of the drought order, therefore there will be a minor impact on landscape.	Low (adverse)	High	Small	Moderate	Short-term	Temporary	Minor adverse	None

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Drought Plan option	Sundridge of 8MI/d. The droug for up to s	2: Water is ht order inv ix consecut	abstracted rolves relaxi ive months	by Thames ing the annu consequent	Water from ual average t to the Sund	boreholes d licence rate dridge 1 Dror	Irilled into t and increas ught Order.	he Hythe Ad sing the pea Benefit of u	quifer at Su k licence ra p to 12MI/	ndridge. TV Ite so that f	WUL are licen	nsed to absi	tract, from t drought ord	he ground, : er, 12MI/d (at an annuai could be abs	I average ra	ate of 1.36N ch day. The	11/d (equival Sundridge 2	ent to 489M drought or	∕II/y) with a der is anticij	maximum d pated to be i	Jaily peak in place
Summary commentary of scheme adverse effects:	Major shor water qual Moderate significanc impact of t between s will have a	rt-term hyd lity, as one e adverse she e of impac the drought ignal and ti a visual imp	Irological eff reach may f ort-term eff ts on NERC t option on f he native wi lact on the li	fects may oo have higher fects associa fish species fish. Major a hite clawed landscape se	ccur due to r SRP concent ited with rec are likely to adverse effe crayfish (NE atting of the	reductions in trations asso duced lake It > be moderat ects due to th ERC species), area and th	n flows, velo ociated with evels on the te for brown he possibilit resulting in e Darent Va	ocities and la low river fi Sevenoaks n/sea trout try that an im n a high mag Illey Path Na	evels in thr ow. A mod Gravel Pits and eels ba uplementat nitude imp itional Trail	ee reaches erate short SSSI are po ised on the ion of the d hact that is o I, which ma	of the River -term impac ossible, as ar fragmentati drought orde considered in y be noticea	Darent (Im t on the fea e impacts o on of habit: rr could enc rreversible. ble by walk	pacts are ma isibility of su n breeding I ats, with red ourage mov Minor adve eers.	ajor on one urface wate birds and a l luced river f ement of th rse short te	reach and m r abstractior reduction in flows inhibit re invasive s rm effects n	ninor on tw n at Seveno 1 suitability ting migrati species sign nay occur o	o other read aks Wildfov or distribut on. Modera al crayfish in n landscape	ches). This v wl Reserve n ion of habita ite adverse i n the catchn e values, as a	vould also r 1ay occur w ats which su mpacts may 1ent, increa a significant	esult in min ith the drou upport Cordi y occur on V sing the like reduction i	or adverse e ght order in ulia aenea. T VFD status dı !lihood of in! n river or lak	effects to I place. The Jue to the Iteraction (ce level
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects asso	ociated with	h the mainte	anance of es	sential publi	ic water sup	oplies during	; times of d	Irought, and	d improved r	esilience to	the drough	t effects.								
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residu effect (likely) reasor
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protectec habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WPD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity?	The EAR identifies moderate adverse effects a national designated site. The impact of a reduction in lake levels on the Sevenoaks Gravel Pits SSS is likely to be of medium magnitude for breeding birds as the extent of the hydrological impact will be small and the impacts will not extend outside of the drought implementation period. Impacts on the ecological integrity of the site are not likely as the ponds will not dry up completely, and it is considered likely that mitigation can be easily implemented to control the level of the small lake. There is potential for a reduction in suitability or distribution of habitats which support Cordulia aenea, for which the site is designated, causing a decline in ecological status of the site. Moderate adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species. The significance of impacts on NERC fich species were identified as a moderate for brown/sea trout and eels based on the fragmentation of habitats, with reduced river flows inhibiting migration. The EAR identifies moderate impact on WED status based on the impact of the drought option on fish, and minor for macroinvertebrates and macrophytes.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	
Biodiversity, flora and fauna	 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy. 	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EARs assessed the impact of the drought option on the distribution of invasive non-native flora and fauna species including signal crayfish, zebra mussel, Australian swamp stonecrop and parrot's feather. The sensitivity of the river reaches to INNS overall is considered to be medium as there are a number of invasive species known to be present in the catchment. The assessment results of the drought option noted the possible specad of INNS with the impact ranging from negligible to major. Implementation of a drough order could encourage movement of crayfish in the catchment increasing the likelihood of interaction between signal and white clawed crayfish (NERC species), resulting in a high magnitude impact that is considered irreversible. Due to the permanence of this effect the overall assessment is major adverse. Mitigation includes direct removal and appropriate disposal of invasive species if identified during monitoring.	High (adverse)	Medium	Small	Moderate	Long-term	Permanent	Major adverse	
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)?	The option will help to maintain essential public water supplies (provision of up to an additional 12 MI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	М
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network?	A significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. It is unlikely that the bird information sites or hides would be removed or lead to a reduction in bird watchers to the area. The river or lakes will not dry out as a result of the drought order, therefore impacts on recreation should be no more than minor. The Darent contains a wide diversity of coarse fish including roach, chub, perch, pike, eaks, gudgeon, carp and tench. The close proximity to central London makes the catchment very popular with anglers. Any impacts of the drought order on fish population or distribution may impact anglers and therefore impacts on angling are considered to be minor adverse.	Low (adverse)	Medium	Smail	Moderate	Short-term	Temporary	Minor adverse	
Population and human health	12.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Impacts of the drought order on navigation are unknown, but would be of major significance if there was a reduction in lake level that considerably disrupted saling activity, particularly on Chipstead Lake and is assessed as moderate adverse based on navigation having medium sensitivity. Implementation of the drought may restrict the feasibility of the surface water abstraction at Sevenoaks Wildfowl Reserve may be limited with the drought order in place. This has been assessed as a moderate adverse effect, based on the abstractor having medium sensitivity. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This is considered a moderate beneficial effect as people and businesses have a high sensitivity to access to water during times of drought.	Medium (adverse) Low (beneficial)	Medium (adverse) High (beneficial)	Small	Low	Short-term	Temporary	Moderate adverse	M
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimis the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it reducing the productive reuse of waste including energy recovery?	Increases in abstraction (up to 12 MI/d) over and above what occurs under normal operation will usually result in related and proportional increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	

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	SEA topics and objectives	According to the delega				Accordment of ontion					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge?	The EAR identifies a major impact on one river reach and minor impacts on two other reaches. The impact would be limited to the duration of the drought order only (which can theoretically be implemented at any time year). The impact would manifest as reduction of flows, velocities and levels.	High (adverse)	High	Small	Moderate	Short-term	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? • Will it present a risk to water quality of groundwater, and surface water or estuarine waters? • Will it prevent water pollution? • Will it affect water quality compliance?	In the absence of significant water quality pressures within the study area, the risk to water quality from the drought order is considered negligible in all reaches for disolved oxygen. In one reach higher SRP concentrations are associated with lower river flow so the risk is to water quality is medium from the drought option but low in the other reaches. The reaches are considered to have medium sensitivity to changes in water quality and the overall effect is minor adverse.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	Local resource availability is described as 'Water not available for licensing' by the EA. The feasibility of the surface water abstraction at Sevenoaks Wildfowl Reserve may be limited with the drought order in place. This has been assessed as a moderate impact.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	The EAR suggests minor temporary impacts to geomorphology in one reach and negligible in other reaches, overall assessed as minor adverse. This is due to the reductions in flow and potentially large changes in wetted width and depth. No land take is required for the option and therefore no impacts on land use, soil or geology are anticipated as a result of this option.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option will increase emissions associated with abstraction and treatment of water (up to 12 MI/d). The drought option is located less than a 1km from the M25 AQMA, therefore the sensitivity to changes in air quality is medium and the overall significance is assessed as minor adverse with low certainty.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it wake use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmenta deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	There are heritage assets in proximity to the option and zone of influence including 12 Scheduled Ancient Monuments and the registered park and garden Combe Bank. However they are unlikely to be impacted during drought permit implementation, and therefore the impact is considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmenta deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	No construction activities are required for this option. The option is located within the Kent Downs AONB and a significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. However, the river or lakes will not dry out as a result of the drought order, therefore there will be a minor impact on landscape.	Low (adverse)	High	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Lower Tha To reduce The Lower relative to Tames Wa in the TTF 400MI/d a The assess	mes: the minimu Thames Op the prevail ter's abstra- in a stepwis nd then 300 ment is bas	um pass-forw perating Agr ling seasona ctions canno se fashion. OMI/d . In ac sed on the w	ward flow o reement (LT al reservoir : ot cause the Each step ro dvance of a worst case –	OVER TEDDING OA) provide storage of the pass-forwa equires the i drought per Scenario 2:	ton Weir to : s a guide to ne Thames Va ard flow to du implementat rmit applicat Reduction in	100MI/d or day-to-day o alley and Lee rop below th cion of great ion, which v n pass forwa	0MI/d depe operational e Valley res he TTF agre er demand vould be to rd flows fro	ending on a decisions c ervoir grou ed for that control me reduce the om 200MI/c	greement v on Thames V ps. Four pa day. Norm asures by T TTF to 100 I to OMI/d.	with the Env Waters abst ass-forward ally there is "WUL, for ex IMI/d or 0M	ironment Aş raction from flow (Teddir a minimum xample, hose I/d, TWUL w	gency. In the lower langet residual flo epipe bans. vould agree	River Tham t flows, TTF w of 800Mi This stepw with the Er	es. The agre values are l/d. Howeve ise reductio avironment	eement is b included in er, as the voi n progresse Agency to a	ased on ens the LTOA. I lume of ava the from 8000 adopt the low	uring that s Under norm ilable reser MI/d to 600 wer TTF of 2	sufficient flo nal periods, rvoir storage IMI/d, follov 200MI/d as s	w passes ov the LTOA co e reduces, th ved by furth set out in th	er Teddingt nditions me is triggers r er reductio e M2 licenc	:on weir, ean that eductions ns to :e.
Summary commentary of scheme adverse effects	If impleme Adverse ei Moderate migration. small restr	ented, the d ffects are pr to major ad Adverse ef rictions rega	Irought perm redicted on dverse effec fects also id arding navig	nit would h water quali ts are expe lentified wi ability in th	nave major a ity in the flu cted on a rau th respect to ne Thames Ti	dverse effect vial Thames i nge of aquati o Langham Po ideway would	ts on flows i (reduced dis ic ecological ond SSSI, Du d result in m	n the lowe solved oxy receptors, imsey Mean najor advers	st reaches o gen saturat such as ma dow SSSI an se effects o	of the fluvia ion and red croinvertet id Syon Par n boats tha	Il Thames, m luced phosp orates, macr k SSSI. Majo It are naviga	nainly in terr hate dilutio ophytes, fisl r adverse ef ting betwee	ns of veloci n) which ma h and algae. fects may o n the Tidew	ty reduction ay exacerba . The major .ccur on nav vay and the	n. Freshwate te water qu adverse eff vigation. Th fluvial Rive	er flows to t ality issues ects are pre e combinati r Thames.	the upper Th in the uppe dominantly ion of maint	names Tide r Tideway v associated renance of v	way will red with the pot I with advers water levels	luce, potent ential for m se effects to , restriction:	ially comple ajor adverse fish, includ s on lock use	e effects. ing e, and
SEA Objectives Adverse Effects Assessment Summary		None	None						None			None	None		None	None			None		None	
Summary commentary of scheme beneficial effects	If impleme resilience	ented, the d of water su	lrought pern pplies to dro	nit would h ought.	ave a major	beneficial el	ffects for po	pulations a	nd human l	health in te	rms of ensu	ring supply (of water an	d other cust	tomers/busi	inesses. Maj	jor beneficia	al effects ar	re also expe	cted in rega	rd to improv	ved
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (those likely to remain after reasonable mitigation)	Residual beneficial effect significance (those likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The key hydrological impacts of the Lower Thames drought permit relate to moderate to major effects on velocity upstream of Teddington Weir, and major water quality effects in the tideway (forms part of the Thames Estuary Marine Conservation Zone). The result is a wide range of effects on a large number of ecological receptors, which include a number of designated sites (Langham Pond SSSI, Dumsey Meadow SSSI and Syon Park SSSI). Adverse effects relating to the freshwater species of the lowest reaches of the fluvial River Thames and the transitional species of the Tideway range from minor to major. The types of effects are greatest regarding fish communities. Major, temporary adverse effects include those that relate to localised water quality deterioration, increased predation, habitat fragmentation and impacts on migration affecting species which include migratory salmonids, European eel, lamprey and brown trout. Major adverse effects to fish communities relate to a moderate risk of deterioration regarding the fish component of the WFD waterbody GB530603911403 Thames Upper. Moderate to major adverse effects with respect to depressed river mussel (NERC Section 41 Species). The effects associated with the small construction requirements (generators, submersible pumps and pipes) are considered to be limited.	Major (adverse)	High	Large	Moderate	Short-term	Temporary	Major adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natura heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non- Native Species (INNS)?	The changes to flow velocity and water quality as result of the drought permit are considered likely to have minor adverse effects associated with the spreading a wide range of INNS including for example Zebra mussel, Chinese mitten crab and spionid worm (<i>Marenzelleriawiréni.</i>)	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Implementation of the drought permit will help to maintain essential public water supplies (provision of up to an additional 200Ml/d of water) during drought conditions and therefore help maintain public health. Some construction is required for option implementation, therefore there may be negligible effects on human health (e.g., noise and dust nuisance).	Low (adverse) High (beneficial)	Low (adverse) High (beneficial)	Small (adverse) Medium (beneficial)	Moderate	Short-term	Temporary	Negligible adverse	Major beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	The River Thames is highly valued for its navigational and recreational uses. The EAR identifies impacts of the drought option on navigation and recreation. In the fluvial River Thames, restrictions on lock use would be imposed both as a result of natural drought conditions (to maintain critical water levels) and the requirements to keep Moseley Weir and Teddington Weir closed (at least for most of the time) in order for the drought permit to operate effectively. The reduction in pass forward flows over Teddington Weir would result in impacts due to insufficient working navigable depth at some locations in the Thames Tideway (Richmond, Brentford and Kew), these are considered small in the context of existing restrictions. However, when considering the further restrictions on navigation imposed at Teddington and other locks upstream as a result of frought conditions, there will be impacts on boats that are navigating between the Tideway and the lower freshwater River Thames. There is also the potential for additional risks to navigation as a result of increased sedimentation in the navigation channel in the upper Tideway as fewer and fewer vessels use the navigation channel, with implications on maneouvrability for larger boats. Overall, impacts on navigation in the presence of fish species as a result of the adverse impacts to fish communities identified. The requirement for back-pumping may present some disruption to the public rights of way in proximity to Molesey weir and Teddington weir.	Major (adverse)	High	Large	Moderate	Short-term	Temporary	Major adverse	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (those likely to remain after reasonable mitigation)	Residual beneficial effect significance (those likely to remain after reasonable mitigation)
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Implementation of the drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. However significant adverse impacts to navigation are expected, which may present temporary adverse effects to the business of a number of the marina, passenger boat and hire boat operators.	Medium (adverse) High (beneficial) ,	Medium (adverse) High (beneficial)	Medium	Moderate	Short-term	Temporary	Moderate adverse	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An increase in abstraction (200MI/d) is likely to result in a proportional increase in the use of energy, chemicals and generation of waste. However, this is a temporary increase in abstraction that occurs at high volumes under normal operating conditions. Construction activities will likely generate some waste as well.	High (adverse)	Low	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The drought permit would have a major hydrological impact. The lowest reaches of the River Thames (Datchet abstraction to Teddington Weir) would experience a reduction in river flow during natural low flow periods. As the river is impounded with river levels (and wetted area) maintained for navigation, the flow reduction would only lead to a reduction in velocity as a result of the drough permit, the reduction in velocity is considered major from Penton Hook lock to Teddington Weir. The drought permit would result in a major reduction in freshwater flow that enters the Upper Tideway over Teddington Weir. This would have limited impact on river levels, however, due to the reduction in freshwater flow associated with the drought permit, there would be estuarine water quality implications (decreasing with distance downstream to London Bridge).	High (adverse)	Medium	Small	Moderate	Short-term	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	In the adversely impacted reach of the fluvial River Thames there would be a minor to moderate water quality risk for dissolved oxygen concentration (increasing downstream) during drought permit implementation. Implementation of the drought permit would have moderate (GB106039023231) and major risk (GB106039023222) of short-term deterioration to related freshwater WFD waterbodies in terms of the macroinvertebrate community. The drought permit would result in a major reductior in freshwater flow that enters the Upper Tideway over Teddington weir, resulting in estuarine water quality implications (but decreasing with distance downstream to London Bridge). The risk to dissolved oxygen is considered major in the impacted reach of the Thames Tideway. The impact of consented discharges to the River Thames and its tributaries is considered to present moderate and major pressures in the lowest reaches of the fluvial Thames (ammonia and dissolved oxygen) and upper Tideway (dissolved oxygen) respectively.	Major (adverse)	Medium	Small	Moderate	Short-term	Temporary	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. However the drought permit for both scenarios will not reduce the amount of water available for other licence holders to abstract in the freshwater River Thames and it is not anticipated that the drought permit will limit the feasibility of other abstractors in the Tideway.	, n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR identifies minor impacts on geomorphology that relate to in-channel structures, such as weirs/locks and their influence on sediment dynamics by creating ponded areas upstream of the structure. It is anticipated that there would be low amounts of sediment in transport during a drought.	Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No impacts on land use or soil are anticipated as the construction requirements are limited to the use of submersible pumps, barges and temporary pipes.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (those likely to remain after reasonable mitigation)	Residual beneficial effect significance (those likely to remain after reasonable mitigation)
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option and there are no opportunities for catchment wide approach to land management.	- n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	In addition to the temporary emissions associated with the abstraction and treatment of water (up to 200Ml/d), the option will result in temporary emissions as a result of the back-pumping component of the option. The option is in close proximity (or within) a number of AQMAs, including Spelthorne AQMA and Richmon AQMA.	Medium (adverse)	Medium	Small	Low	Short-term	Temporary	Moderate adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non- drought conditions? 	In addition to the temporary energy use associated with the abstraction and treatment of water (up to 200MI/d). The option will involve additional temporary energy use and therefore greenhouse gas emissions to enable the back-pumping component of the option.	Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effect: of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	High (beneficial)	High	Small	High	Short-term	Temporary	None	Major beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The length of the impacted reach of the River Thames includes a wealth of archaeology and cultural heritage assets. However, water levels will not be significantly affected adjacent to these assets due to the requirement to maintain levels for navigation. Assuming water levels are maintained, the potential impact of this drought permit on the setting of the heritage assets associated with the Thames including sub-surface water dependent heritage assets, is considered negligible.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No designated landscape areas in proximity. Temporary minor adverse effects as a result of the visual intrusion of the construction and decommissioning activities, primarily to local residents or walkers using public rights of way. No significant effects on non-designated areas of natural beauty or access to values areas of landscape character. There is no land take associated with the scheme.	Moderate (adverse)	Low	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Crayford: Water is al in abstract There is no TWUL is al	ibstracted fi tion beyond o constructi Iso licensed	rom the Ken d existing lic ion phase a: d to abstract	nt Chalk at C rence limit. ssociated wi from the N	Crayford. TW The drough ith the Cray lorth Kent C	VUL are licen: t permit is an ford drought halk aquifer	sed to abstr nticipated to permit, onl for public w	ract, from th be applied by a change rater supply	ne ground, a I for up to 6 to operatin r at Wansun	at an annua consecutiv g pumping tt approxim	il average ra ve months be regime, spec ately 1km av	te of 13.6Ml etween May iffically the f way from th	/d (workinį and Decen force pump e Crayford :	g out at thai nber inclusions s (that are a abstraction.	n 4,964Ml/y ve. already insta	rear). Imple alled) that b	mentation o xoost treated	of the droug	ht permit w site. A temp	rould provid torary gener	e a 2.8MI/d ator may b	l increase e required.
Summary commentary of scheme adverse effects:	Hydrologic associated	cal impacts I with the d	on two read Irought plan	ches of the I	River Cray a also largely	re considere: • negligible, e	d to be negl xcluding a n	igible, as no ninor, short	o reduction t-term effec	in the surfa	ace (fresh) w d air emissic	ater contrib	ution to the	e tidal reach ergy use, gi	nes of the lo	wer Cray ar a of influenc	re expected a	as a result c an AQMA.)f increased	abstraction	ı. Other eff	ects
SEA Objectives Adverse Effects Assessment Summary [completes automatically]		None	None		None	None			None				None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial i	impacts are	expected w	vith regard t	:o ensuring st	upply of wat	ter to local	population	and other o	customers/b	usinesses. T	here is also	likely to be	e beneficial	impacts ass	ociated with	ו improved ו	resilience oʻ	f water sup;	plies to drou	ught.
SEA Objectives Beneficial Effects Assessment Summary [completes automatically]	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservatior interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	There are no designated sites within the area of influence of the drought permit, either in relation to impacts on groundwater levels and flows, or river flows. The closest site is Footscray Meadow Local Nature Reserve, but this is outside the area of influence, upstream from the Shuttle confluence. There are a number of NERC sites for which the hydrological impact is negligible for all. There is one SSSI (Wansunt Pit) outside the area of influence but within 1km. However there are negligible effects on the reaches and no construction, therefore impacts are not anticipated further afield.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	There is uncertainty surrounding the likely effect of flow and level impacts on the ability of invasive species to distribute further within the watercourse. Hydrological effects are negligible, thus impacts on INNS are also assumed to be negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to 2.8Ml/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects on human health (e.g., noise and dust nuisance) are expected.	Low (beneficial)	High	Small	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as , National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	Hydrological impacts associated with implementation of the drought option are assumed to be negligible, thus no impacts on other users o the water environment (e.g., anglers) are expected. No construction is proposed, so no impacts on terrestrial recreational resources area anticipated.	n/a f	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. The only identified groundwater abstraction in the area of influence is a TWUL abstraction (Wansunt), and impacts on this abstraction are exoected to be negligible.	Low (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Medium	Medium	Short-term	Temporary	Negligible adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An increase in abstraction is likely to result in a proportional increase in the use of energy and generation of waste. However, existing infrastructure would be used, minimising such increases.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR reports the effect on Reach 1, River Cray from Bexley Pumping Station to weir in Hall Place Gardens as uncertain (assumed negligible), and the effect on flows in Reach 2, River Cray from weir in Hall Place Gardens to tidal limit is also negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Water quality within the catchment consistently achieves High WFD status for temperature, pH, Ammonia (NH3) and DO. The exception to this is phosphate which consistently achieves Good WFD status. Hydrological and water quality effects associated with drought permit implementation are expected to be negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing'. Howver, given that there is no adverse surface water hydrological impact associated with the drought permit, there would be no impact on surface water abstractions. The only identified groundwater abstraction in the area of influence is a TWUL abstraction (Wansunt), and effects on this abstraction are expected to be negligible.	Low (adverse)	Low	Small	Low	Short	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence o effect (permanent/ temporary)	f Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	No soils or geological SSSIs are reported as being impacted in the EAR. There is one geological SSSI beyond the zone of influence but within 1km. There is no construction proposed and negligible effects hydrological effects are anticipated. Impacts on geology, geomorphology and soils are not expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	There is no construction, although increased abstraction would cause a small increase in energy use and associated air emissions. The option is located within an AQMA and therefore has high sensitivity to emissions.	Low (adverse)	High	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	There is no construction although increased abstraction would cause a small increase in energy use and associated greenhouse gas emissions.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The Hall Place Scheduled Ancient Monument and Gardens are within the drought plan area of influence. However, no construction is proposed and hydrological effects will be negligible, therefore these sites will not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The London Loop Public Right of Way runs in close proximity to the River Cray. The river forms part of the landscape setting of the trail. However, anticipated hydrological impacts are negligible therefore landscape values would not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
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Drought Plan option	Horton Kir Aquifer Sta There is a drought pe	by: This dri orage and f constructio ermit does	ought permi Recovery (As on phase ass not apply to	it is for abstr SR) scheme ociated with o the Horton	raction from which abstr h this droug Kirby abstr	n the Lower acts from th ht permit, w action from	Greensand le Greensan /hich includ the chalk a	aquifer at H d aquifer. B es connectin quifer.	orton Kirby enefit of up ng a pipelin	using a boo to 2.6 MI/ e from the l	rehole drille d. boreholes to	d for an Aq o the Hortoi	uifer Storag	e and Recov er Treatmen	ery (ASR) so t Works (W	cheme whic	h is not yet ljustments n	licensed. Ti nade to the	he option w WTW for w	ould be to	oring forward / purposes. N	d the Vote the
Summary commentary of scheme adverse effects:	Negligible restricted and treatn	adverse hy to the area nent of wat	rdrological e within the ter and the o	ffects are pi existing site drought opti	redicted as , and as suc ion is locate	recharge and h, it is not a d less than :	d abstractio nticipated t 1km from tl	n would be hat any imp ne M20 AQM	from the he acts associa 1A.	eavily confi ated with co	ned Greensa onstruction.	and aquifer, Minor adve	and it is an rse short-te	ticipated th rm air quali	at there is n ty effects a	io hydraulic re possible,	link with su as the optic	Irface water	r features. T ase emissic	'he construe	:tion phase i ed with abst	s raction
SEA Objectives Adverse Effects Assessment Summary		None	None	None	None	None	None		None		None	None	None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects con	nprise maint	tenance of e	essential pu	blic water su	upplies duri	ng times of	drought.													
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology									
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity?	All construction will take place on site. This disturbance is anticipated to be short term, temporary and reversible and is therefore expected to be of negligible impact. As no hydrological impact of the drought permit is predicted there i no impact on designated sites, NERC species, or WFD status.	s Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EARs conclude that there will be impact no impact on the distribution of invasive non-native flora and fauna species, as there are no hydrological impacts.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 2 MI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network?	Angling and the Darent Valley Path National Trail are unlikely to be impacted over the duration of drought permit implementation, therefore there will be no impact on recreation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well- being? 	Due to the negligible hydrological impact, there will be no impact or navigation. The underlying aquifer is confined in this location and sy the drought permit would not impact on abstractions from the chal aquifer (at Horton Kirby). The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This is considered a moderate beneficial effect a people and businesses have a high sensitivity to access to water during times of drought.	n D k Low (beneficial) S	High (beneficial)	Small	Low	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	The construction phase will involve additional use of materials and energy. It is assumed that materials and equipment required during construction will be sourced locally to minimise transport. Increases in abstraction (up to 2 MI/d) over and above what occurs under normal operation will typically result in proportional increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The hydrological impact of the drought permit has been assessed as negligible, as recharge and abstraction would be from the heavily confined Greensand aquifer, and it is anticipated that there is no hydraulic link with surface water features.	: Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present arisk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Given that there is no adverse hydrological impact associated with the drought permit, water quality would not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	Local resource availability is described as 'Water not available for licensing' by the EA. However, the underlying aquifer is confined in this location and so the drought permit would not impact on abstractions from the chalk aquifer (at Horton Kirby). No other public water supply abstractions will be derogated by the drought permit.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
	SEA topics and objectives	Assessment methodology									
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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Given that there is no adverse hydrological impact associated with the drought permit, geomorphology would not be affected. All construction will take place on site. This disturbance is anticipated to be short term, temporary and reversible and is therefore expected to be of negligible impact on land use, soil or geology are anticipated as a result of the operation of this option.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towardsa catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	Assuming best practice construction methods, impacts of the construction phase on air quality are anticipated to be negligible. The option will increase the emissions associated with the abstraction and treatment of water (up to 2 MI/d). The drought option is located less than 1km from the M20 AQMA, therefore the sensitivity to changes in air quality is medium and the overall significance is assessed as minor adverse with low certainty.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Construction will involve the delivery of materials and equipment to the site. It is assumed that materials will be sourced locally to minimise transport requirements, and therefore CO2 emissions. Increased water abstraction would cause an increase in energy use in the short term.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy?	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will it he hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it mprove access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	The construction phase is restricted to the area within the existing site, and as such, it is not anticipated that any sites of archaeologica or cultural heritage importance will be affected. There are heritage assets in proximity to the option, including Scheduled Ancient Monument, Medieval moated site and associated fish pond, Franks Hall and the registered park and garden Franks Hall. However they are unlikely to be impacted over the duration of the drought permits' implementation and therefore the impact is considered negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	There may be a negligible adverse impact to landscape and visual amenity during construction, due to plant and vehicles on site. The Darent Valley Path National Trail is unlikely to be impacted over the duration of drought permit implementation.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None

Drought Plan option	Enysford: 1 which allo during wel The droug around 6.6 Amendme	Thames Wat ws a total d tter months ht order inv GMI/d durin; nts to this a	ter can abs laily abstrac s. However, rolves an in g drier mor assessment	tract up to 7 ctions for bo this is incor crease in pe tths). to reflect th	2.34MI/d on th sites up t rect and Th ak rate of al ne correct ba	a particular to 11.36Ml/d ames Water bstraction to aseline refere	day and up day and 248: are not curr 11.6MI/d a ence conditi	to an avera 2MI/year. 1 rently using and relaxati ions for the	nge of 2.09N The baseline ; the Eynsfo on of annua : Eynsford a	/I/d for the e reference rd abstracti al licence lir bstraction l	licencing ye conditions o on. nit to allow icence and p	ear (without of this assess 6 months of proposed dro	a drought p ment are b abstraction pught permi	ermit) und ased on Tha n at peak da it, will be u	er the norm ames Water aily rate (equ pdated bety	al operating abstracting uating to 2,5 ween the dra	; licence at E 5 MI/d fron 05.8MI/γ). aft and final	Eynsford. Ey n Eynsford Benefit of submissior	nsford is ag during drier f up to 11.6 n of the Tha	gregated w months an MI/d (altho mes Water	ith Horton H d not abstra ugh expecte Drought Pla	irby cting d to be n.
Summary commentary of scheme adverse effects:	Major adv concentrat possible, t Moderate feather an	erse short-te tions are ass hrough rest adverse im d floating p	erm effects sociated wi ricting the pacts on W eennywort)	s are predict th lower riv size of boats FD status ar are possible	ed on one r er flow. Mir s able to use e anticipate e. Minor adv	each of the F nor short-tern the river. Sh d based on t rerse short-te	River Darren m impacts n hort-term ef che impact o erm visual ir	nt as part of nay occur o ffects are p of the droug mpact may	it could dr n one Souti ossible on N sht option o occur on th	y up as a re: hern Water JERC fish sp n fish and r e landscape	sult of droug Services abs recies (brow macroinvert e setting of t	ght option in straction and n trout and ebrates. Mo he area and	nplementati l other smai cels - moder derate adve the Darent	ion. This w ller abstrac rate, sea trr rse effects Valley Path	ould result tors. Moder out - major) associated t n National Tr	in minor, sh ate short-te due to fragi with the spr rail reductio	ort-term add rm effects o nentation o ead of the in n in river let	verse effect on navigatic of habitats a nvasive spe vel will hav	ts to water o n associate nd reduced cies (Austra e, which ma	quality beca d with lowe river flows lian swamp ly be notice	use higher : r river level inhibiting n stonecrop, able by wal	SRP s are nigration. parrots kers.
SEA Objectives Adverse Effects Assessment Summary [completes automatically]		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	If impleme resilience	ented, the d of water su	lrought per pplies to dr	mit would h ought.	ave modera	te beneficial	l effects for	population	s and huma	in health in	terms of en	suring suppl	y of water a	and other c	ustomers/b	usinesses. M	linor benefi	cial effects	are also exp	pected in re	gard to imp	roved
SEA Objectives Beneficial Effects Assessment Summary [completes automatically]	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity?	The EAR identifies no effects a national designated site. Despite its proximity Farningham Wood SSSI and LNR to the River Darent, this site is elevated approximately 40m above the river which suggests that due to the local topography, it will not be in connectivity with either the river or the underlying aquifer. Moderate adverse effects are expected to aquatic habitats and species, including NERC habitats/species and ecologically significant species. Impacts on NERC fish species include moderate impacts on brown trout and eels and a major impact on sea trout. These are based on fragmentation of habitats, and reduced river flows inhibiting migration. Moderate impacts on WFD status are expected based on the impacts on fish and macroinvertebrates.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non- Native Species (INNS)?	The sensitivity of the river reaches to invasive non-native flora and fauna species overall is considered to be medium, as there are a number of invasive species known to be present in the catchment. Moderate changes to the distribution and abundance of Australian swamp stonecrop, parrots feather and floating pennywort are anticipated.	Medium (adverse)	Medium	Small	Moderate	Long-term	Permanent	Moderate adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 11.6 MI/d of water) during drought conditions, and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	A significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. It is unlikely that bird information sites or hides would be removed, or there would be a reduction in bird watchers to the area. The river or lakes will not dry out as a result of the drought order, therefore impacts on recreation are expected to be minor. Any impacts of the drought order on fish population or distribution may impact anglers, and therefore impacts on angling are considered to be minor adverse.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	A significant lowering of lake or river levels may result in impacts to navigation through restricting the size of boats able to use the river, which would result in moderate adverse effects, based on navigation haiving medium sensitivity. There is low risk to one Southern Water Services abstraction and a negligible risk to other smaller abstractors. This has been assessed as a moderate impact based on the abstractor having medium sensitivity. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This is considered a moderate beneficial effect as people and businesses have a high sensitivity to access to water during times of drought.	Medium (adverse) Low (beneficial)	Medium (adverse) High (beneficial)	Small	Low	Short-term	Temporary	Moderate adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (up to 11.6 Ml/d) over and above what occurs under normal operation will likely result in proportional increases in energy use and waste generation.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge?	The EAR identifies a major impact on one reach of the River Darent, where the drought option could potentially cause drying within the reach. The impact would be limited to the duration of the drought order only (which can theoretically be implemented at any time of the year).	High (adverse)	High	Medium	Moderate	Short-term	Temporary	Major adverse	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	In the absence of significant water quality pressures within the study area, the risk to water quality from the drought order is considered negligible in all reaches for dissolved oxygen. SRP concentrations are associated with lower river flow so the risk is to water quality is medium from the drought option. The reaches are considered to have medium sensitivity to changes in water quality and therefore the overall risk is minor adverse.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing' by the EA. There is low risk to one Southern Water Services abstraction and a negligible risk to other smaller abstractors. This has been assessed as a minor impact.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	The EAR suggests low risk to geomorphology in one reach and is assessed as minor adverse as it is temporary. The risk is due to the reductions in flow and potentially large changes in wetted width and depth. No land take is required for the option and therefore no impacts on land use, soil or geology are anticipated as a result of the operation of this option.	Low (adverse)	High	Small	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will increase emissions associated with the abstraction and treatment of water (up to 11.6 Ml/d). The drought option is located less than 5km from the M25 AQMA, therefore the sensitivity to changes in air quality is medium and the overall significance is assessed as moderate adverse with low certainty.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non- drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic revironment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are heritage assets in proximity to the option and zone of influence, including 10 Scheduled Ancient Monument. However they are unlikely to be impacted during drought permit implementation and therefore the impact is considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None

	SEA topics and objectives	Assessment methodology				Assessment of ontion					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction activities are required for this option. The option is located within the Kent Downs AONB, and a significant reduction in river or lake level will have a visual impact on the landscape setting of the area and the Darent Valley Path National Trail, which may be noticeable by walkers. The river is unlikely to dry out as a result of the drought order, therefore, there will be a minor impact on landscape.	Low (adverse)	High	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Wansunt: TWUL are anticipate The 6MI/c is assumed to abstrac	licensed to d to be app l increase ir d that there t from the M	abstract, fr lied for up 1 n average lic e is no const North Kent (om the Chal to six consec cence limit r truction phas Chalk aquife	k aquifer b cutive mont epresents t se associate r for public	elow Wansu ths between the maximum ed with the V : water suppl	nt pumping : May and De n that can be Vansunt dro y at Crayford	station, at a comber inc e abstracted ught permi d, approxin	an annual a clusive. d according t, however, nately 1km	verage rate to what the TWUL have away from	of 13.6MI/d e network ca e indicated t the Wansun	d (4,977MI/\ an receive. I that if groun It abstraction	vear). The d t is possible dwater qua n.	rought perr e that this n lity deterio	nit would co ate cannot t rates during	omprise a 6. De sustained g implement	.0MI/d incre I from the w tation additi	ase in abstr rell and bor fonal treatn	raction beyo ehole at Wa nent may be	ond existing ansunt for 6 e required. 1	licence lim months. C FWUL is also	it, and is urrently it o licensed
Summary commentary of scheme adverse effects:	Hydrologia result of in	cal impacts ncreased ab	on Reach 1 estraction. (of the River Other effect:	Cray are un s associated	ncertain and d with the dr	assumed to ought plan c	be negligib option are a	ole, and effe	ects on Read negligible, d	ch 2 are also excluding a l	negligible a minor, short	s no reduct -term effec	ion in the s t associated	urface (fresl 1 air emissio	h) water cor ons due to in	ntribution to	o the tidal ro ergy use, giv	eaches of th ven the area	e lower Cra a of influenc	y is expecto e is within	≥d as a an AQMA.
SEA Objectives Adverse Effects Assessment Summary [completes automatically]		None	None		None	None			None				None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial i	impacts are	expected w	ith regard t	to ensuring s	upply of wat	ter to local	population	and other o	ustomers/b	ousinesses. T	here is also	likely to be	e beneficial	impacts for	associated v	with improv	red resiliend	e of water :	supplies to	drought.
SEA Objectives Beneficial Effects Assessment Summary [completes automatically]	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE/	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	l Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR states there are no designated sites within the extent of influence of the drought permit, either in relation to impacts on groundwater levels and flows, or river flows (the closest site is Footscray Meadow Local Nature Reserve, but this is beyond the extent of influence, upstream from the Shuttle confluence, and is not considered further). There are a number of NERC sites within the area of influence and these are identified and assessed as negligible in the EAR. There are two areas of ancient woodland within 1km. However, negligible hydrological effects are expected on the River Cray and there will be no construction, therefore impacts to biodiversity and designated sites are anticipated to be negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	There is uncertainty surrounding the likely effect of flow and level impacts on the ability of invasive species to distribute further within the watercourse. Hydrological effects are negligible, thus impacts on INNS are also assumed to be negligible.	Low (adverse)	Low	n/a	n/a	n/a	n/a	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, 	The option will help to maintain essential public water supplies (provision of up to 6MI/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects on human health (e.g., noise and dust nuisance) are expected.	Low (beneficial)	High	Small	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	Hydrological impacts associated with implementation of the drought option are assumed to be negligible, thus no impacts on other users of the water environment (e.g., anglers) are expected. No construction is proposed, so no impacts on terrestrial recreational resources area anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. The only identified groundwater abstraction in the area of influence is a TWUL abstraction (Crayford), and impacts on this abstraction are expected to be negligible.	Low (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Medium	Medium	Short-term	Temporary	Negligible adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	An increase in abstraction is likely to result in a proportional increase in the use of energy and generation of waste. However, existing infrastructure would be used, minimising such increases.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR reports the effect on Reach 1, River Cray from Bexley Pumping Station to weir in Hall Place Gardens as uncertain (assumed negligible), and the effect on flows in Reach 2, River Cra from weir in Hall Place Gardens to tidal limit is also negligible.	Low (adverse) y	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Water quality within the catchment consistently achieves High WFD status for temperature, pH, Ammonia (NH3) and DO. The exception to this is phosphate which consistently achieves Good WFD status. Hydrological and water quality effects associated wit drought permit implementation are expected to be negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. Howver given that there is no adverse surface water hydrological impact associated with the drought permit, there would be no impact on surface water abstractions. The only identified groundwater abstraction in the area of influence is a TWUL abstraction (Crayford), and effects on this abstraction are expected to be negligible.	Low (adverse)	Low	Small	Low	Short	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	No specific soils or geological SSSIs are reported as being impacted in the EAR and no construction is proposed. Impacts on geology, geomorphology and soils are not expected.	i n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	There is no construction, although increased abstraction would cause a small increase in energy use and associated air emissions. The option is located within an AQMA and therefore has high sensitivity to emissions.	Low (adverse)	High	Small	Low	Short-term	temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	There is no construction although increased abstraction would cause a small increase in energy use and associated greenhouse gas emissions.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will be the test of the storage capacity of the storage capacity of the storage capacity of the storage capacity.	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important 	The Hall Place Scheduled Ancient Monument and Gardens are within the drought plan area of influence. However, no construction is proposed and hydrological effects will be negligible, therefore these sites will not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it more access value understanding or environment heritage assets and 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The London Loop Public Right of Way runs in close proximity to the River Cray. The river forms part of the landscape setting of the trail. However, anticipated hydrological impacts are negligible therefore landscape values would not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
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Drought Plan option	Increase in The intent calendar y	1 M2 annual ion of the iu ear rather t	l licence (Lo ncrease in N than being r	wer Thame M2 annual li estricted by	s): cence (Low / the annua e daily lice	rer Thames) Il total abstra	drought peri action limit i	mit is to en in case ther	able recove e is a droug e restricted	ry of storag	ge in the Tha ollowing on s are mediu	imes reservo in the next y	irs after a prear. Impler	period of sur nentation w	nmer droug vould increa	ght. This will se in the av	l help ensur erage maxir	e that the n mum abstra	eservoirs ca action permi	in be full by	the end of the M2 lice	the ence by up
Summary commentary of scheme adverse effects:	Adverse ef	ffects identi	ified are lim	iited to negl	ligible, tem	porary adve	rse effects fi	rom emissic	ons of air po	ollutants an	nd greenhou	se gases asso	ociated with	n additional	water pum	ping and tre	eatment req	uirements.				
SEA Objectives Adverse Effects Assessment Summary [completes automatically]	None	None	None	None	None	None	None		None	None	None	None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Major ben drought op abstraction environme	eficial effec otion achiev n limit, in ca ental featurr	ts are ident res this by e se there is es or other a	ified with n nabling recu a drought p abstractors.	espect to ti overy of sto eriod follor	he populatio orage in the ' wing on in th	n and huma Thames rese 1e next year.	n health, w rvoirs aftei . Abstractio	vater and ai r a period o ons would st	r and climat f summer d till be restri	te. These re Irought. This	late to helpi will help en lows are me	ng with the sure that th dium to lov	sustainable ne reservoir v (as per no	e provision o s can be full rmal operat	of a large qu by the end ions) and th	uantity of wa of the caler herefore the	ater (at a ra 1dar year ra benefits ar	te of 91Ml/ ther than bu e achieved v	d) during pe eing restrict with no adv	riods of dru ed by the a verse effects	ought. The innual total s on
SEA Objectives Beneficial Effects Assessment Summary [completes automatically]	None	None	None	None		None			None	None	None		None	None	None	None	None	None		None	None	None

SE/	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	There are no designated sites impacted by the operation of the drought option, and there would be no impacts on habitats, species or WFD compliance.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	There are several INNS known to inhabit the section of the Thames River associated with the option. However, with implementation of the option is not expected to influence the distribution or abundance of INNS present, or introduce any new INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The drought option will help to ensure levels of service are maintained through enabling provision of water (at a rate of 91Ml/d), and therefore help maintain public health.	Medium (beneficial)	High	Medium	High	Short term	Temporary	None	Major beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	With no construction requirements and operational hydrological effects assessed as negligible, no effects on other water environment users are likely.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This will be achieved with no adverse hydrological impacts, and therefore no impacts on other abstractors is anticipated.	Medium (beneficial)	High	Medium	High	Long term	Temporary	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Option requires no construction and will use existing infrastructure. Option will result in an increase in annual maximum abstraction by up to 5%. Therefore there will be proportional (minor) increases in energy use and waste for water abstraction and treatment.	Low (adverse) Low (beneficial)	Low	Medium	Medium	Short term	Temporary	Negligible adverse	Negligible beneficial
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies no adverse hydrological impact associated with the drought option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	With no construction requirements and no operational hydrological effects the EAR identifies that water quality would not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
water	4.3 to ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	• Will it ensure sustainable abstractions, taking account of water resources availability status? • Will it affect WFD protected areas? • Will it prevent the introduction of impediments to the attainment of WFD good status or potential? • Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	The option enables recovery or storage in the inames reservoirs after a period of summer drought. This will help ensure that the reservoirs can be full by the end of the calendar year rather than being restricted by the annual total abstraction limit, in case there is a drought period following on in the next year. Abstractions would still be restricted when flows are medium to low (as per normal operations). Local resource availability is described as 'Water not available for licensing', however no adverse effects on environmental features or other abstractors have been identified.	Medium (beneficiai)	High (deneticiai)	Medium	High	Short term	Temporary	None	Major penencial
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it prmote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	As no adverse hydrological impacts have been identified, and no impacts on geomorphology are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	There will be no construction requirements or land take, and no hydrological impacts have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	The option involves the increase in the annual maximum abstraction permitted under the M2 licence by up to 5%. Therefor there will be a short term increase in emissions associated with th additional pumping and treatment requirements. The option is within 5km of a number of west London AQMAs.	Low (adverse) e e	Low	Local	Low	Short term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	The option involves the increase in the annual maximum abstraction permitted under the M2 licence by up to 5%. Therefor there will be a associated short term increase in greenhouse gas emissions associated with the additional pumping and treatment requirements.	Low (adverse) e	Low	Medium	High	Short term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	The option is likely to be implemented during November and December, during which time flows would be expected to be recovering. The increased abstraction would be limited to when flows are sufficiently high enough in the River Thames. The continued abstraction would result in higher reservoir storage levels going into the following year than would occur without the use of the drought permit. Depending on flows in the subsequent year, this could result in lower abstractions due to decreased need to fill the reservoirs.	Medium (beneficial)	Medium	Medium	Medium	Short term	Temporary	None	Moderate beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	With no construction requirements and no adverse hydrological impacts identified, no adverse effects to heritage assets are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will ithe hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it more vaces, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	With no construction requirements and no adverse hydrological impacts identified, no adverse effects to landscape values are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Waddon D Water is al MI/d (worl The drough for 6 mont	rought Pern bstracted fru king out at r ht permit co :hs or less if	nit: om the Chai no more tha ould potenti 'water reso	lk Aquifer a ३n 2,773 Mi ially start in urces withi	at Waddon b I/year). The 1 any month in the TWUL	ioreholes. Th drought peri of the year a supply area i	ie existing al mit would b although it i: have return	bstraction li ne for a 7MI s anticipate ed to adequ	icence (28/ /d increase d to be app Jate levels	'39/41/12) e in abstract olied for du to safeguar	permits abst tion beyond ring the hyd rd future wat	ractions froi existing lice rological sur ter supplies,	m the Chalk nce limit (a nmer (the n , as agreed v	: Aquifer at verage rate nonths of A _i with the Env	Waddon at per year of pril to Septe rironment A	a peak day 7.6MI/d) th ember inclu Igency. The	rate of 15.5 iroughout th sive). The re re is no cons	MI/d with ; ie duration evised abstr struction act	an average of the drou raction arra tivity associ	rate per yea ght permit. ngements w ated with tl	ir and mont /ould remain his drought	h of 7.6 n in place permit.
Summary commentary of scheme adverse effects	Under a wo risk of incr and flows I Valley Wet adverse ef valued by	orst case sce eased wate by up to one tland LNRs. fects were i walkers.	enario, Wad r temperatu e month. Th Overall mou identified ou	idon Ponds ure and red tese hydrolo derate adve n the lands	: may dry up luction in dis ogical affect: erse effects c icape values :	(for up to 3 i isolved oxyge s could resul on fish comm associated w	months) who en saturatio It in modera nunities are vith Waddor	en they wo n. Moderat te adverse, predicted, n Ponds, wh	uld otherw e adverse e short term with poten lich form a	ise not have effects are a effects wit tial for maje local ameni	e without a also identifie th respect to or adverse ir ity feature ir	drought pera el with respo o biodiversity mpacts on El o the Londor	mit (signific ect to the Ri y, including uropean eel n Borough o	ant adverse iver Wandle moderate 1 I (NERC fish íf Croydon a	effect on v downstrea o minor ad species) an and an esser	vater levels, im of the po verse effect d moderate ntial part of	/flows). With onds, where is on the Wil adverse effi the landsca	h reduction the drough Iderness Isla ects to brov pe setting a	i in through- it permit wc and, Spence wn trout ani and charactr	-flow in Wa ould extend rr Road Wet d barbel. M er of the Wa	ddon Ponds the recover lands, and V linor, tempc andle trail w	, there is a y of levels Nandle Srary /hich is
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Moderate	beneficial e	iffects are e	xpected du	ie to provisic	on of additio	nal water su	ıpply. There	eare also lii	kely to be n	ninor benefi	cial impacts	associated	with impro	ved resilien	ce of water	supplies to	drought.				
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of opt	tion				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	f Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it affect wFD compliance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	There is potential for moderate to minor adverse effects or Wilderness Island LNR, Spencer Road Wetlands LNR and Wandle Valley Wetland LNR. Moderate adverse effects on fish communities. Major adverse impacts identified regarding the European eel (NERC fish species) and moderate adverse effects to brown trout/ trout and barbel	n Medium (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Major adverse INNS impacts in the Waddon Ponds may occur as a result of changes in the distribution Chinese mitten crab. Moderate adverse impacts were identified for the River Wandle regarding the distribution and abundance of invasive floral species (between April and September only).	Medium (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 g • Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? • Will it help to protect or improve drinking water quality? • Will it raise awareness of the importance and value of the water environment for health and well-being? • Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Implementation of the drought permit will help to maintain essential public water supplies (provision of up to an additional 7MI/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects on human health (e.g., noise and dust nuisance) are expected.	h Low (beneficial)	High	Medium	High	Medium-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as , public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Waddon Ponds (located within a small urban park) form a local amenity feature in the London Borough of Croydon with significant recreational value. Under a worst case scenario Waddon ponds may dry up (for up to 3 months) when they would otherwise not have without a drought permit.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	The drought option will contribute to the maintenance of supply reliability in drought conditions. However, there is some uncertainty regarding the potential for impacts on the feasibility of a nearby groundwater abstraction under operation of the drought option.	Low (beneficial) Low (adverse)	High (beneficial) Medium (adverse)	Medium	Moderate (beneficial) Low (adverse)	Short-term	Temporary	Minor adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Option requires no construction and will use existing infrastructure. Option will result in up to 7MI/d increase in d abstraction beyond its existing licence limit with an associated increases in energy use and waste for water abstraction and treatment.	Low (beneficial)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	There is potential for major adverse hydrological effects. Under a worst case scenario, Waddon ponds may dry up (for up to 3 months) when they would otherwise not have without a drought permit. Moderate adverse effects were also identified with respect to the River Wandle downstream of the ponds. The drought permit would not affect the lowest flows but median to low flows (approximately QS0-Q90). The drought permit would extend the recovery of levels and flows by up to one month.	High (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Major adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of opt	ion				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	f Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	With reduction in through-flow in Waddon Ponds, there is risk of increased water temperature and a reduction in dissolved oxygen saturation, which would be exacerbated if the ponds dry. In the River Wandle further downstream there is no significant relationship between flow and water quality, and risks to water quality from drought permit implementation are considered minor.	High (adverse)	Low	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing'. The EAR generally identifies minor risks of short-term deterioration or prevention of the r Croydon and Wandsworth water body (GB106039023460) achieving Good Ecological Potential (GEP). Generally negligible to low risks are identified in the EAR with respect to other abstraction pressures.	Medium (adverse)	Low	Small	Moderate	Medium-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	There are no construction requirements. Implementation of the drought option and a prolonged environmental drought may lead to loss of vegetation, which could leave sediment exposed to erosion upon commencement of higher flows when drought conditions cease. This may be the case in the middle and lower section of the impacted part of the River Wandle, which contains some in-channel macrophytes. The EAR describes geomorphology impacts as minor in this reach (and negligible regarding the upstream reach and Waddon Ponds).	Low	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	There are no construction requirements or land take for this option, which would utilise existing abstraction and water treatment sites. No opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option involves an increase in abstraction of up to 7MI/d, and there will be an associated short-term increase in air emissions. The option is within Croydon AQMA.	Low (adverse)	Medium	Medium	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	The option involves an increase in abstraction of up to 7/M//d, and there will be an associated short-term increase in greenhouse gas emissions.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will th improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are two Scheduled Ancient Monuments in proximity (Roman Villa East of Beddington Park and Dovecote, Beddington Park), however, as identified by the EAR, impacts are on these heritage assets are unlikely. The presence of springs in chalk catchments and their related surface waters or wetlands can contain important archaeological information, especially palaeo- environmental evidence. The drought option is likely to reduce groundwater levels and have impacts on Waddon Ponds. However, these impacts will be an extension of significant impacts of the natural drought and the groundwater levels are anticipated to respond rapidly to rainfall in subsequent recharge events.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None

SEA	A topics and objectives	Assessment methodology				Assessment of opt	ion				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	There are no designated landscape areas in the area of influence. The Wandle Trail runs along the River Wandle from Croydon to the River Thames. The ponds form an essential part of the landscape setting and character of the trail that is valued by walkers. In a worst case scenario, the impact of the proposed drought permit may result in Waddon Ponds drying up when they may not have done so without a drought permit in place. If drying up of the ponds were only to occur with a drought permit in place, this would probably occur during the latter half of the drought permit. Drying out of the ponds would adversely effect the visual amenity value and local distinctiveness of the non-designated landscape.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Bauton 1: River Chur than 32M The droug of up to 6	Water is ab n flow cons //d. ht permit w VII/d.	ostracted fro straint is at : vould involv	om the Infe 32 MI/d. W e a tempor	rior Oolite A Vhen flow is rary suspensi	quifer at Baı greater thar on of the 32	unton from t n 32 MI/d, al MI/d flow c	four boreho bstraction is constraint or	les. The op permitted n the River	eration of t l at a rate of Churn at Ci	he existing a f up to 21.6N rencester. V	abstraction /I/d with ar Vhen flows	licence (28/: n annual ave in the River	39/2/63) is erage rate e Churn are l	determine equivalent t less than 32	d by the flov o 16.64MI/d MI/d, abstra	v conditions I. No abstra action woul	s in the Rive ction is per d be permit	r Churn at C mitted when ted to a ma:	Cirencester n flow in th ximum rate	Gauging Sta e River Chui : of 6.3MI/d	tion. The rn is less . Benefit
Summary commentary of scheme adverse effects:	Moderate on the nat	, adverse, si ionally desi	hort-term e ignated site	ffects are p North Mea	predicted on adow SSSI as	three reache offtakes fro	es of the Riv m the River	er Churn, as Churn supp	they may ort the ma	remain drya crophyte co	er for longer mmunity at	as result of the site (un	the drough certainty su	t option. M irrounds th	loderate, ac e water lev	iverse, shori el managem	t-term effec lent practice	ts on NERC	fish species	are possibl	e, as are mir	nor effects
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects asso	ociated with	n the droug	ht option ind	clude mainta	ining essen	tial public w	ater suppli	ies during ti	mes of drou	ght.										
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity?	The EAR identifies minor adverse effects on the nationally designated site North Meadow SSS. Offtakes from the River Churn appear to provide flow through the central ditch system supporting the sites macrophyte community but uncertainty surrounds the water level management practice at the site. There are negligible effects on the internationally important site North Meadow and Clattinger Farm SAC as it its hydrologically isolated from the drought option. Moderate adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species. The significance of impacts on NERC fish species were identified as a moderate for brown/sea	Medium (adverse)	Medium	Medium	Low	Short-term	Temporary	Moderate adverse	None
			trout and eels based reduction or loss of spawning habitat due to desiccation of habitat and increased stress and predation on species in refuges as a result of delay in recovery of flows. A minor impact on WFD status is predicted based on the impact of the drought option on fish, macroinvertebrates and macrophytes.								
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature were identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The drought permit is likely to have a negligible impact to the distribution of non-native species, such as invasive macroinvertebrates (signal crayfish and zebra mussel) or invasive macrophytes.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)?	The option will help to maintain essential public water supplies (provision of up to an additional 6 MI/d of water) during drought conditions, and therefore help to maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network?	Due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any further impacts on existing trails and footpaths or navigation/angling.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Implementation of the drought permit will have negligible impact on other abstractors. The assessment was constrained by limited information, but no impacts on known abstractors have been identified. No impacts on navigation are likely. Therefore the sensitivity of navigation, tourism and other abstractors is low and the impacts are negligible. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This is considered a moderate beneficial effect as people and businesses have a high sensitivity to access to water during times of drought.	Low (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Small	Moderate	Short-term	Temporary	Negligible adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	Increases in abstraction (up to 6MI/d) over and above what occurs under normal operation will likely result in related and proportional increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies major impact on 1 reach of a watercourse and moderate and minor on 2 others, with them remaining drier for longer based on reduced groundwater levels. Impact anticipated to be limited to during hydrological winter for a short duration of up to 1 month. The impact would also manifest as reduction of flows, velocities and levels. Overall the impacts is assessed as moderate adverse.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it prevent a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance?	The risk of the drought permit to dissolved oxygen saturation levels is considered to be no risk across all hydrological reaches. The risk of the drought permit to total ammonia concentration levels was identified as negligible for all reaches. There is no risk from other discharges. The sensitivity to water quality changes is therefore considered to be low and the overall significance is negligible adverse.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing' by the EA. However, other water company public water supplies and non-public water supply abstractions, were reviewed and it was considered that the implementation of the drought permit will have a negligible impact on other abstractions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of solis? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests minor impacts to geomorphology in the impacted reaches. The drought permit may result in a reduction in wetted width and depth than might otherwise be expected under the current hydrological regime. This may result in a potential minor reduction in bank and bed stability. No land take is required for the option and therefore there is no impacts on land use, soil or geology are anticipated as a result of the operation of this option.	, Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option will increase air emissions associated with abstraction and treatment of water (up to 6 Ml/d). However, no AQMA are in proximity to the option.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy?	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	Heritage assets in proximity to the option and zone of influence including 4 Scheduled Ancient Monuments. However they are unlikely to be impacted over the duration of the drought permit implementation.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction activities are required for this option, however there will be changes to water levels in three reaches of the River Churn for a short duration. The option is located in the Cotswolds AONB, but due to the natura drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on the local distinctiveness of the landscape.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None

Drought Plan option	Bauton 2: Water is al flow const The droug (compared The droug water reso There is no	bstracted fr raint is at 3: ht permit w I to the Bau ht permit is purces within o construction	om the Infe 2 MI/d. Wh ould involv nton 1 drou anticipated n the TWUL on phase as	rior Oolite / hen flow is g e a tempora ght permit I to be appli . supply area sociated wi	Aquifer at Ba greater than ary suspensid maximum ra ied for up to a have retur th this droug	aunton from 32 MI/d, ab on of the 32 ate of 6.3MI six consecu ned to adeq ght permit.	n four boreh Istraction is MI/d flow co /d). The opt tive months juate levels f	oles. The o permitted a onstraint o tion would p s between f to safeguar	peration of at a rate of n the River provide a b May and De d future wa	the existing up to 21.6N Churn at Cii enefit of up cember, alt iter supplie	g abstractior Al/d with an rencester. W to 17Ml/d. though it cou s, as agreed	h licence (28, annual aver /hen flows in ald be imple with the En	/39/2/63) is age rate eq n the River (mented at a vironment A	s determine uivalent to Churn are le any time of Agency.	d by the fla 16.64Ml/d. ess than 32M year. The re	w condition No abstrac Al/d, abstra evised abstr	ns in the Riv ction is pern iction would raction arrar	er Churn at nitted when I be permitt agements w	Cirencester I flow in the ied up to a r ould remain	Gauging St River Chur naximum r n in place fo	ation. The Ri n is less than ite of 17Ml/i r 6 months c	iver Churn ı 32MI/d. d or less if
Summary commentary of scheme adverse effects	Moderate, on the nat and visual local distir	adverse, sh ionally desi effects may activeness o	nort-term ef gnated site y occur as th f the landsc	ffects are pr North Mear ne drought c rape. Effects	redicted on t dow SSSI as option is loca s are similar	three reache offtakes fro ated in Cots to those ass	es of the River m the River wolds AONB sociated with	er Churn, a: Churn supp 3. However h the Baunt	s they may oort the ma due to the ton 1 option	remain dryo crophyte co natural dryi n.	er for longer mmunity at ing of the rea	as result of the site (un aches in nat	the drough certainty su ural drough	t option. M irrounds th t condition	oderate, ad e water leve s, it is unlike	verse, short I managem Ily that dro	t-term effec ient practice ught permit	ts on NERC (at the site) implement	fish species). Negligible ation will h	are possibl , adverse, s ave significa	e, as are min hort-term la nt impacts c	or effects ndscape on the
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects asso	ociated with	the drough	it option inc	lude mainta	ining essent	tial public w	vater suppli	es during ti	mes of drou	ght.										
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migraton fish functioning habitat connectivity?	The EAR identifies minor adverse effects on the nationally designated site North Meadow SSI. Offtakes from the River Churn appear to provide flow through the central ditch system supporting the sites macrophyte community but uncertainty surrounds the water level management practice at the site. There are negligible effects on the internationally important site North Meadow and Clattinger Farm SAC as it is hydrologically isolated from the drought option. Moderate adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species. The significance of impacts on NERC fish species were identified as moderate for brown trout and European eels based on reduction or loss of spawning habitat due to desiccation of habitat and increased stress and predation on species in refuges as a result of delay in recovery of flows. Minor to moderate impacts on WFD status are predicted based on the impact of the drought option on fish, macroinvertebrates and macrophytes.	Medium (adverse)	Medium	Medium	Low	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The drought permit is likely to have a negligible impact to the distribution of non-native species, such as invasive macroinvertebrates (signal crayfish and zebra mussel) or invasive macrophytes. The delay in recovery of flows is unlikely to influence the migration of invasive invertebrates species to previously uncolonised habitats of the Churn catchment, especially when set against baseline conditions of a dry summer.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 17/MI/d of water) during drought conditions, and therefore help to maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any further impacts on existing trails and footpaths or navigation. Flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Implementation of the drought permit will have negligible impact on other abstractors. The assessment was constrained by limited information, but no impacts on known abstractors have been identified. No impacts on navigation are likely. Therefore the sensitivity of navigation, tourism and other abstractors is low and the impacts are negligible. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. This is considered a moderate beneficial effect as people and businesses have a high sensitivity to access to water during times of drought.	Low (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Small	Moderate	Short-term	Temporary	Negligible adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	Increases in abstraction (up to 17MI/d) over and above what occurs under normal operation will likely result in related and proportional increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge?	The EAR identifies major, moderate and minor impacts on the three reaches of the River Churn considered, as they will remain drier for longer based on reduced groundwater levels. Impacts anticipated to be limited to during hydrological winter for a short duration of up to 1 month. The impact would manifest as reduction of flows, velocities and levels. Overall the impact is assessed as moderate adverse. Impacts on the Cirencester Watercourses affected by the option are expected to be negligible.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Topic	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it prevent a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance?	There is a low risk that oxygen quality will deteriorate in Reach 3 of the River Churn, due to minor hydrological effects on low flows in this reach. However, no risks to water quality are anticipated in the remaining two reaches of the River Churn or the Cirencester Watercourses. There is no risk from other discharges. The sensitivity to water quality changes is therefore considered to be low and the overall significance is negligible adverse.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	Local resource availability is described as 'water not available for licensing' by the EA. However, other water company public water supplies and non-public water supply abstractions were reviewed and it was considered that the implementation of the drought permit will have a negligible impact on other abstractions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of solis? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Minor impacts to geomorphology in the three reaches of the River Churn may occur. The drought permit may result in a reduction in wetted width and depth than might otherwise be expected under the current hydrological regime. This may result in a potential minor reduction in bank and bed stability.	r Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities for protecting or enhancing ecosystem services have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option will increase air emissions associated with abstraction and treatment of water (up to 17MI/d). However, no AQMA are in proximity to the option.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy?	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Heritage assets in proximity to the option and zone of influence are unlikely to be impacted over the duration of the drought permit implementation.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	There are no opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction activities are required for this option, however there will be changes to water levels in three reaches of the River Churn for a short duration. The option is located in the Cotswolds AONB, but due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on the local distinctiveness of the landscape.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None

Drought Plan option	Latton: Wa daily licen The drougi	ater is abstr ce rate per ht permit w	racted by Th year and pe vould be for	ames Water r month of : a 5MI/d inc	r from boreł 15MI/d (anc :rease in the	noles drilled I not exceedi : average lice	into the Gre ing 5,475MI ance limit (t [,]	eat Oolite A l in any year o 20MI/d) f	quifer at La r). or the dura	atton. The e	existing abst drought per	raction licer mit. The an	nce (28/39/2 nual licence	2/10) permi e limit woul	ts abstracti d be increa:	on from the sed from 5,4	e Great Oolit 475Ml to up	e at Latton to 6,390Ml	at a peak da . Benefit of	ay rate of 2(up to 5MI/	IMI/d with a d.	an average
Summary commentary of scheme adverse effects:	Minor adv and increa KWS are a	erse, short- sed SRP con nticipated c	-term effect: ncentration. due to reduc	s are predici . Minor adv∈ ∶tion in abui	ted on three erse, short-t ndance or di	ereaches of i erm impacts istribution of	river as they ; on the feas f species su	y may rema sibility of so pported by	in dryer for me other g the designa	longer as r roundwate ated site or	esult of the r abstractior deterioratio	drought opi ns in the stu on in habitat	tion. This w dy area are c quality, cau	vould result possible. N using a decl	in moderat loderate ad ine in ecolo	e adverse ei verse, short gical status	ffects to wa t-term effec of the site.	ter quality, ts on NERC t	due to redu fish species	ced dissolve and on the	:d oxygen sa Down Ampr	ituration 1ey Pits
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects incl	ude those a:	ssociated w	ith maintain	iing essentia	ıl public wat	ter supplies	during tim	es of droug	ht.											
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE4	topics and objectives	Assessment methodology				Assessment of option					
Topic	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies moderate adverse effects on regional designated sites such as Down Ampney Pits KWS. Reduction in abundance or distribution of species supported by the designated site or deterioration in habitat quality, causing a decline in ecological status of the site. Moderate adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species brown trout, bullhead and brook lamprey. The impacts include increased stress and predation on species in refuges as a result of delay in recovery of flows and a reduction in species abundance or distribution as a result of changes in water quality A minor impact on WFD status is predicted based on the impact of the drough option on macroinvertebrates and fish.	i Medium (adverse) t	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The drought permit is considered likely to have a negligible impact as a result of changes in the distribution of non-native species such as Nuttall's pondweed or least duckweed in the impacted reaches.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional SMI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Due to the natural drying of the Ampney Brook in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on existing trails and footpaths or navigation/angling.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Implementation of the Latton drought permit may impact on the feasibility of the some of the other groundwater abstractions, this is assessed as minor adverse based on the abstractors having medium sensitivity. No impacts on navigation, therefore no effects on related businesses or tourism are anticipated. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This is considered a moderate beneficial effect for people and businesses.	Low (adverse) Low (beneficial)	High	Small	Low	Short-term	Temporary	Minor adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	Increases in abstraction (up to 5 MI/d) over and above what occurs under normal operation will result in short-term increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies moderate risk of increased duration of watercourses remaining drier for longer based on reduced groundwater levels in one reach and minor for the other for reaches. Impact anticipated to be limited to during hydrological winter for a short duration of approximately 1 month. The reaches are high sensitivity to flow based on historic abstraction effects however, due to the short duration the overall impact significance is assessed as minor adverse. The impact would also manifest as reduction of flows, velocities and levels.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it prevent a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The EAR identifies moderate risk due to reduced dissolved oxygen saturation and increased SRP concentration. Also moderate risk from Ampney St Peter STW discharge.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whils protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it affect WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing' by the EA. Implementation of the Latton drought permit may affect the feasibility of some other groundwater abstractions in the study area. There are six groundwater abstractions greater than 0.5MI/d. Discussion would be required with the individual groundwater abstractors to understand pump depths and other elements of the abstraction facilities. Consequently, the impacts on other abstractors is therefore considered uncertain. There are 3 surface water abstractions below 0.5 MI/d in the hydrologically impacted areas one of which is located in the reach that drys naturally, therefore discussions with the individual abstractor would be needed during application of the drought permit.	, Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests minor impacts to geomorphology in four reaches. The drought permit may result in a reduction in wetted width and depth, extended drying of a channel, changes in sediment dynamics and potential reductions in bank and bed stability than under the current hydrological regime. No land take is required for the option and therefore there is no impacts on land use, soil or geology are anticipated as a result of the operation of this option.	Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option, and no opportunities to enhance ecosystem service functions of land have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will cause short-term increases in emissions associated with the abstraction and treatment of water (up to SMI/d). However, no AQMA are in proximity to the option, no construction activities are required, and the use of existing infrastructure and treatment facilities will minimise emissions of air pollutants.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threat of climate change.	 s • Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? • Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? • Will it create opportunities to benefit from potential effects of climate change? • Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it important assets and enhance the fit of the paleo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are heritage assets in proximity to the option and zone of influence including 3 Scheduled Ancient Monuments. However they are unlikely to be impacted over the duration of the drought permits' implementation and therefore the impact is considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction is required for this option. There will be a change to water levels in one reach for a short duration. It is not a sensitive landscape and due to the natural drying of the Ampney Brook in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on the local distinctiveness of the landscape.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None

Drought Plan option	Meysey Ha Under nor 10.1MI/d i The droug Benefit of	ampton: mal licence is permittec ht permit w up to 11.37	: conditions d from the Ir vould allow : 7MI/d.	water is abs nferior Oolit abstraction	stracted fror te boreholes from the Gr	n the Inferio s. When flow eat Oolite b	אי Oolite Aq v is less that oreholes at	uifer at Mey n 68MI/d, n a rate of 11	rsey Hampt Dabstractic .37 MI/d w	ton. When on from the rhen precec	preceding fl Inferior Oo ling flow (m	ow (mean 5 lite borehole ean 5 days b	days before es is permit before) in th	e) at River C ted. e River Coli	Coln at Bibur n at Bibury i	ry is greater s less than (than 68 MI 68 MI/d (i.e	/d, abstract . as per the	ion (licence terms of th	number 28 e now revol	/39/5/45) of ed 'summer	f up to r' licence).
Summary commentary of scheme adverse effects:	Major adv affected b distributio from the a	erse, short- y lower rive n as a resul quifer to su	-term effects er flow. Moc It of change: urface water	s are predict derate adver s in water qı rbodies ofte	ted on four rse, short-te uality, and i n ceases in	reaches of ri Irm effects o mpacts on sy dry summer:	iver as they In NERC fish pawning po S.	may remain species are tential. Mir	dryer for I predicted, ior adverse	onger as re comprising effects on	sult of the d g increased s the local de	rought opti tress and pr signated site	on. This wo redation on e Down Am	uld result ir species in r pney Pits K	n minor shoi efuges as a WS may occ	t-term effe result of de ur, howeve	cts to water lay in recov r it is resilie	r quality as o ery of flows nt to the im	dissolved ox ;, reduction pacts of de:	ygen satura in species a siccation as	tion levels n bundance or movement d	nay be r of water
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	effects incl	ude mainter	nance of ess	sential publi	ic water sup;	plies during	times of dro	ought.													
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will affect WFD compliance e.g. good ecological potential/status? Will tensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies minor adverse effects on local designated site (Down Ampney Pits KWS). The local non-statutory designated site is likely to be resilient to some degree to the impacts of desiccation considering the movement of water from the aquifer to surface waterbodies often ceases in dry summers. Moderate adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species. The significance of impacts on NERC fish species were identified as moderate for bullhead, brow trout and lamprey species in four reaches and moderate for bullhead, brow trout and lamprey species in four reaches and moderate for brown trout and aminor for bullhead in one reach. These impacts relate to the risk of increased stress and predation on species in refuges as a result of delay in recovery of flows, reduction in species abundance or distribution as a result of changes in water quality, and those relating to the impact on spawning potential. The EAR identifies moderate impact on WFD status based on the impact of the drought option on fish, and minor for macroinvertebrates.	n Medium (adverse)	Medium	Medium	Low	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy. 	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The drought permit is likely to have a negligible impact on the distribution of invasive non-native flora and fauna species, such as Nuttall's pondweed, leas duckweed and signal crayfish. The delay in recovery of flows will not have any influence in the spreading of signal crayfish species beyond that expected under baseline conditions of a dry summer and dry watercourse.	t / Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to portect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	I The option will help to maintain essential public water supplies (provision of up to an additional 11 MI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on existin trails and footpaths or navigation/angling.	g Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well- being?	The sensitivity of tourism in these river reaches is low and therefore there will be negligible adverse effects. No navigation in these reaches. Implementation of the drought permit will not impact on the feasibility of an of the surface water or groundwater abstractions in the reaches considered. The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. This is considered a moderate beneficial effect as people and businesses have a high sensitivity to access to water during times of drought.	Low (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Small	Moderate	Short-term	Temporary	Negligible adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (up to 11 MI/d) over and above what occurs under normal operation will usually result in related and proportional increases in energy use and waste.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies moderate impact on 4 reaches and a minor effect on one reach of watercourse, as there would be a delay in groundwater level recovery with a consequent delay in groundwater contributing to flow within these watercourses. This is considered a large scale effect as total of 49 km (made up of the four river reaches) have the potential to be impacted and therefore the overall magnitude of effect is considered to be major adverse based on the high sensitivity of the river to low flows which is evident from historic effects. However the impact is anticipated to be limited to the hydrological winter for a short duration of approximately 1 month.	Medium (adverse)	High	Large	Moderate	Short-term	Temporary	Major adverse	None

	SEA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/te mporary)	Residual adverse effect significance likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The risk of the drought permit to dissolved oxygen saturation levels is moderate in one reach and negligible in four others. The risk of the drought permit to total ammonia concentration levels was identified as negligible throughout the hydrological zone of influence of the Meysey Hampton drought permit. The reaches are at good status and therefore considered medium sensitivity to changes and therefore the overall risk is minor adverse. Impacts associated with consented discharges identified a negligible risk in the first reach with respect to water quality and a potential beneficial effect from flow.	. Low (adverse)	Medium	Large	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential?	Local resource availability is described as 'Water not available for licensing' by the EA. However, implementation of the drought permit will not impact on other groundwater or surface water abstractions and therefore there will be a negligible adverse impact.	/ Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests minor impacts and temporary to geomorphology in the impacted reaches, due to the reduction in wetted width and depth, extended drying of a channel, changes in sediment dynamics and potential reductions in bank and bed stability than under the current hydrological regime. No land take is required for the option and therefore there is no impacts on land use, soil or geology are anticipated as a result of the operation of this option.	Low (adverse)	Medium	Large	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutants.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will increase the emissions associated with the abstraction and treatment of water (up to 11 Ml/d). No AQMA are in proximity of the option.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by lincreasing water storage capacity, or transferring water from areas with surplus? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are heritage assets in proximity to the option and zone of influence including Scheduled Ancient Monument. However they are unlikely to be impacted over the duration of the drought permits' implementation and therefore the impact is considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it more vaccess, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	No construction activities are required for this option. However, there will be changes to water levels in four reaches for a short duration. It is not a sensitive landscape and due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on the landscapes local distinctiveness.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None

Drought Plan option	Farmoor: The permi Thames an implemen	t involves cl ıd transfern tation, back	hanges to th 'ed to the pu &-pumping c	ne condition umped stora of river flow:	is associated age Farmoor s from furth	d with the na r Reservoir. : Ier downstre	aturalised fl Stored wate aam is propc	ows in the F r is treated ssed to help	River Tham ∣at Farmoo naintain a	es at Farmo r water trea a minimum '	oor under wh atment work flow (or leve	nich normal ‹s (WTW) or al) in sensiti	abstraction Swinford W ve reaches.	is restraine /TW for trea	d. This resu atment and	lts in a bene public wate	efit of up to ≥r supply to	30MI/d. Sui the SWOX V	rface water NRZ. As par	is abstracte t of the Farı	d from the F	River 1t permit
Summary commentary of scheme adverse effects	Moderate Moderate quality in l element o	adverse, sh adverse, sh both the ma f the scherr	iort term eff iort term eff ainstem of t ie).	fects with re fects to recr :he River Tha	espect to Bio 'eational use ames and d	odiversity, fl e of the Rive listributaries	lora and fau Ir Thames du 5. Discharge	na including ue to potent pressures (S	१ moderate tial effects STW discha	adverse eff to navigatic rges) pose a	fects regardi on and angli a risk to watı	ing INNS, fisl ng. Major a er quality in	h communit dverse, shoi both the m	:y and mode rt term effe ainstem of	arate risk of cts to water the River Th	short-term • were ident names and c	deterioratio tified, incluc distributarie	on to the fis ding major r ıs (this inclu	ት compone eductions ir des risks as:	nt of 2 WFE 1 velocity a sociated wi) waterbodie 1d high risk t th the back p	:s. :o water oumping
SEA Objectives Adverse Effects Assessment Summary		None	None		None								None		None	None			None		None	
Summary commentary of scheme beneficial effects	Moderate	beneficial e	effects are e	xpected du	e to provisic	on of additio	mal water si	upply, and n	ninor effec	ts are assoc	ciated with in	mproved res	ilience of w	/ater suppli	es to drougł	ht.						
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	 Certainty of effect (low/moderate/l igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain aft reasonable mitigati
Biodiversity, flora and fauna	 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species). 	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contitude to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it affect WFD compliance e.g. good ecological potential/status? Will it affect WFD compliance e.g. good ecological potential/status? Will it affect wFD compliance e.g. good ecological potential/status? Will it affect wFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provide the spece of t	Moderate adverse effects on national and regional designate sites. Moderate adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species such as <i>Ranunculus</i> spp. Moderate adverse effects to fish community (including effects on migration) and moderate risk of short-term deterioration to the fish component of 2 WFD water bodies.	d Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	 2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy. 	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EAR identifies a moderate impact as a result of changes to distribution of invasive species.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)?	Option will help to maintain essential public water supplies (provision of up to an additional 30M/d/d of water) during drought conditions and therefore help maintain public health. Construction activities may affect people living locally (Oxfordshire greenbelt), however these would be small in scale and mitigated and therefore considered negligible.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficia
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, fuurism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network?	Thames Path National Trail. There are a number of marinas located along the impacted stretch of the River Thames. The potential hydrological effects lidentified in the EAR could resul in moderate adverse effects on navigation. Changing distributions and numbers of fish species identified in the EAR may impact anglers who use the river. There are a number of recreational resources in proximity (Oatlands Road Recreation Ground; Abingdon Vale Cricket and Football Club; and The Springs Golf Club) however, no effects anticipated.	Medium (adverse) t s	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well- being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. However, potential for som adverse effects such as businesses associated with navigation e.g. marinas, passenger boat/ hire boat operators.	r Low (adverse) Low (beneficial) 2	Medium (adverse) High (beneficial)	Small	Low	Short-term	Temporary	Minor adverse	Moderate beneficia
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	Increase in energy use and chemicals for treatment of abstracted water (up to 30Ml/d). The option will make use of existing infrastructure. However, will also require additional equipment and energy use to enable the back-pumping component of the option.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	The flow benefits created as a result of the back-pumping operation at times of very low flow outweigh the adverse effects associated with the poorer water quality being back- pumped into the watercourses. The option will not impact on the feasibility of other abstractions identified in the zone of influence identified above. However, although the drought permit would not impact on the feasibility of the Didotot abstraction occurring it may affect the amount of water that is permitted to be abstracted.	Low (adverse)	Medium	Medium	Medium	Short-term	Temporary	Minor adverse	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge?	Major reduction in velocities for those watercourses where water levels are controlled including the mainstem of the River Thames. Reduction in velocity and level for distributaries that are not level controlled. No effects on groundwater levels are anticipated.	High (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it achieve WFD compliance? e.g. prevent deterioration of WFD status between status classes? Will it present a risk to water quality of groundwater, and surface water or esturine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The EAR identifies a high risk with regard to surface water quality (specifically with regard to SRP) as well as medium risk with regard to dissolved oxygen in the distributaries of the Thames only. Discharge pressures (STW discharges) pose a risi to water quality. No construction impacts on water quality anticipated after mitigation. However, the back pumping operation generations additional water quality risks associate with the recirculation of Oxford STW discharged water to both the distributaries of the Thames.	Medium (adverse)	High	Medium	Moderate	Short-term	Temporary	Major adverse	None



SEA	topics and objectives	Assessment methodology				Assessment of optic	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographics &/or population affected (small/medium/large)	I Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies while protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potentia? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	Local resource availability is described as 'water not available for licensing'. The EAR identifies that the option is unlikely to impact the feasibility of any groundwater or surface water abstractions in the zone of influence (including those for agriculture). However, there are potential short term temporary adverse effects with respect to local WFD waterbodies.	Low (adverse)	Medium	Medium	Medium	Short-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of solis? Will it protect and enhance geological SSSIs or similar nationally protected sites?	The EAR identifies minor impacts on geomorphology that relate to reduced velocity, deposition of sediments and their re-suspension in higher flows.	Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it protect and enhance geomorphology and geomorphological processes?	No impacts on land use or soil are anticipated as the construction requirements are limited to the use of submersible pumps, barges and temporary pipes.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it ensure efficient use of land (e.g. make use of previously developed land)? Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and there are no opportunities for catchment-wide approach to land management.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will It reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)?	In addition to the emissions associated with the abstraction and treatment of water (up to 30MI/d), the option will result in emissions as a result of the back-pumping component of the option. Within proximity to Oxford city council AQMA (4.8km).	Low (adverse)	Low	Small	High	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	In addition to the energy use associated with the abstraction and treatment of water (up to 30MI/d). The option will involve additional energy use and therefore greenhouse gas emissions to enable the back-pumping component of the option.	Low (adverse)	Low	Medium	High	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy?	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Medium	Medium	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	The length of the impacted reach of the River Thames and its location presents a wealth of assets with respect to archaeology and cultural heritage. Assuming water levels are maintained, the potential impact of this drought permit on the setting of the heritage assets associated with the Thames, including sub-surface water dependent heritage assets, is considered negligible.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	No designated landscape areas in proximity. Temporary minor adverse effects as a result of the visual intrusion of the construction and decommissioning activities, primarily to local residents or walkers using public rights of way. No significant effects on non-designated areas of natural beauty or access to values areas of landscape character. The option is within greenfield land however, there is no land take associated with the scheme.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Axford 1 D As a result the River H constraint	rought Perr of recent iı (ennet at Kı of 6 MI/d v	mit: nvestigation nighton gauı will be remo'	is by the En ging station wed and the	וvironment A ו are below נ a average da	igency, from LOO MI/d. Th ily abstracti	। April 2017, herefore the on limit will	the new ab drought pe increase to	estraction li rmit assess 13.1 MI/d	cence limit sment has b . This will p	at Axford w een underta rovide a ben	ill be set at iken based o efit of 7.1M	an average on these ne I/d.	of 9.34 MI/ w licence co	d and peak	of 13.1 MI	/d with maxi liated drougi	mum abstra ht permit co	action consi onditions w	trained to 6 hereby the i	MI/d when river flow-re	flows in Iated
Summary commentary of scheme adverse effects	Moderate recovery, l Conservati body (GB1 trout and through, w	adverse, sh out this is ui on Objectiv 060390231: orown trouf /hich includ	ort term red nlikely to pr ves are consi 72) would b t (NERC Act les the Nortl	ductions in f revent recor idered mod re at moder Section 41 h Wessex D	flows in the very occurrin Jerate during ate risk from Species) bet Jowns AONB	River Kenne 1g during the 3 drought pe 1 May to Dee tween May 7 and Ramsbi	t would ma e hydrologic :rmit implen cember and and Decemb ury Manor (i	nifest as a r cal winter (C nentation a minor risk per with dro Registered I	eduction ir October to I nd minor d from Janua ught permi Park and Ga	n levels and March). Mo uring the pe ry to March t implemen arden).	velocities de derate adver eriod of grou of short-ter atation. Pote	uring drough rse, short-te Indwater ree m deteriora Intial for mir	nt permit in rm effects a covery. The tion or prev nor adverse	nplementati are anticipa e macroinve vention of a effects with	ion. Under ted with re: rtebrate an chieving GE h respect to	dry weathe spect to bio d fish comp S with drou the change	r conditions diversity, fla yonent of the ight permit i a in water ler	there woul ora and faur Middle Ke mplementa vels in the F	ld be a subs na. Impacts nnet (Marli ntion. Poten River Kenne	equent dela regarding R borough to l tial modera t and the la	y in ground iver Kennet Hungerford) te impacts o ndscape it f	water SSSI water on sea iows
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	impacts inc	:lude ensurir	ng supply o	f water to lo	cal populati	on and othe	er customer	s/businesse	es. There an	e also likely	to be benefi	icial effects	through rec	ducing vuln	erability to	drought.			-	-	
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Adverse effects have been identified in relation to the changes in flow during drought permit implementation. Impacts on the River Kennet SSSI Conservation Objectives are identified as moderate during drought permit implementation and minor during the period of groundwater recovery. The EAR considers the macroinvertebrate and fish component of the Middle (Kennet (Marlborough to Hungerford) water body (GB106039023172) to be at moderate risk from May to December and minor risk from January to March of short-term deterioration or prevention of achieving GES with drought permit implementation. Moderate impacts on the NERC Act Section 41 Species are moderate for sea trout and brown trout from May to December.	Medium (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The minor changes in flow and limited effects on water quality are not considered likely to significantly affect distribution and abundance of INNS such as signal crayfish, New Zealand mud snail and European physa. Consequently, drought permit implementation is considered to have a negligible impact as a result of changes in the distribution of the INNS.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)?	Option will help to maintain essential public water supplies (provision of up to an additional 7.1Ml/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects on human health (e.g. noise and dust nuisance) are expected.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	c The fish assessment in the EAR identifies a potential short term alteration to fish community composition as a result of drought permit implementation, therefore there is a potential minor adverse effects on angling.	Low (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of supply reliability in drought conditions (7.1Ml/d) without impacting on other abstractors, therefore ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Implementation will result in an increase in energy use and chemicals for treatment of abstracted water (7.1MI/d). The option has the benefit that it will make use of existing infrastructure without the requirement for additional equipment.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The drought permit would lead to a reduction in flows that would manifest as a reduction in levels and velocities (not considered significant with regard to potential marginal habitats), and impacts are considered moderate adverse. This would be limited to the period of drought permit implementation, which could last for up to 6 consecutive months during the period May to December. Under dry weather conditions, there would be a subsequent delay in groundwater recovery but this is unlikely to prevent recovery occurring during the hydrological winter (October to March).	Medium (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The drought option would not significantly increase risks associated with SRI beyond that occurring under natural drought conditions. The EAR suggests a low risk is associated with dissolved oxygen saturation and negligible risk associated with ammonia.	P Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None

SE/	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it affect WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing'. There is a low risk to river flows associated with the groundwater abstraction licence for the Ramsbury Pumping Station. The EAR identifies that the option is unlikely to impact the feasibility of surface water abstractions in the zone of influence (including those for agriculture).	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Some potential for adverse geomorphological impacts are identified by the EAR. However, due to the presumably low sediment concentrations (characteristic of a chalk fed river) and the relatively low amounts of sediment in transport during a drought, they are considered to be no more than minor.	Low (adverse)	Low	Small	Moderate	Medium-term	Temporary	Negligible adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide approach have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option involves an increase in abstraction of 7.1MI/d. There would be a short-term increase in air emissions associated with abstraction and treatment. The option is within 5km of the Marlborough AQMA.	Low (adverse)	Medium	Low	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought, which may become more prevalent due to climate change.	Low (beneficial)	Medium	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no construction requirements. The potentially impacted reach of the River Kennet flows through Ramsbury Manor (Registered Park and Garden). Therefore there is potential for the drought permit to influence the setting of this heritage asset and any unknown water dependent assets. However, these effects will be short term, temporary and during a time of drought conditions and naturally lower groundwater and river levels.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	The option lies within North Wessex Downs AONB. The drought permit would lead to a reduction in flows that would manifest as a reduction in levels which could affect locals and visitors who use the local area. These effects would relate to a short section of river, would be short term and temporary in nature and would occur during a time of naturally low river levels.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Axford 2: As a conse MI/d and leave the this flow c	equence of 1 peak of 13. Kennet Cato constraint a	the Environi 1 MI/d with chment and nd increase	ment Agenc I maximum ; I feed other of the aver;	:y's Restorin abstraction parts of the age and pea	g Sustainabl constrained : WRZ. The o ik abstractio	e Abstractio to 6 MI/d w ther 3 MI/d n to 20 MI/c	on investiga vhen flows i of water m d (an additio	tion, the ab n the River ust be usec onal benefit	straction li Kennet at l I to supply t of 14 MI/c	cence at Axf Knighton gau Axford and t d) regardless	ford has rece uging station the surround of the flow	ently been r a are below ling villages as recorded	eviewed. A 100 Ml/d. \ and return d at Knighto	s of April 2(When the fl ed to the Ri on gauging s	017, the nev ow constrai ver Kennet tation	v abstraction nt is in force via local STV	n licence lin 3, only 3 Ml, Ns. The Axfi	nit at Axford /d of the ab ord 2 droug	d will be set stracted am ht permit w	: at an avera iount is peri ill effectivel	ige of 9.34 mitted to ly remove
Summary commentary of scheme adverse effects	Major adv subsequer regarding (Marlboro Potential Kennet an	erse, short ht delay in g River Kenne nugh to Hun moderate ir nd the lands	term effect: roundwate et SSSI Cons gerford) wa mpacts on s cape it flow	s are expect r recovery, l rervation Ob iter body (Gi rea trout and vs through, v	ted in relatic but this is ur ojectives are B106039023 d brown trou which includ	on to a reduc nlikely to pre considered \$172) would ut (NERC Ac ^r les the North	ction in flow event recove moderate d be at moder t Section 41 h Wessex Dc	rs in the Riv ery occurrin luring droug rate risk fro Species) be owns AONB	er Kennet, g during th th permit i m May to I tween May and Ramsb	that would e hydrologi mplementa December a y and Decer wury Manor	manifest as cal winter (C ition and mi ind minor ris nber with di (Registered	a reduction October to N nor during t sk from Janu rought perm Park and Ga	in levels ar Aarch). Moo he period o ary to Marc it impleme Irden).	nd velocities lerate adver f groundwa ch of short-t ntation. Pol	s during dro rse, short-te ter recovery erm deteric tential for m	ught permit rm effects : 7. The macr pration or p ninor advers	: implement: are anticipal oinvertebra revention of se effects wi	ation. Unde ted with res te and fish (ⁱ achieving C th respect t	er dry weath spect to bioc component GES with dro so the chang	ner conditio diversity, flo of the Mido ought permi e in water l	ns, there we yra and faun ile Kennet it implemen evels in the	ould be a 1a. Impacts 1tation. 2 River
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Moderate	beneficial o	effects are e	expected du	e to provisio	on of additio	mal water si	upply, and a	also minor l	oeneficial e	ffects associ	ated with in	nproving th	e resilience	of water su	pplies to di	ought.					
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (those likely to remain after reasonable mitigation)	Residual beneficial effect significance (those likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Major hydrological effects have been identified in relation to the significant changes in flows that would manifest as a reduction in levels and velocities flow during drought permit implementation. Impacts on the River Kennet SSSI Conservation Objectives are identified as moderate during drought permit implementation and during the period of groundwater recovery. The EAR considers the macroinvertebrate, fish and macrophyte component of the Middle Kennet (Marlborough to Hungerford) water body (GB106039023172) to be at moderate risk of short-term deterioration or prevention of achieving GES with drought permit implementation. Impacts on the NERC Act Section 41 Species are moderate for sea trout and brown trout and minor for European eel.	Medium (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	s n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	· n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	There is uncertainty surrounding the likely effect of flow and level impacts on the ability of invasive macroinvertebrates (e.g., such as signal crayfish, New Zealand mud snail and European physa) to distribute further within the watercourses. However, implementation of the drought permit may increase abundance o range of invasive macrophytes (e.g., Japanese knotweed, giant hogweed, Himalayan balsam and Australian swamp stonecrop) through additional habitat availability, although the level of impact beyond that of natural drought is uncertain.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional 14Ml/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects on human health (e.g. noise and dust nuisance) are expected.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	c The River Og and Kennet contain a wide diversity of fish species. The location and surrounding area makes the catchment very popular with anglers. There is a potential short term alteration to fish community composition as a result of drought permit implementation, which may impact anglers. Navigation is not possible within the River Og (Reach 1) and the River Kenne between the River Og confluence and Hungerford (Reach 2). As such, the potential to affect navigation is minor. The North Wessex Downs is a unique and spectacular landscape. The River Og and River Kennet form an essential part of the landscape of the AONB and therefore any impacts of the drought permit on the river could impact walkers and others who visit the area.	Moderate (adverse) t	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	• Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions (14MI/d) without impacting on other abstractors, therefore ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Implementation will result in an increase in energy use and chemicals for treatment of abstracted water (14MI/d). The option has the benefit that it will make use of existing infrastructure without the requirement for additional equipment.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The drought permit would lead to a reduction in flows that would manifest as a reduction in levels and velocities (not considered significant with regard to potential marginal habitats), and impacts are considered major adverse. This would be limited to the period of drought permit implementation, which could last for up to 6 consecutive months during the period May to December. Under dry weather conditions, there would be a subsequent delay in groundwater recovery but this is unlikely to prevent recovery occurring during the hydrological winter (October to March).	Major (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Major adverse	None

SE	A topics and objectives	Assessment methodology				Assessment of option																
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (those likely to remain after reasonable mitigation)	Residual beneficial effect significance (those likely to remain after reasonable mitigation)											
Wəter	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/Status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The EAR suggests the drought option would result in moderate risk associated with SRP beyond that occurring under natural drought conditions A low risk is associated with dissolved oxygen saturation and negligible risk associated with ammonia. Marlborough STW (upstream of the impacted reach) presents a medium risk to water quality in the impacted reach (specifically with regard to ammonia and phosphorous). The risk would also likely be medium without a drought permit in place.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None											
Wəter	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	Local resource availability is described as 'Water not available for licensing'. There is a low risk to river flows associated with the groundwater abstraction licence for the Ramsbury Pumping Station. The EAR identifies that the optior is unlikely to impact the feasibility of surface water abstractions in the zone of influence (including those for agriculture).	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None											
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None											
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes?	Overall, geomorphology impacts are assessed as moderate in the reach. Impacts could include changes in wetted width and depth, in-channel structures or macrophytes influencing ponding and sediment dynamics, or declines in bed stability.	Moderate (adverse)	Medium	Small	Moderate	Medium-term	Temporary	Moderate adverse	None											
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None											
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide approach have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None											
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option involves an increase in abstraction of 14MI/d. There would be a short-term, temporary increase in air emissions associated with abstraction and treatment. The option is 4.4km from the Marlborough AQMA. Considering the proportional increase in abstraction, the distance to the AQMA and the temporary nature of effects the potential magnitude of effect is considered to be minor.	Low (adverse)	Medium	Low	Low	Short-term	Temporary	Minor adverse	None											
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	The option involves an increase in abstraction of 14MI/d. There would be a short-term increase in greenhouse gas emissions associated with abstraction and treatment.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None											
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Small	High	Short-term	Temporary	None	Minor beneficial											
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no construction requirements. The potentially impacted reach of the River Kennet flows through Ramsbury Manor (Registered Park and Garden). Therefore there is potential for the drought permit to influence the setting of this heritage asset and any unknown water dependent assets. However, these effects will be short term, temporary and during a time of drought conditions and naturally lower groundwater and river levels.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None											
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None											
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The option lies within North Wessex Downs AONB. The drought permit would lead to a reduction in flows that would manifest as a reduction in levels which could affect locals and visitors who use the local area. These effects would relate to a short section of river, would be short term and temporary in nature and would occur during a time of naturally low river levels.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None											
Drought Plan option	Bibury: The droug below. The droug The arrang Minor con the enviro	ht permit ir ht permit w gement for istruction w inment are a	nvolves add vould increa river flow a vorks are red anticipated	itional abstra ase abstractio ugmentatior quired to bri	action from on at the cu n would cor ng the optic	existing bo arrent boreh atinue. on online as	reholes. Cu oles by up t a drought p	rrent liceno o 5Ml/d. permit sour	ce (28/39/06 ce. There is	5/0062) allo limited tre	ows for abstr atment capa	action at a p ibility at Bib	beak daily r	ate of 6.819 erefore a ter	MI/d for pu nporary wa	ıblic water s ter treatme	upply and a	n arrangem ay be requi	ent for rive red. No sigr	r flow augn hificant con	nentation as	described pacts on
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Summary commentary of scheme adverse effects:	Potential a constructio	adverse effe on. All impa	ects identifi acts identifi	ied relate to ed will be sh	a minor rec ort-term ar	duction in flo nd temporar	ow in the Riv Y.	ver Coln, ar	nd associate	d minor im	pacts on NEf	RC species, N	WFD status	and the geo	morpholog	y of the rea	ches. There	may also be	e minor adv	erse tempo	rary effects	related to
SEA Objectives Adverse Effects Assessment Summary		None	None			None	None		None				None		None	None			None	None	None	
Summary commentary of scheme beneficial effects	Beneficial drought.	impacts ha	we been ide	entified prim.	arily throug	th ensuring s	supply of wa	ater to loca	l population	and other	customers/t	ousinesses. 1	There are al	so likely to	be benefici	al impacts a	associated w	vith improvi	ng the resil	ience of wa	iter supplies	to
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/l igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies negligible effects on nationally designated sites (Winson Meadows SSSI, Whelford Meadows SSSI and Cotswold Water Park SSSI). Minor adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species. The EAR predicts a minor impact on WFD status based on the impact of the drought option on macroinvertebrates, macrophytes, fish and diatoms. Minor construction works (temporary water treatment facilities) an required in order to bring the option online. The EAR assessed the impacts associated with construction to be negligible.	Medium e	Low	Medium	Moderate	Short term	Temporary	Minor adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Although there is potential for an increase in distribution and abundance of INNS as a result of the drought permit implementation, the impact significance and magnitude is considered to be negligible.	Low	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to SMI/d of water) during drought conditions and therefore help maintain public health. h Minor construction works are required in order to bring the option online (temporary water treatment facilities) - therefore may result in noise/dust nuisance during construction.	Low (beneficial) Low (adverse)	High (beneficial) Medium (adverse)	Medium	Moderate	Short term	Temporary	Minor adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as , National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	No impacts on recreation, tourism and navigation are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being	POption will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation have been identified, therefore no impacts on related businesses or tourism are anticipated.	Low (beneficial)	High	Small	Moderate	Short Term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs under normal operation will usually result in related and proportional increases in energy use and waste. The option will make use of existing infrastructure, with minor construction works required in order to bring the option online (temporary water treatment facilities)	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 Io avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	I he EAR identifies minor hydrological impact on the two identified reaches based on the predicted reduction flow of 3.5Ml/d.	Low	Medium	Medium	Moderate	Shert term	Temporary	Minor adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Assuming best practice construction methods, impacts from construction on water are anticipated to be negligible. The EAR identifies that the implementation of the Bibury drought option will have a negligible impact on water quality. The discharge from a local trout farm may be exacerbated by the implementation of the drought option, but it is anticipated to be low localised risk.	Low	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Water resource available is described as "water not available for licencing" by the EA. Implementation of the drought permit will have a negligible impact on other groundwater and surface water abstractions. The 3 surface water abstractions in Reach 1 are for Bibury Trout Farm and are through flows rather than consumptive.	Low	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests minor impacts to geomorphology in the impacted reaches - The evidence of in-channel weirs (in reach 1) and in- channel macrophytes (both reaches) could lead to sediment trapping and deposition but due to the low impact and unlikely impact to sediment transportation this impact would be limited. No impacts on land use, soil or geology are anticipated as a result of the operation of this option.	Low	Medium	Low	Moderate	Short term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cvcling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option, and no opportunities to enhance ecosystem service functions of land have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for a catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	The option will increase air emissions associated with abstraction and treatment of water (up to 5ml/day), however no AQMAs are in proximity of the option.	Low	Low	Small	Low	Short Term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Increased abstraction would cause an increase in energy use in the short term. Minor construction is anticipated, which would result in energy use/short term increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought orders/permits are a key componant of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low	High	Small	Moderate	Short term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it morove access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Heritage assets in proximity to the option and zone of influence are unlikely to be impacted over the duration of the drought permit implementation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The drought option is located within AONB (Cotswolds). However, minor impact on water flows/level are expected, and it is not anticipated that this will affect the visual amenity of the area.	Low	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None

Drought Plan option	Blewbury Overview: located 60 SMI/d- rec Minor con significant	The drough Om south o commission struction w constructio	nt permit wo f the village ing of abstra orks would on impacts o	ould require a, approxima action from be required on the enviro	re-commiss tely 700m a boreholes (to bring thi onment are	sioning of ex away from ti revoked 200 is option onl anticipated	kisting borel he Mill Broc 17). line as a dro	holes. The a ok source an ought permit	bstraction l d 600m aw t source. Op	licence at B ray from Ble peration wo	lewbury wa ewbury Pono puld involve	s revoked in d. construction	1 2007 and v n of a temp	olumes trai	nsferred to t	Gatehampto plant; howe	n. The revo ver, pipewo	ked Blewbu rk would be	ury abstracti e within the	ion consiste	d of 4 boreł e boundary.	noles . No
Summary commentary of scheme adverse effects:	Major redu effects on adverse ef	uctions in fl NERC speci fects relate	ows are like es (spawnin to the impa	ely to occur i g fish - brow acts associat	n Mill Broo yn trout). A ed with Iow	k and Chols further maj v flow, inclu	ey Brook du or adverse e ding increas	ring drough effect is anti se in invasiv	t option im cipated in r e flora and	plementati relation to t geomorpho	on, resulting the near-dry ological impa	g in major ao ing out of B acts. All adv	dverse impa lewbury Po erse impact	cts on wate nd during d s are consic	er quality (ir rought optic lered to be s	particular : on operatior short term a	south of Sou , which has nd tempora	uth Moreto high ameni Iry.	n and Chols ity for local	ey STW), bı residents a	t also result nd visitors.	ting in Other
SEA Objectives Adverse Effects Assessment Summary		None	None				None		None				None		None	None			None	None	None	
Summary commentary of scheme beneficial effects	Beneficial	impacts cor	mprise ensu	ring supply o	of water to	local popula	ation and ot	her custom	ers/busines	ses. There a	are also like	ly to be ben	eficial effec	ts associate	d with imp	roving the re	silience of t	water suppl	lies to drouş	ght.	-	
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies no effects on nationally designated sites. Major adverse effects on NERC habitats/species (major impact Brown trout - October to March - affecting spawning fish. Minor impact on European Eel - fragmentation of habitats, Ma to March) and ecologically significant species. The EAR identifies minor and moderate effects on WFD status based on the impact of the drought option on macroinvertebrates, macrophytes, fish and diatoms. Minor construction works are required in order to bring the option online (temporary plant) - The EAR assessed the impact: associated with construction to be negligible.	High (adverse)	Medium	Medium	Moderate	Short Term	Temporary	Major adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water wi collaborate with catchment groups on climate change resilience.	n/a I	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however TW will work with catchment groups in the long term to collaborate on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EAR identifies that the drought option will result in a reduction in flows, thereby increasing the habitat suitability and distribution of invasive flora (least duckweed) in March to May. There may also be changes to invasive species distribution and abundance due to water quality deterioration.	Low (adverse)	Medium	Medium	Moderate	Short term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to 5Ml/d of water) during drought conditions and therefore help maintain public health. Minor construction works are required in order to bring the option online (temporary plant), which may result in noise/dust nuisance during construction.	Low (beneficial) Low (adverse)	High (beneficial) Medium (adverse)	Medium	High	Short term	Temporary	Minor adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as , public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	It is unlikely that drought permit implementation will have any impacts on existing trails and footpaths, navigation or angling. The EAR identifies a negligible adverse effect on other abstractors - they are considered unlikely to present a significant risk to river flows with the drought permit in place, and their operation would not be affected by the drought permit.	Low (adverse)	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation have been identified, therefore no impacts on related businesses or tourism are anticipated.	Low (beneficial)	High	Small	Moderate	Short Term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs under normal operation will usually result in related and proportional increases in energy use and waste. The option will make use of existing infrastructure, with minor construction works required in order to bring the option online (temporary water treatment plant)	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge?	A major reduction in river low flows (manifesting as a reduction in levels, velocities and wetted widths) is likely in both Mill Brook and Cholsey Brook. The impacts are likely to be limited to the duration of drought permit implementation and subsequent recovery period (that could last up to an additiona 3 months).	n High (adverse)	Medium	Medium	Moderate	Medium	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The EAR identifies a high risk of water quality impacts associated with SRP, due to reduction in buffering capacity of South Moreton (Reach 1) and Cholsey STW (Reach 2) discharges. Also a medium risk associated with dissolved oxygen saturation (downstream of Cholsey STW - Reach 2). Assuming best practice construction methods, impacts from construction on water are anticipated to be negligible.	High (adverse)	Medium	Medium	Moderate	Short term	Temporary	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services 	Water resource available is described as "water not available for licencing" by the EA. Implementation of the drought permit will have a negligible impact on other groundwater or surface water abstractions as they are all under 0.5MI/d.	Low (adverse)	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests minor impacts to geomorphology in the impacted reaches due to changes in wetted width and depth and the impacts of in-channel structures. No impacts on land use, soil or geology are anticipated as a result of the operation of this option, as construction is within existing plant.	Low (adverse)	Medium	Small	Moderate	Short Term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option (construction in existing boundary), and no opportunities to enhance ecosystem service functions of land have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option will increase air emissions associated with abstraction and treatment of water (up to Smi/day), however no AQMAs are in proximity of the option. Minor construction is anticipated, which may result in short term increases in dust/air pollutant emissions.	Low (adverse)	Low	Small	Low	Short term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Increased abstraction would cause an increase in energy use in the short term. Minor construction is anticipated, which may result in energy use/short term increases in greenhouse gas emissions.	Low (adverse)	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key componant of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (adverse)	High	Small	Moderate	Short term	Temporary	None	Minor beneficial

SEA	topics and objectives	Assessment methodology				Assessment of option	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Heritage assets in proximity to the option and zone of influence are unlikely to be impacted over the duration of the drought permit implementation.	e n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	There are two AONBs within close proximity to the option, i.e., Chilterns and North Wessex Downs. However, the EAR assesses identifies that the AONBs are unlikely to be impacted over the duration of drought permit implementation. Blewbury Pond has high amenity value for the local residents and visitors (Reach 2). It is likely that there will be a significant reduction in level, almost to the point of complete drying out of the pond in extreme circumstances, as a result of the drought permit. This is seen as having a very significant impact on the landscape and amenity value of this feature.	High (adverse)	Medium	Medium	Moderate	Short term	Temporary	Major adverse	None

Drought Plan option	Gatehamp Under nor 250m fron annual ma The opera comprises	ton: mal license n the river). Iximum of 3 tion of the :: 3.5MI/d -	conditions ι . Normal abs 3,4770Ml/ γε existing abst continuation	water is ab: :traction co ear. traction lice n of abstrac	stracted froi imprises: Thi ance is limit [,] ction from b	m the Cretad e existing ab ed by flow c oreholes be	ceous Chalk : Istraction lic onditions in yond licence	aquifer at G sence (28/3 the River T e conditions	iatehampto 9/23/173) p hames at C . This would	on. The Gate bermits abs aversham G d provide a	ehampton al traction fron Gauging Stati benefit of 3	bstraction c n the Chalk on - when f .5Ml/d. The	onsists of 7 aquifer at G flows are les ere is no con	boreholes (Satehampto Sathan 400N Struction ph	4 boreholes n at a peak ⁄Il/d for 5 da nase associa	s are within day rate of ays, then at ated with th	100 metres 105MI/d wit ostraction m is drought o	of the River th an avera ust be main ption.	⁷ Thames; th 3e rate per y Itained at or	1e other thr year and mc r below 101	ee are appri inth of 95M .5MI/d. Proj	oximately II/d and an posed
Summary commentary of scheme adverse effects:	There are emissions	negligible h to air assoc	ıydrological i :iated with a	impacts ass additional a	sociated wit	h Gatehamp ınd proximit	iton drought y to nature o	t permit imp conservatio	olementation n sites. All a	on. No impa adverse eff	acts on biodi ects identifie	versity, geo ed are short	morphology t-term and t	y, water qua emporary.	lity and oth	ıer abstractı	ors are expe	cted. There	may be mir	nor adverse	effects due	: to
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None	None	None	None		None		None	None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial i	impacts are (expected w	vith regard t	o ensuring s	upply of wat	ter to local	population	and other o	customers/b	usinesses. 1	There are als	so likely to b	oe beneficia	ıl impacts a:	ssociated wi	th improvin	g the resilie	ince of wate	er supplies t	to drought.
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Hydrological impacts would be negligible. The EAR reports no significant impacts on designations, or NERC or notable species. Other within a 1km area of influence (e.g., areas of ancient woodland) are unlikely to be affected by implementation of this drought option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EAR reports the implementation of the drought permit will not increase dispersal of invasive flora species. For other invasive species significant effects are unlikely due to the negligible impact on surface waters.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional 3.5Ml/d of water) during drought conditions and therefore help maintain public health. Regarding nuisance, there is no construction proposed for this option therefore no adverse effects are expected to public health.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	There is no hydrological impact on surface water features as a result of drought permit implementation. Therefore, there will be no impact on angling or navigation. The option is within proximity of the Thames Path National Trail however there is no construction proposed and negligible hydrology effects therefore no effects on visual amenity from the path anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Medium	Short-term	Long	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling?	Increases in abstraction (3.5 MI/d) over and above what occurs under normal operation will result in short-term increases in energy use and waste. The option will make use of existing infrastructure, avoiding new construction (and associated use of materials) and minimising additional energy use and waste generation.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The reach addressed in the EAR is the River Thames from Goring Lock to Whitchurch Lock. The course of the River Pang is about 8km away from Gatehampton to the southwest, therefore, significantly outside the drawdown zone identified in the EAR. The drought permit would have a negligible impact on flows in the Rivers Thames and Pang.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution?	There are no additional discharge pressures with a dry weather flow or maximum flow of greater 0.5 MI/d within the hydrogeological impacted zone of the Gatehampton drought permit, thus no impacts on water quality or WFD status are expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)?	There are no additional abstraction pressures greater than 0.5MI/d within the hydrogeological impacted zone of the Gatehampton drought permit, thus no impacts on other abstractions are expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true water and the support of the supervision of the supe	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 10 protect and enhance geology, geomorphology and the quality and quantity of soils.	 will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	As neguguble adverse hydrological impacts were identified, no impacts on geomorphology are anticipated. No construction is required for implementation of this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after) reasonable mitigation)
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment- wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	There would be small increases in air emissions associated with abstraction of water. The option is within proximity of sites designated for nature conservation at national level.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	There would be small, short-term increases in greenhouse gas emissions associated with abstraction of water. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from optential effects of climate change?	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Heritage assets within the area of influence include Grim's Ditch: two sections in Portobello Wood, Holies Shaw and High Holies Wood Gap – Scheduled Ancient Monuments. These are unlikely to be impacted over the duration of drought permit implementation. There is also one listed building within 500m and further listed buildings between 500m and 1km. However there is no construction proposed and negligible hydrological effects, therefore no effects on heritage assets are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it more acress, value, understanding or environment periape assets and 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	The option is within the North Wessex Downs AONB. There is no construction proposed and a negligible hydrological effect predicted therefore no significant effects on landscape are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
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Drought Plan option	Ogbourne The Ogbou approxima from these significant	Energency E Irne ground Itely 1km av e boreholes. constructio	Boreholes (I water abstr vay from th Works will n impacts o	BH): action site c ose used for include con n the enviro	omprises ter r the TWUL r nection of m nment are a	n borehole: ormal ope nobile gene nticipated	s constructe rating licenc rators and s . The drough	d between æ. Impleme tarters to e nt permit is	1970 and 1 ntation of f ach boreho anticipated	979. Water the drought le pump. Ti l to be appl	would be al permit wou he abstracte ied for up to	bstracted fro uld involve al d water will 6 consecutio	m the Berk bstraction c be pumped ve months l	shire Down of 4 MI/d fr I to Ogbour between M	s Chalk WFi om these be ne WTW fo ay and Dece	D groundwa oreholes. M r treatment ember inclu	iter body ne inor constru via the exis sive, althou	ar Ogbourn Iction work ting pipelin gh it could l	e St George s are require e from the l be impleme	. The Ogbo ed to achie boreholes t nted at any	urne EBH ar re the abstr o the WTW time of yea	re located raction . No ar.
Summary commentary of scheme adverse effects	Moderate River Kenr fish. A min changes in	adverse, sh het (a design hor adverse, h the River K	ort-term eff bated SSSI) short-term ennet are c	ects are ant also have po effect onan onsidered m	icipated wit otential for n gling and rec inor, howev	n respect to noderate a reation rel er there is	o biodiversit dverse, shor ates is posib a high risk t	ty, flora and t-term effe ble due to ir o water qua	fauna. Imp cts on macr npacts on f llity associa	pacts on fish roinvertebra ish commu ated with th	n may occur ates. The Mi nities. Modu ne Marlborou	due to an ex ddle Kennet erate advers ugh STW disc	tension in c water body e, short-ter :harge due :	duration of y is conside m effects to to reduced	River Og be red at mode o water are dilution in t	ing dry, and erate risk of likely as the the River Ke	l a reduction short-term a abstraction nnet during	n in flows in deteriorati n will cause g drought pe	the River K on of WFD s the River O ermit impler	Sennet. Cha status for m Ig to remair mentation.	nges in flow acroinverte dry for lon	v in the ebrates and gger. Flow
SEA Objectives Adverse Effects Assessment Summary		None	None				None		None				None		None	None			None	None	None	
Summary commentary of scheme beneficial effects	Moderate	beneficial e	ffects are e	xpected due	e to provisio	n of additio	nal water su	upply. Mino	r beneficial	l effects are	e associated	with improv	ing the resi	lience of w	ater supplie	s to drough	t.					
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Minor construction works required involve connection of mobile generators and starters to each borehole pump, however these are not expected to be significant. The EAR identifies no significant reductions in wetted width or marginal habitats. The extension in duration of River Og being dry may cause moderate impacts on brown trout, builhead and grayling. As a result of changes to flow, moderate adverse impacts have been identified on macroinvertebrates and fish in the River Kennet (a designated SSSI), including fragmentation of habitats and increased significance of obstacles/barriers to migration, and alteration to community composition as a result of water quality deterioration. The Middle Kennet water body (GB106039023173) would be at moderate risk of short-term deterioration of WFD status for macroinvertebrates and fish.	Medium (adverse)	Medium	Medium	Medium	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Implementation of the option may cause a delay in hydrological, recovery increasing the habitat suitability and therefore distribution of invasive species, however these impacts are expected to be negligible.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional 4MI/d of water) during drought conditions and therefore help maintain public health. Construction activities (mobile generators connected to borehole pump) are considered very small scale and short term. The Marlborough AQMA lies within 5km of the study area.	Low (adverse) Low (beneficial)	Medium (adverse) High (beneficial)	Medium	Low (adverse) High (beneficial)	Short-term	Temporary	Minor adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	The fish assessment in the EAR identifies a potential minor alteration to community composition as a result of drought permit implementation, therefore there is a potential minor impact on angling. The River Og and Kennet contain a wide diversity of fish species. The location and surrounding area makes the catchment very popular with anglers. Any impacts of the drought permit on fish population or distribution may impact anglers. Navigation is not possible within the River Og (Reach 1) and the River Kennet between the River Og confluence and Hungerford (Reach 2). As such, the potential to affect navigation is minor.	Low (adverse)	Medium	Medium	Medium	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The option will contribute to the maintenance of supply reliability in drought conditions without impacting on other abstractors, therefore ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Medium	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Implementation will result in an increase in energy use and chemicals for treatment of abstracted water (4MI/d). The option make use of existing infrastructure. However, will also require additional equipment and energy use to enable pumping from boreholes that are not used in non-drought conditions.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies moderate risks on the River Og due to increased duration of reach being dry up until annual groundwater recovery occurs, leading to watercourses remaining drier for longer. The impact is anticipated to be up to 2 months (based on data from 4 historic drought periods and acknowledging the details of the proposed drought permit) and limited to during the hydrological winter. There may also be small changes to flow in the River Kennet (within normal range of medium to low flows) around the period when recovery of flow input from the River Og would otherwise have occurred without a drought permit being utilised. Impact anticipated to be up to 2 months, in line with the impact duration for the River Og (Reach 1) and limited to during hydrological winter.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	I Assuming best practice construction methods, impacts from construction on water are anticipated to be negligible. Care should be taken at the end of the drought option operation to prevent contamination of the groundwater. The EAR identifies a moderate risk to phosphorus concentration, and negligible risks to dissolved oxygen and ammonia concentrations in both reaches. In the River Kennet reach there is a high risk to water quality associated with Marlborough STW due to reduced dilution in the River Kennet during drought permit implementation.	Medium (adverse)	Medium	Medium	Medium	Short-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it affect WFD group of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. Abstraction will be temporary and short term, however, there is potential for duration of effects on groundwater to extend beyond the drought permit implementation period with potential adverse effects to the local WFD water body. The EAR identifies that the option is unlikely to impact the feasibility of any groundwater or surface water abstractions in the zone of influence (including those for agriculture).	Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The minor construction works required (connection of mobile generators) are not anticipated to result in any adverse effects on soils. In operation in-channel structures, such as weirs/sluices, could influence sediment dynamics by creating ponded areas upstream of the structure. These areas will have very low flow velocities and increased depth in relation to other areas of the channel, this is likely to promote the deposition of fine sediment behind the structure. The EAR describes geomorphology impacts as minor in both reaches based on the anticipated low sediment concentrations (characteristic of a chalk fed river) and the relatively low amounts of sediment in transport during a drought. As the Rover Og channel is accustomed to changes in wetted perimeters are not considered significant.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No opportunities to promote a catchment wide approach have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	The option involves abstraction of 4MI/d of water. There would be a n short-term increase in air emissions associated with abstraction and treatment. The option is within 5km of the Mariborough AQMA.	Low (adverse)	Medium	Low	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	The option involves abstraction of 4MI/d of water. There would be a d short-term increase in greenhouse gas emissions associated with abstraction and treatment.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial

Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are number of statutory sites in proximity to the Ogbourne boreholes, including three Scheduled Ancient Monuments and a Conservation Area associated with Ogbourne St. George. However, all are over Ikm from minor construction works planned at the boreholes. Hydrological impacts associated with operation of the options are not anticipated to adversely effects these assets or any unknown water-dependent assets.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultura assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their lsettings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The option and impacted reaches are within North Wessex Downs AONB. The minor construction works planned are associated with existing borehole sites. The AONB is a unique and spectacular landscape. The River Og and River Kennet form an essential part of the landscape of the AONB. The impacted reach of the River Og is an intermittently flowing river and there are naturally periods of no flow. The impact of the drought permit is to extend the period of recovery between the months of October to March. This delay to the recovery period occurs outside of the summer months when visitors to the North Wessex Downs would be greater. Considering these factors the value/sensitivity of the AONB is considered to be Medium.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
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Drought Plan option	Oxford Cau No abstrac and onwau Perry Hills situation.	nal: ction usually rds to supply ; boreholes). Constructio nted at any t	y occurs fror y. The abstr . Abstractio ın activities ı :ime of year	m the Oxfor action poin ns would b would be re although is	rd Canal. The It would appr e within norm aquired assoc anticipated 1	drought pr oximate to nal operat iated with to be imple	ermit would o the closes :ional volum ı the install; emented fo	d involve at t point of th netric limits ation of pun r up to 6 co	ostraction of ne Oxford Ca and so the c nps and tem nsecutive m	5 to 10Ml/ mal to Grin drought pe porary pip onths betv	/d from Oxfr nsbury Rese rrmit would e connectio ween May a	ord Canal w rvoir. The a not have ar n across the nd Decemb	ith the perm wailable res wadditiona e short dista er inclusive.	nission of th ource would I environme nce betwee	e Canal and d be abstrad intal impact n the Oxfor	d River Trusi cted from bo t at or arour rd Canal and	t, and transf preholes than the se boo I Grimsbury	ferring it fo at are curre reholes cor Reservoir.	r storage to antly operat npared to ti The drough	Grimsbury I ional (Bradle ne normal al it permit cou	Reservoir ey and bstraction uld be
Summary commentary of scheme adverse effects	Small char expected. Council AC	nges to flow . Short-term QMA.	[,] and velocit effects on p	:y in Reach : oublic healt	1 of the Oxfoi h and air quai	rd Canal wi lity due to	nill occur, ha ∙ emissions ;	owever the associated v	hydrological with constru	impact of action and a	the drought additional al	permit is c ostraction r	onsidered t nay occur, a	o be minor o nd these are	overall. No i e considere	impacts on (d to be min	geomorpho or overall gi	logy, watei iven proxin	r quality and nity to the C	l other abstr herwell Dist	ractors are trict
SEA Objectives Adverse Effects Assessment Summary	None	None	None	None			None		None		None	None	None	None	None	None			None	None	None
Summary commentary of scheme beneficial effects	Moderate	: beneficial e	iffects are e	xpected du	e to provisior	1 of additic	onal water :	supply. Min	or beneficial	l effects an	e associated	l with impro	oving the re	silience of w	vater suppli	es to droug	ht.				
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None	,	None		None	None	None	None	None	None	None	None	None	None	None		None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species). 	Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustianable management of natural habitats and ecosystems, i.e. Will it contribute to the sustianable management of natural habitats and ecosystems, i.e. Will it affect WFD compliance e.g. good ecological potential/status? Will it affect WFD compliance or support provision of fish passage with respect to migratory fish functioning habitat connectivity?	The EAR confirms that no designated sites would be impacted by the drought option and no impacts on habitats, species or WFD compliance are anticipated. It is assumed that the abstraction would be adequately screened to prevent fish entrainment or impingement.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The source of water abstracted is groundwater and therefore there are no perceived risks of introducing INNS. Identified minor, short term increases in flow velocities in the canal as a result of the option is unlikely to result in any effects on the spread of INNS.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)?	Option will help to maintain essential public water supplies (provision of up to an additional 10Ml/d of water) during drought conditions and therefore help maintain public health. Some construction is required for option implementation, therefore there may be minor effects on human health (e.g., noise and dust nuisance).	Low (beneficial) Low (adverse)	High (beneficial) High (adverse)	Medium	Moderate	Short term	Temporary	Minor adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network?	Flows and velocities would be increased slightly within Oxford Canal due to abstraction up to the first lock upstream. The increase would be small given the size of the abstraction with no impacts on fish or angling. The Canal and River Trust will still be able to manage water levels during drought permit implementation. Therefore no impacts on navigation are anticipated.	Low (adverse)	Low	Small	Moderate	Short term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation, therefore no effects on essential services are anticipated.	Low (beneficial)	High	Small	Moderate	Short term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	An increase in abstraction (5-10MI/d) is likely to result in a proportional increase in the use of energy, chemicals and generation of waste. However, existing infrastructure would be used, minimising such increases.	Low (adverse)	Low	Small	High	Short term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	There would be no impact around the Bradley and Perry Wells boreholes normal licensed operational limits would not be exceeded. The Canal and River Trust has indicated that it would still be able to manage water levels in the canal during operation . The EAR identifies a minor hydrological impact relating to minor increases in flow velocities in the canal.	Low (adverse)	Medium	Small	High	Short term	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance?	The EAR describes no risk to water quality or WFD status as a result of drought permit implementation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it minime an appropriate balance of supply with other functions and services (including agriculture)?	Water resource availability is described as "water not available for licencing" by the EA. However, abstraction is within normal operational volumetric limits and so would not have any additional environmental impact compared to the normal abstraction situation. The water would be transferred via the canals therefore minimising energy use for pumping. There are no abstraction licences (>0.5Ml/d) in the zone of impact that could be impacted.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option	•	•			-
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No impacts on land use, soil or geology are anticipated as a result of the operation of this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
oil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for enhancing the ecosystem services functions of land have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
pil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat?	No land take is required for the option, and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
ir and Climate	6.1 To reduce air pollutant and greenemissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	There would be emissions associated with abstraction and treatment of water. The drought option is in proximity to Cherwell District Council AQMA.	Low (adverse)	Medium	Small	Moderate	Short term	Temporary	Minor adverse	None
ir and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	There would be energy use and emissions associated with the abstraction and treatment of water, however, this is unlikely to be more than would be produced to supply an equivalent quantity of water in non-drought conditions.	Low (adverse)	Low	Small	High	Short term	Temporary	Negligible adverse	None
ir and climate	6.3 To adapt and improve resilience to the threats of climate change.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	Moderate	Short term	Temporary	None	Minor beneficial
.rchaeology and Cultural leritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	There are no heritage assets in proximity to the option and zone of influence. The EAR identifies no significant impacts on groundwater levels or water levels in the canal therefore, no adverse effects on the historic environment or water dependant heritage assets.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
andscape and Visual imenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	The Oxford Canal National Trail is within the area of influence. However, construction requirements are limited to installation of pumps and temporary pipe connection across the short distance between the Oxford Canal and Grimsby Reservoir. No impacts to access are anticipated. Loss of local distinctiveness is unlikely as water levels in the canal would be maintained. The trail is unlikely to be impacted over the duration of the drought permit implementation as water levels are only subject to slight change.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Sor Brook Overview: result of tl Abstractio full 4.456f	The drough he drought n would be Ml/d may b	ht permit w permit. 4.4 permitted e e abstracted	ould involve 56Ml/d - dir down to a n l.	e a reduction rect surface lew residual	n in the low water abstr gauged flo	flow abstraction. Sor I w of 2MI/d	ction constr Brook droug (as measure	aint to the tht permit t ad at Bodice	surface wa would be fo ote downstr	ter abstracti r the contin ream of the	on (from So uation of the abstraction	r Brook). A e licensed a). Thus if n:	minimum r bstraction f aturalised fl	esidual flov from the So low was 5M	v constraint r Brook at B II/d only 3M	would be in odicote bel II/d may be	n place to en ow the norn abstracted,	isure that t nal HoF of 1 whereas if	he brook do L4MI/d. naturalised	es not dry (flow was 1)	up as a OMI/d the
Summary commentary of scheme adverse effects:	Moderate adverse ef fish comm	adverse efi ifects relate unities. Wa	fects have b cd to this red ater quality i	een identifi duction in v is also likely	ed regardin elocity and r to be affec	g reductions wetted dept ted, particul	: in velocity :h include th larly downst	and wetted he spread of tream of He	depth dow invasive sp yford STW	vnstream of secies (sign due to redu	5 Sor Brook, i al crayfish, N iced dilution	and associat lew Zealand of the STW	ed impacts I mud snail I discharge.	on NERC sp and invasiv All impacts	ecies (brow e flora), geo are expecte	n trout, bui morphologi ed to be sho	lhead, Euro ical impacts rt-term and	pean eel, an , and effects I temporary.	id fine-line s on feasibil	pea mussel lity of angli). Other mo g due to im	derate 1pacts on
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None				None		None	None			None		None	None
Summary commentary of scheme beneficial effects	Beneficial	impacts ind	clude ensuri	ng supply of	f water to tl	he local pop	ulation and	other custo	mers/busir	nesses. The	re are also li	kely to be be	eneficial eff	ects associa	ated with in	nproving the	e resilience	of water sup	oplies to dra	ought.		
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of optio	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/l igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies no effects on designated sites. Moderate to minor adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species, including Brown Trout, Bullhead, European Eel, and fine-line pea mussel, due to reductions in velocity and wetted depth. Moderate adverse effects to selected fish community are anticipated, including effects on spawning habitats. The EAR identifies minor to moderate impact on WFD status based on the impact of the drought option on macroinvertebrates, macrophytes, fish and diatoms.	Medium (adverse)	Medium	Medium	Moderate	Medium-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Minor impacts have been identified on the abundance and distribution of the New Zealand mud snail (Reach 1 - May to December and Reach 2 - All year), signal crayfish (Reach 2) and for invasive flora (Reach 2 - May to December). Noderate impacts identified for invasive flora (May to December for reach 1). Major impacts identified for signal crayfish (Reach 1 - May to December).	Medium (adverse)	Medium	Medium	Moderate	Short-Term	Temporary	Moderate adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? will it help to protect or improve drinking water quality? will it raise awareness of the importance and value of the water environment for health and well-being? will thelp to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to existing 4.456MI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High	Medium	High	Short-Term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	It is unlikely that drought permit implementation will have any impacts on existing trails and footpaths, angling or navigation.	r Low (adverse)	Low	Medium	Moderate	Medium-term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of water supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation have been identified, therefore no effects on related businesses or tourism are anticipated.	Low (beneficial)	High (beneficial)	Medium	Moderate	Short-Term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling?	Increases in abstraction over and above what occurs under normal operation will usually result in related and proportional increases in energy use and waste. The option will make use of existing infrastructure.	Low (adverse)	Low	Medium	Medium	Short-Term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources have been identified as part of the option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identified a major hydrological impact of drought permit implementation on Sor Brook (downstream of the abstraction) and a minor hydrological impact on the River Cherwell further downstream. Effects would include reductior in velocities and wetted depth, however would be limited to the period of drought option operation.	Low (adverse)	Medium	Medium	Moderate	Short-Term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Both reaches would be exposed to an increased water quality risk. The drought permit would present a medium risk to deterioration in phosphorus concentration in the Sor Brook and a lower risk of deterioration in the River Cherwell. This would be particularly prevalent downstream of Heyford STW in Reach 2 which currently supports good status for fish, moderate status for macrophytes and high status for macroinvertebrates. The drought permit could also influence dissolved oxygen saturation in the River Cherwell, particularly downstream of Heyford STW.	Medium (adverse)	High	Medium	Moderate	Short-Term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services 	The EAR identifies a negligible adverse impact on other surface water abstractors (only one over 0.5Ml/day - The Grounds, Adderbury). Groundwater abstractions have been assessed as neither putting additional pressure on the river or have their operation limited by the implementation of the drought permit.	Low (adverse)	Low	Medium	Moderate	Short-Term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests minor impacts to geomorphology in Reach 1 (Sor Brook from the Bodicote abstraction confluence with the River Cherwell), including changes in wetted width and depth and the impacts on in-channel structures. No impacts on land use, soil or geology are anticipated as a result of the operation of this option.	Low (adverse)	Medium	Medium	Medium	Short-Term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option, and no opportunities to enhance ecosystem service functions of land have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	The option will increase air emissions associated with abstraction and treatment of water (up to 4.456Ml/day). There is one AQMAs within 5km proximity of the option. There is no construction associated with this option.	Low (adverse)	Low	Small	Low	Short-Term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Increased abstraction would cause an increase in energy use in the short term. There is no construction associated with this option.	n Low (adverse)	Low	Medium	Moderate	Short-Term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-Term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important 	Heritage assets in proximity to the option and zone of influence are unlikely to be impacted over the duration of the drought permit implementation.	Low (adverse)	Low	Medium	Moderate	Short-Term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option	า				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction will occur for this option, however there will be a change to water levels in two reaches for a short duration. It is not a sensitive landscape and due to the natural drying of the reaches in natural drought conditions, it is unlikely that drought permit implementation will have any impacts on the landscapes local distinctiveness.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Childrey W The Childr boreholes.	/arren: ey Warren ; . The licence	abstraction (e to abstract	consists of c t will be rev	one boreholı roked as a re	e located ap sult of the F	ıproximatelı Restoring Su	y 1 km away Istainable A	from the s bstraction p	source of Le programme	tcombe Bro . The propos	ok. From the	e end of AN permit opti	1P6 Thames ion is to res	Water Utili ume histori	ities Limited cal abstracti	l will no lon ion to previ	ger be perm ous licence l	litted to abe imit of 4.5M	stract from : /II/d	the Childrey	y Warren
Summary commentary of scheme adverse effects:	Short-term biodiversit in water q and waste	1, temporar Ly, flora and uality (with generation	γ effects on 1 fauna (in p 1 regards to ! 1 due to absf	water level articular eff SRP), and ge traction and	ls and flows fects on NER 20morpholo 1 treatment :	are anticip; IC species - t gical change of additiona	ated, compr brown trout Is (shallowe Il water. Ne;	rising a 100% t). Other sho r banks affe gligible, sho	6 decrease rt-term adu cted by dro rt-term inc	in flow on F verse effect ought action reases in air	Reach 1 of Lo s anticipate n). There wil r emissions a	etcombe Bro d include ch l also be mir are expected	bok and asse anges to the nor, short-te d to accomp	ociated wat e distributio erm drying-i bany increas	er quality e on and abur up of Letcor es in energ	ffects. This i ndance of in nbe Brook a y use.	is likely to c vasive speci long existir	ontribute to ies (Canadia ng trails and	n major shoi n pondwee footpaths, ;	rt-term, terr d and least and minor i	iporary effe duckweed), ncreases in	ects on . declines energy use
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None				None		None	None			None	None	None	
Summary commentary of scheme beneficial effects	Beneficial	effects incl	ude ensurin	ig water sup	ply to the lo	xal populati	ion and oth	er customer	s/business	es. There ar	e also likely	to be benef	icial effects	associated	with impro	ving the res	ilience of w	rater supplie	s to drough	ıt.		
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of opti	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	FResidual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No effects on designated sites have been identified within the EAR. Minor to major adverse effects to aquatic habitats and species including NERC habitats/species and ecologically significant species (Brown Trout). Major and moderate adverse effects to fish community in Reaches 1 and 2 respectively, including effects on spawning habitats. A major impact on WFD status is predicted based on the impact of the drought option on macroinvertebrates and macrophytes. Moderate effects are expected on phytobenthos.	High (adverse)	High	Medium	Moderate	Medium term	Temporary	Major adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Adverse impacts are considered likely for invasive flora (Canadian Pondweed Elodea candensis and Least duckweed Lemna minuta), which is likely to be moderate for reach 1 and minor for reach 2.	High (adverse)	Medium	Medium	Moderate	Short term	Temporary	Moderate adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplie (provision of up to an additional 4.5Ml/d of water) during drought conditions and therefore help maintain public h health.	s Low (beneficial)	High	Medium	Moderate	Short term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	Impacts on recreation have been identified in relation to the several trails and footpaths that are in place along Letcombe Brook through Wantage and Grove which are frequented by locals. However, as Letchcombe Brook is known to naturally drying, the impact is expected to be minor. No impacts are anticipated for navigation or angling.	Low (adverse)	Low	Medium	Moderate	Short term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation have been identified, therefore no effects on related businesses or tourism are anticipated.	Low (beneficial)	High	Medium	Medium	Short term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplie from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs unde normal operation will usually result in related and d proportional increases in energy use and waste. The option will make use of existing infrastructure.	r Low (adverse)	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of opti	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies a major impact on one reach and as minor impact on another. For the major impact, this relates to 100% reduction in flow of Letcombe Brook whicl could last a full year (as a result of decreased groundwater contributions to the river).	Low (adverse)	High	Medium	High	Medium term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The EAR identifies moderate risk with regards to SRP and minor risk due to reduced dissolved oxygen and ammonia. Also a low water quality risk associated with Wantage STM discharge (Reach 1).	Moderate (adverse)	Medium	Medium	Moderate	Short term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Water resource available is described as "water not available for licencing" by the EA. The EAR identifies 2 surface water abstractions (Grove, r Letcombe Brook Dandridges Mill) that would be impacted if the drought option was implemented. The DP could deplete the flow in Reach 1 by 100% completely limiting the feasibility of the abstraction at Gove (high risk). Although the DP is not expected to severely impact flow in Reach 2, the river is expected to reduce and the abstraction may be limited (high risk).	High (adverse)	High	Medium	Moderate	Short term	Temporary	Major adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The EAR suggests moderate impact on geomorphology in Reach 1, where shallower banks will be affected by the drought action. The banks are generally steep, and variation in wetted width would only occur in the limited shallower sections of the reaches. Minor impacts on geomorphology are anticipated in Reach 2. No impacts on land use, soil or geology are expected as a result of the operation of this option.	Low (adverse)	Medium	Large	Moderate	Short term	Temporary	Moderate adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities to enhance ecosystem service functions of land.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for catchment-wide approach to land management were identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	The option will increase air emissions associated with abstraction and treatment of water (up to 4.5ml/day), however no AQMAs are in proximity of the option. There is no construction associated with this option.	Low (adverse)	Low	Small	Low	Short term	Temporary	Negligible adverse	None

SEA	A topics and objectives	Assessment methodology				Assessment of opti	ion				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Increased abstraction would cause an increase in energy use in the short term. There is no construction associated with this option.	Low (adverse)	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought orders/permits are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (adverse)	High	Small	Moderate	Short term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no heritage assets in the area of influence, so no effects on the historic environment are anticipated.	o n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultura assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their l settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No construction activities would be conducted during implementation of the plan. There will be a change to water levels in two reaches of Letcombe Brook for a short duration. The option is located within the North Wessex Downs AONB. However, Letcombe Brook dries under natural drought conditions and the AONB is therefore unlikely to be impacted over the duration of the drought permit implementation.	Low	Low	Medium	Moderate	Short term	Temporary	Negligible adverse	None

Drought Plan option	Ogbourne The licence was physic are require	1: e to abstrac :ally limited ad to achiev	ct an average d by ground ve the abstr	e of 8 MI/d a water levels action from	and peak of therefore t these boreł	13.6 MI/d f he expected holes. Work:	irom the Og I deployable s will includ	bourne bore e output dui le connectio	eholes will ring these p n of mobile	be revoked periods was generators	in April 201 3.5 MI/d. Tł s and starter	7 as a result herefore, Og rs to each bo	t of the Rest gbourne 1 d prehole pun	toring Sustai rought pern 1p.	nable Absti nit proposes	raction prog s to use the	gramme. In a existing bo	a drought, ti reholes and	he amount (abstract 3.	of water ava 5 MI/d. Min	ailable for al or construct	bstraction ion works
Summary commentary of scheme adverse effects	Moderate River Kenr fish. Mino changes in	adverse, sh 1et (a desigi r adverse, s 1 the River M	10rt-term eff nated SSSI) ;hort-term e Kennet are c	fects are and also have pr iffects on an considered m	ticipated wi otential for gling and re ninor, howe	th respect to moderate a ccreation are ever there is	o biodiversi dverse, shoi ≥ possible di a high risk †	ity, flora and rt-term effe ue to impac to water qua	l fauna. Im cts on mac ts on fish c ality associa	pacts on fisl roinvertebr ommunities ated with th	h may occur ates. The Mi s. Moderate ne Marlboro	due to an e iddle Kenne adverse, sh ugh STW dis	xtension in t water bod oort-term ef scharge due	duration of ly is conside fects to wat to reduced	River Og be red at mod er are likely dilution in f	ing dry, and erate risk of y as the abs the River Ke	d a reductio f short-term traction will ennet during	n in flows ir deteriorati I cause the F g drought pe	। the River K on of WFD s रोver Og to । ermit imple।	(ennet. Cha status for m remain dry f mentation.	nges in flow acroinvertel for longer. Fl	in the brates and low
SEA Objectives Adverse Effects Assessment Summary		None	None				None		None				None		None	None			None	None	None	
Summary commentary of scheme beneficial effects	Moderate	beneficial e	effects are e	expected due	e to provisio	on of additic	onal water s	upply. Minc	or beneficia	I effects are	e associated	with impro	ving the res	ilience of w	ater supplie	to drough	ıt.					
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Minor construction works required involve connection of mobile generators and starters to each borehole pump, however these are not expected to be significant. The EAR identifies no significant reductions in wetted width or marginal habitats. The extension in duration of River Og being dry may cause impacts on brown trout, builhead and grayling. These have been assessed in the EAR as of moderate significance. As a result of changes to flow, moderate adverse impacts have been identified in the River Kennet (a designated SSSI) on macroinvertebrates and fish. The Middle Kennet water body (GB106039023173) would be at moderate risk of short- term deterioration of WFD status for macroinvertebrates and fish.	Medium (adverse)	Medium	Medium	Medium	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Implementation of the option may cause a delay in hydrological, recovery increasing the habitat suitability and therefore distribution of invasive species, however these impacts are expected to be negligible.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional 3.5Ml/d of water) during drought conditions and therefore help maintain public health. Construction activities (mobile generators connected to borehole pump) are considered very small scale and short term. The Marlborough AQMA lies within 5km o the study area.	Low (adverse) Low (beneficial) f	Medium (adverse) High (beneficial)	Medium	Low (adverse) High (beneficial)	Short-term	Temporary	Minor adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	The fish assessment in the EAR identifies a potential minor alteration to community composition as a result of drought permit implementation, therefore there is a potential minor impact on angling. The River Og and Kennet contain a wide diversity of fish species. The location and surrounding area makes the catchment very popular with anglers. Any impacts of the drought permit on fish population or distribution may impact anglers. Navigation is not possible within the River Og (Reach 1) and the River Kennet between the River Og confluence and Hungerford (Reach 2). As such, the potential to affect navigation is minor.	Low (adverse)	Medium	Medium	Medium	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of supply reliability in drought conditions without impacting on other abstractors, therefore ensuring a resilient supply for customers and economic activity.	Low (beneficial)	High	Medium	Medium	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Implementation will result in an increase in energy use and chemicals for treatment of abstracted water (3.5Ml/d). The option make use of existing infrastructure. However, will also require additional equipment and energy use to enable pumping from boreholes that are not used in non-drought conditions.	Low (adverse)	Low	Medium	Low	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies short term, moderate adverse effects to the River Og regarding increased duration of the impacted reach being dry until annual groundwater recovery occurs, leading to watercourses remaining drier for longer. There may also be short term minor adverse effects to the River Kennet, with small changes to flow within normal range of medium to low flows around the period when recovery of flow input from the River Og would otherwise have occurred without a drought permit being utilised.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Assuming best practice construction methods, impacts from construction on water are anticipated to be negligible. Care should be taken at the end of the drought option operation to prevent contamination of the groundwater. The EAR identifies a moderate risk to phosphorus concentration and a low risk to dissolved oxygen and ammonia. In the River Kennet reach there is a high risk to water quality associated with Marlborough STW due to reduced dilution in the River Kennet during drought permit implementation.	Medium (adverse)	Medium	Medium	Medium	Short-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'Water not available for licensing'. Abstraction will be temporary and short term, however, there is potential for duration of effects on groundwater to extend beyond the drought permit implementation period with potential adverse effects to the local WFD water body . The EAR identifies that the option is unlikely to impact the feasibility of any groundwater or surface water abstractions in the zone of influence (including those for agriculture).	Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	The minor construction works required (connection of mobile generators) are not anticipated to result in any adverse effects on soils. In operation in-channel structures, such as weirs/sluices, could influence sediment dynamics by creating ponded areas upstream of the structure. These areas will have very low flow velocities and increased depth in relation to other areas of the channel, this is likely to promote the deposition of fine sediment behind the structure. The EAR describes geomorphology impacts as minor in both reaches based on the anticipated low sediment concentrations (characteristic of a chalk fed river) and the relatively low amounts of sediment in transport during a drought.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities to promote a catchment wide approach have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)?	The option involves the abstraction of 3.5 Ml/d from the existing Ogbourne boreholes used in the revoked licence (from April 2017). There would be a short-term increase in air emissions associated with abstraction and treatment. The option is within 5km of the Marlborough AQMA.	Low (adverse)	Medium	Low	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	The option involves the abstraction of 3.5 Ml/d from the existing Ogbourne boreholes used in the revoked licence (from April 2017). There would be a short-term increase in greenhouse gas emissions associated with abstraction and treatment.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Small	High	Short-term	Temporary	None	Minor beneficial

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are number of statutory sites in proximity to the Ogbourne boreholes including three Scheduled Ancient Monuments and a Conservation Area associated with Ogbourne St. George. However, all are over 1km from minor construction works planned at the boreholes. Hydrological impacts associated with operation of the options are not anticipated to adversely effects these assets or any unknown water-dependent assets.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The option and impacted reaches are within North Wessex Downs AONB. The minor construction works planned are associated with existing borehole sites. The AONB is a unique and spectacular landscape. The River Og and River Kennet form an essential part of the landscape of the AONB. The impacted reach of the River Og is an intermittently flowing river and there are naturally periods of no flow. The impact of the drought permit is to extend the period of recovery between the months of October to March. This delay to the recovery period occurs outside of the summer months when visitors to the North Wessex Downs would be greater. Considering these factors the value/sensitivity of the AONB is considered to be Medium.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Compton : Overview: 5MI/day. Minor con	L Compton (struction w	1) abstractio	on borehole: quired to bri	s are locate ng the optic	d in Berkshi on online as	re Downs Cl a drought s	halk WFD gr ource. Ther	oundwater e is current	body. The d	option woul reatment ca	d see re-est apability and	ablished ab	straction fr	om existing v water trea	boreholes (tment facili	previously r ty may be r	evoked due equired.	to high nit	rate concen	trations) of t	up to
Summary commentary of scheme adverse effects:	Moderate oxygen sal groundwa	adverse eff turation lev ter abstract	fects are ide rels), NERC s tions that ar	entified for b pecies (Ranu e used by th	iodiversity unculus spp e EA for ab	and on wate b brown trou straction un	er quality. E ut, fine-line der the WB	ffects includ d pea musse GWS (upstre	le low grou I), macroin eam of Com	ndwater flo vertebrates apton, total	ows being ex s and fish. Ti ling 56MI/d	acerbated, here is the p), which may	resulting in totential for affect the t	the River Pa major adve feasibility c	ang remaini irse impacts if the abstra	ng drier for in relation inction. Mino	longer, and to other ab or effects ind	resulting in stractors, in clude those	npacts on w particular a on angling.	ater quality number of	(SRP and di	ssolved
SEA Objectives Adverse Effects Assessment Summary		None	None				None		None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	impacts inc	clude ensuri	ng supply of	water to lo	ocal populati	ion and oth	er customer	s/businesse	es. There is	also likely to	o be benefic	ial impacts :	associated	with improv	ring the resil	lience of wa	iter supplies	s to drought			
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservatior interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR identifies no impacts on designated sites. Minor to moderate impacts on NERC species have been identified (<i>Ranunculus</i> spp., brown trout, fine-lined pea musse due to low groundwater flows being exacerbated, resulting in watercourses remaining drier for longer. Moderate impacts are anticipated for macroinvertebrates and fish.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water wil work with catchment groups on climate change resilience.	n/a I	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EAR identifies a negligible impact on invasive species, due t a delay in hydrological recovery increasing habitat suitability and therefore distribution of invasive species.	o Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to SMI/d of water) during drought conditions and therefore help maintain public health. Minor construction works are required in order to bring the option online (temporary water treatment facilities) - therefore may result in noise/dust nuisance during construction.	Low (beneficial) Low (adverse)	High (beneficial) Medium (adverse)	Medium	Moderate	Short-term	Temporary	Minor adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	No impacts are anticipated in relation to National Trails, or navigation. Although the River Pang is an intermittently flowing river, the expected hydrological impact of the drought permit would likely extend up to 4 weeks (between Oct and March) an recovery period could have a negative impact on angling for up to a month.	Medium (adverse) d	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being:	? The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	Low (beneficial)	High	Small	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs under normal operation will typically result in proportional increases energy use and waste. Minor construction works are required in order to bring the option online as a temporary water treatment facility may be required.	Low (adverse) (energy use) in Low (adverse) (construction)	Low (adverse) (energy use) Medium (adverse) (construction)	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Implementation of the Compton (1) drought permit is likely to exacerbate the low groundwater levels so that the watercourse would remain dry for longer (taking longer to recover/becoming wet later) (River Pang from source until Blue Pool). The impact would likely extend for up to 4 weeks and would likely manifest between October and April. Under extreme circumstance the drought permit would delay groundwater recovery until the following year (so that it, or portions of it, may be dry for consecutive years). If this occurred, it is likely that groundwater would have contributed to flow in the reach for only a short period of time before it ceased again. Furthermore, the system is used to such occurrences (extended periods of drying between consecutive winters) that can happen at times when abstractions do not occur.	Low (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The risk of the drought order to dissolved oxygen saturation levels and SRP has been assessed as medium in one reach (River Pang from source to Blue Pool), and low for ammonia. The reaches are considered to be medium sensitivity to changes in water quality and therefore the overall risk is minor adverse. Water quality pressures are likely to present a low risk to water quality, associated with Hampstead Norreys and Bucklebury Upper Common STWs.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	There are 10 significant groundwater abstractions (over 0.5 MI/d) within the impacted area of the Compton (1) drought permit. Two of these licenses are owned by the Environment Agency totalling 56 MI/d and are used for abstraction under the WBGWS. All of the abstractions are located upstream or within area of the Compton (1) impacted reach. As there is a high uncertainty and unknown impacts of the drought permit being implemented when the WBGWS is operating, the WBGWS abstractions are considered to pose a high risk. The operation, but this is currently unknown and further studies are recommended Two surface water abstractions are assessed to have negligible impacts.	High (adverse)	Medium	Medium	Low	Short-term	Temporary	Major adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Significant impacts on geomorphology are unlikely, as water levels will not be reduced below those already experienced in the River Pang.	Low (adverse)	Medium	Low	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will increase emissions associated with abstraction and treatment of water (up to 5 Ml/d). There are no AQMAs within 5km.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. Minor construction works may be required in order to bring the drought option online (temporary water treatment facilities may be required) which would also result in short-term increases in greenhouse gas emissions.	E Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial

SEA	topics and objectives	Assessment methodology				Assessment of option	1				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are heritage assets, including the East IIsley Down round barrow scheduled monuments, in proximity to the area of influence however they are unlikely to be impacted by drought permit implementation. Effects are considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultura assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The impacted reaches of the River Pang are within the North Wessex Downs AONB. The hydrological impact of the drought permit would be to exacerbate low groundwater levels so that the watercourse would remain dry for longer, likely to extend for up to 4 weeks (between October and April). However, the impacted reach of the River Pang is an intermittently flowing river and there are natural periods of no flow, resulting in minimal impact on the visual amenity of the AONB from drought permit implementation. It will also occur outside of the summer months when the number of visitors to the North Wessex Downs would be lower.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Compton 2 Overview: of 8.6MI/d No constru	2 Compton (lay compar uction work	2) abstractions are requir	on borehole ompton 1 dro ed to bring 1	s are locate ought perm the option c	d in Berkshi it. online, as a t	re Downs Cl emporary t	halk WFD gr reatment fa	oundwater cility would	body. The d	option woul	d extend th	e abstractio rt of Compte	n establish on 1 drough	ed from Cor t permit.	npton 1 to a	abstract to 1	the maximu	m possible	yield of 13.	5MI/day - ar	ı increase
Summary commentary of scheme adverse effects:	Moderate (Brown Tro used by th	adverse eff out, Fine-lir e EA for ab	fects are ide ned pea mus straction un	entified for b ssel, Europe der the WB	biodiversity an Eel) , ma GWS (upstro	and on wate croinverteb eam of Com	er quality. E rates, macro pton, totalli	ffects includ ophytes and ing 56MI/d),	le low grou fish. There , which may	ndwater flo is the pote / affect the	ws being ex ntial for maj feasibility o	acerbated, jor adverse i f the abstra	resulting in impacts in r ction. Mino	the River P: elation to o r effects inc	ang remaini ther abstra lude those	ng drier for ctors, in parl on angling.	longer, and ticular a nu	resulting in mber of sigr	npacts on w hificant grou	ater quality Indwater al	stractions t	: species hat are
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	impacts inc	clude ensuri	ng supply of	f water to lo	ocal populati	ion and oth	er customer	s/businesse	es. There is	also likely to	o be benefic	ial impacts	associated	with improv	ring the resil	lience of wa	ater supplies	s to drought			
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	: Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No impacts on designated sites have been identified. Minor to moderate impacts on NERC species have been identified in Reach 1 (including brown trout, fine-lined pea mussel, and <i>Ranunculus</i> spp.) and Reach 2 (brown trout, European eel, fine- lined pea mussel, Thames ram's-horn snail, <i>Riolus cupreus</i> and <i>Riolus subviolaceu</i>) due to low groundwater flows being exacerbated resulting in the River Pang remaining drier for longer. Moderate to minor impacts are anticipated on macroinvertebrates, fish and macrophytes in both reaches.	Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will work with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EAR identifies a negligible impact on invasive species, due to a delay in hydrological recovery increasing habitat suitability and therefore distribution of invasive species.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? will it help to protect or improve drinking water quality? will it raise awareness of the importance and value of the water environment for health and well-being? will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to 8.6MI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public, rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	c No impacts are anticipated in relation to National Trails, or navigation. Although the River Pang is an intermittently flowing river, the expected hydrological impact of the drought permit would likely extend up to 3 months (between Oct and March) and recovery period could have a negative impact on angling for up to a month.	Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	Low (beneficial)	High	Small	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs under normal operation will typically result in proportional increases in energy use and waste.	Low	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natura resources were identified for this option.	l n/a	n/a	n/a	n/a	n/a	n/a	None	None
SE/	A topics and objectives	Assessment methodology				Assessment of option					
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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effec (low/moderate/h igh)	t Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR identifies a moderate impact for the implementation of the Compton (2) drought permit, which could delay recovery of the aquifer and resumption of baseflow in Reach 1 (River Pang from source until Blue Pool) by up to 3 months, most likely to occur between December and April after a summer drought. However, this depends heavily on rainfall and could even be delayed until the next winter. Thus the impact could feasibly manifest at any month between October and April. A minor impact is identified for Reach 2 (River Pang from Blue Pool to confluence with River Thames) due to a reduction in moderately-low flows by up to 25%.	Low	Medium	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The risk of the drought order for SRP has been assessed as moderate in Reach 2 (River Pang from Blue Pool to confluence with River Thames), and minor for dissolved oxygen saturation levels. Water quality pressures are likely to present a low risk to water quality, including those associated with Hampstead Norreys and Bucklebury Upper Common STW discharges in Reach 1 (River Pang from source to Blue Pool).	e Medium (adverse)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	There are 10 significant groundwater abstractions (over 0.5 MI/d) within the impacted area of the Compton (1) drought permit. Two of these licenses are owned by the Environment Agency totalling 56 MI/d and are used for abstraction under the WBGWS. All of the abstractions are located upstream or within area of the Compton (1) impacted reach. As there is a high uncertainty and unknown impact of the drought permit being implemented when the WBGWS is operating, the WBGWS abstractions are considered to pose a high risk. The operation of the WBGWS may be limited by drought permit operation, but this is currently unknown and further studies are recommended. Two surface water abstractions are assessed to have negligible impacts.	High (adverse)	Medium	Medium	Low	Short-term	Temporary	Major adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Significant impacts on geomorphology are unlikely, as water levels will not be reduced below those already experienced in the River Pang.	Low (adverse)	Medium	Low	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option, and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option will increase emissions associated with the abstraction and treatment of water (up to 8.6 Ml/d). There are no AQMAs withir Skm.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threat of climate change.	 s • Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? • Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? • Will it create opportunities to benefit from potential effects of climate change? • Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial

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Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are heritage assets, including the East Ilsley Down round barrow scheduled monuments, in the area of influence however they are unlikely to be impacted by drought permit implementation. Effects are considered negligible. The EARs have assessed the impacts on unknown water dependent assets as negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The impacted reaches of the River Pang are within the North Wessex Downs AONB. The hydrological impact of the drought permit would be to exacerbate low groundwater levels so that the watercourse would remain dry for longer, likely to extend for up to 4 weeks (between October and April). However, the impacted reach of the River Pang is an intermittently flowing river and there are natural periods of no flow, resulting in minimal impact on the visual amenity of the AONB from drought permit implementation. It will also occur outside of the summer months when the number of visitors to the North Wessex Downs would be lower.	Low (adverse)	High	Medium	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Fobney En Eight abstr the WTW. boreholes maximum	nergency Bo raction bore The licence may not be yield durin _i	oreholes: eholes are le e permits ei e used, unde g a drought	ocated on th mergency al er normal lic will most lii	ne grounds o ostraction o censed cond kely be 25 M	of Fobney W f 30MI/d for itions, durin AI/d. The boo	TW, licenced 10 consecut g times of dr reholes abstr	for emerg ive days or ought. Pro ract from th	ency use in 10Ml/d for posed abstr he Chalk aq	case of cor r 30 consect raction com uifer. There	ntamination utive days a prises 12-3(e is no const	of the River nd requires t) MI/d throu ruction phas	Kennet at t the borehol gh manipul æ associate	the Fobney es to be res ation of co d with this	intake or fa sted for at le ntrol mecha drought per	ilure of pun east as many nisms restri mit.	nps, power s y days as the cting maxim	supplies, pip ey were use num allowal	pelines, or o d before ab ble abstract	ther appar straction c ion. It is an	atus associa in resume. Licipated tha	ted with The at the
Summary commentary of scheme adverse effects	Four reach width in is downgrad saturation part of the and tempo	nes will be in colated area e diatom ar and SRP. M e landscape orary, and n	mpacted, th as where ch nd macroph Ainor declin and visual a not expected	nree on the l annel banks yte status d es in habita amenity valu d to extend	River Kenne are shallow ownstream. t suitability ue of Southo beyond six i	t all identifie rer, while thi The Reading for sensitive cote Linear P nonths.	ed as having is would not g STW may p flora and fa 'ark, and imp	negligible l occur on th resent moo una specie: pacts on riv	hydrologica he River Ker derate a wa s may occur er levels ma	l impacts, a nnet as it is iter quality r, as may m ay adversel	Ind one on H level-contri pressure to oderate adv y impact the	loly Brook, i olled. Moder the River Ke rerse effects e visual amer	dentified as rate effects nnet down: due to air e nity of the p	s having a n on water q stream of ti emissions as park for wal	ninor impac uality in Ho he confluen ssociated wi Ikers and th	t. The impa ly Brook ma ce with Fou ith increase ose who visi	ct on Holy B y occur, con dry Brook, d d abstractio it the park. I	Grook would nprising ele lue to influe n. Moderato However, al	l include rec vated SRP c ences on am e effect on a Il adverse ef	ductions in oncentratio imonia, dis air emissior ifects ident	evels and w ons that may solved oxyge is. Holy Brod ified are sho	retted / en ok forms ort-term
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Moderate	beneficial e	effects inclu	ide ensuring	; supply of v	vater to loca	l population	and other	customers/	businesses,	, and minor	benefits asso	ociated with	h improving	g the resilier	nce of water	r supplies to	drought.				
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None			None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Negligible hydrological impacts are expected on three reaches of the River Kennet (medium risk to ammonia concentrations and low risk to dissolved oxygen in Reach 2 due to discharges from Reading STW, this has the potential to reduce habitat suitability to sensitive species) and a minor impact on a reach of Holy Brook (could impact spawning, migration, provision of cover, etc.; however hydrological impacts are anticipated). Minor risk to NERC fish species at a reach of the River Kennet and Holy Brook. Risk to Reach 2 (River Kennet) for macroinvertebrates due to risk to ammonia concentrations and low risk to dissolved oxygen in Reach 2 due to discharges from Reading STW. This has th potential to reduce habitat suitability for sensitive species. Risk to other notable fish species due to an additional medium risk to ammonia concentrations and low risk to dissolved oxygen in Reach 2 due to discharges from Reading STW.	Low (adverse)	High	Small	Moderate/high	Short	Temporary	Minor adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will work with catchment groups in the long term to collaborate on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, fiora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Uncertainty remains over the potential for invasive macrophyte species to adversely affect floating pennywort and least duckweed, however hydrological impacts are negligible and therefore no impact is anticipated. For the reaches of the River Kennet there is an additional medium risk to SRP concentrations in Reach 2 due to discharges from Reading STW. This has the potential to increase growth rates of invasive macrophytes increasing abundance and distribution. For the reach of Holy Brook uncertainty remains over the potential presence of invasive macrophyte species, however, hydrological impacts are negligible and therefore no impact is anticipated	Low (adverse)	High	Small	Low	Short	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 25MI/d of water) during drought conditions and therefore help maintain public health. No construction is proposed for this option therefore no adverse effects are expected to public health.	Low (beneficial)	High	Small/medium	High	Short	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network?	Holy Brook forms part of the landscape and visual amenity value of the Southcote Linear Park. Any impact of the drought permit on river levels may impact walkers and those who visit the park. The River Kennet contains a number of fish species. The location and surrounding area makes the catchment very popular with anglers. Any impacts of the drought permit on fish population or distribution may impact anglers. Along the impacted reaches of the River Kennet, level is maintained and hydrological impacts manifest as a reduction in velocities only, therefore have minimal impact on navigation. The EAR identifies negligible sensitivity to these three aspects.	Low (adverse)	Medium	Small/medium	Moderate	Short	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. High magnitude is applicable due to the size of the water increase. No impacts on other surface water or groundwater abstractions are expected. There are no effects likely on angling and recreation and therefore no affects on businesses associated with these activities.	Low (beneficial)	High	Medium	Medium	Short	Long	None	Moderate beneficial

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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (up to 25 MI/d) over and above what occur under normal operation will result in short-term increases in energy use and waste. The option will make use of existing infrastructure, avoiding new construction (and associated use of materials) and minimising additional energy use and waste generation.	s Medium (adverse) Low (beneficial)	Low	Medium	Medium	Short	Temporary	Minor adverse	Negligible beneficial
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR reports a negligible hydrological impact on three reaches o the River Kennet and a minor impact on a reach of Holy Brook (Holy Brook from 2.5km west of the Fobney Emergency Boreholes to the confluence with River Kennet). The reduction of the Summer Q95 and Summer Q99 flow in the brook as a result of the drought permi would be 5% and 12%, respectively. Due to uncertainty of the interaction between the Holy Brook and chalk aquifer the reach extends from the western limit of the cone of depression to the confluence with the River Kennet. The reduction in flow would manifest itself as a reduction of velocity, wetted width, depth and perimeter.	f Low (adverse)	Medium	Small	Moderate	Short	Temporary	Minor adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	For the reach on Holy Brook, the EAR reports a medium risk (specifically with regard to SRP concentration). Risks to dissolved oxygen balance and ammonia balance are considered negligible. The Reading STW presents a water quality pressure to the River Kennet downstream of the confluence with Foudry Brook, i.e., a medium risk to ammonia, dissolved oxygen saturation and SRP.	Medium	Medium	Small	Moderate	Short	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	The EAR reports negligible impacts on other abstractions. Implementation of the drought permit could have a minor impact on Kennet and Holy Brook (GB106039023140) with regard to WFD status.	Low (adverse)	Medium	Small	Moderate	Short	Temporary	Minor adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Overall, geomorphology impacts are minor in Reaches 1, 2, 3 and 4. Deposition of fine sediment behind in-channel structures may occur, however reduction in flows during the operation of the drought permit is unlikely to lead to any significant changes in wetted width or wetted perimeter beyond that which is experienced in the normal range of hydrological variation due to the overall steep and managed nature of the reach channel banks.	Low	Medium	Medium	Low	Short	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No opportunities to enhance ecosystem services function have beer identified for this option. There is no requirement for land take and the existing abstraction would be used.	n n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities for catchment-wide approach to land management have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	Construction activities and increased abstraction/treatment would cause an increase in energy use and associated air emissions. The Reading AQMA is in proximity to the affected area.	Medium (adverse)	Medium	Small	Low	Short-term	Temporary	Moderate adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	There would be emissions associated with the abstraction of water. Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect.	Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (adverse)	High	Small	High	Long	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are scheduled monuments (High Bridge and Reading Abbey) and listed buildings in the area of influence, however, they are unlikely to be impacted by drought permit implementation.	Low (adverse)	Low	Small	Low	Short	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultura assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it moreve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

9	EA topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	Holy Brook forms part of the landscape and visual amenity value of the Southcote Linear Park. Any impact of the drought permit on river levels may impact walkers and those who visit the park.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
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Drought Plan option	Pangbourr River Pang flow const permit cou	e: Water is , gauged at raint and al Ild be imple	abstracted Pangbourne llow the full emented at a	from the Cł e, is below : amount of any time of	halk aquifer 18MI/d for ! the Pangbo the year. T	at Pangbour 5 consecutive urne licence 'here is no co	me. The ab: e days, abst to be abstr onstruction	straction lie traction fror acted from phase assoc	es close to t n two of th all licenced ciated with	he River Pa e boreholes boreholes. this drough	ing, Sulham s is not perm . The drough at permit.	Brook and tl hitted. The o ht permit is a	he River Tha deployable (inticipated f	nmes. Norm output fron to be applie	al abstraction the remain d for up to	on comprise ning boreho 6 consecutiv	es a licence t les is 31.6M ve months b	to abstract a I/d. Propos vetween Ma	at a peak ra ed abstracti ay and Dece	te of 38.6M on compris mber inclus	I/d. When i es 7MI/d − r ive, althoug	low in the emove th the
Summary commentary of scheme adverse effects	Negligible hydrologic discharges flows in ar lamprey) a	hydrologica al effects aı . Sulham Br eas where l re possible.	al effects are re predicted rook has hig bank slope i	e anticipate I due to ext h sensitivity is shallow. N	d on the Riv ension of th y for WFD st Minor, short	ver Pang from te period Sull tatus. Short-t t-term impac	n the Blue P ham Brook t erm major i ts on the Su	Pool to the d would be d impacts on ilham and T	confluence ry, and maj one other a idmarsh W	with River ⁻ or effects o ibstraction oods and N	Thames. How in water qua from Sulhan leadows SSS	wever, temp lity in Sulha n Brook are SI, NERC fish	orary adver m Brook are also possibl species (bro	se impacts e also expec e. Moderat own trout a	ranging fror :ted due to e impacts o nd Europea	n major to r low dissolve n the geome n eel) and n	negligible ar ed oxygen sa orphology o otable coun	e anticipate aturation an f Sulham Br ity and regio	ed on Sulhaı d reduced o ook are pos onal level sp	n Brook. M dilution of F sible, assoc vecies (bullf	ajor adverse angbourne iated with nead and bro	sTW reduced ook
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None		None	
Summary commentary of scheme beneficial effects	Moderate drought.	beneficial i	mpacts are	expected w	rith regard to	o ensuring su	upply of wat	ter to local	population	and other o	customers/b	ousinesses. T	here is also	likely to be	a minor be	neficial effe	ect associate	ed with imp	roving the r	esilience of	water supp	lies to
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	: Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The EAR reports that for the Sulham and Tidmarsh Woods and Meadows SSSI the extension of the recovery of flows will be less than a week (compared to natural drought conditions) and the impact will be observed in the hydrological winter (October to March). As such, the impact on the key features of the designated site (although of national importance) has been assessed of being as low magnitude. The EAR also reports negligible effects on macroinvertebrates, macrophytes, fish and diatoms for WFD status. Minor effect on NERC fish species (brown trout and European eel) is expected. Minor impact on notable species on county and regional level (bullhead and brook lamprey). Additionally, there is ancient woodland on the same site as a SSSI the effects on which are reported in the EAR to be negligible.	E Low (adverse)	High	Small	High	Medium-term	Temporary	Minor adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Invasive macroinvertebrates in the study area are not expected to be significantly impacted by the implementation of the drought permit against a baseline of reduced flows characteristic of a drought. Invasive plant species in the study area can utilise flow of the watercourse for dispersal but are not relian on it, so implementation of the drought permit is unlikely to increase dispersal.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 7MI/d of water) during drought conditions and therefore help maintain public health. Magnitude is rated as Medium due to the amount of additional water provided. Regarding nuisance, there is no construction proposed for this option therefore no adverse effects are expected to public health.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	The route of the Thames Path national trail runs in close proximity to the impacted reach of the River Pang and Sulham Brook. The EAR reports that changes to water levels could affect visual amenity for walkers however, considers any changes in river level as a result of the drought permit are considers any changes in river level as a result of the drought permit are considers any changes in river level as a result of the drought permit are considered unlikely to impact this. Sulham Brook can dry up and is considered intermittently-flowing. It is possible that the drought permit could extend upstream the length of Sulham Brook which dries by up to SOOm. However, it is unlikely to cause any section of the brook to dry out which has not dried historically. Therefore the magnitude is considered low. In addition, there is minimal boating and angling activity on Sulham Brook in comparison to the nearby River Pang and River Thames. The EAR reports negligible effects for these. Additionally the site is within an AONB, is within 1km (from the central point) of a Registered Park and Garden and a number of listed buildings.	Low (adverse)	High	Small	High	Medium-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. There are no significant groundwater abstractions within the area of influence, however there are three significant surface water abstractions. The drought permit is not anticipated to affect two of these abstractions. However, it may limit the feasibility of a surface water abstraction from Sulham Brook if the river dries up or recovery of flow to the river is extended. Discussion with the licence holder would be required at time of application, and effects on this abstraction are identified as high risk. There are no effects likely on angling and recreation and therefore no effects on businesses associated with these.	Low (beneficial) High (adverse)	High	Medium	Medium	Medium-term	Long	Major adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (up to 7MI/d) over and above what occurs under normal operation will result in short-term increases in energy use and waste. The option will make use of existing infrastructure, avoiding new construction (and associated use of materials) and minimising additional energy use and waste generation.	Low (adverse)	Low	Medium	Medium	Short	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	l Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The EAR reports a negligible hydrological effect on Reach 1 (River Pang from the Blue Pool to the confluence with River Thames). However for Reach 2 (Sulham Brook from the vicinity of Sulham until the confluence with the River Thames) the EAR reports the drought permit is anticipated to increase the duration that the reach would dry by up to a handful of days, as well as extend the length of the intermittently-flowing reach. The impact would be restricted to sometime within the hydrological winter (October to March inclusive) that follows the drought permit being implemented. This is reported as a major impact.	High (adverse)	High	Small	High	Medium-term	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	Will it affect WFD compliance e.g. good ecological potential/Status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance?	A negligible effect predicted in EAR for reach 1. High effect predicted in EAR for reach 2 with regard to dissolved oxygen saturation and minor with regard to ammonia and SRP. High water quality risk associated with Pangbourne STWs (associated with ammonia and dissolved oxygen saturation). Reach 2 has high sensitivity for WFD status.	High (adverse)	High	Small	Moderate/high	Medium-term	Temporary	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. Negligible effects on surface water abstractions are predicted for Reach 1 (River Pang), however for Reach 2 there is a high risk associated with one abstraction from the Sulham Brook. Effects on groundwater abstractions are expected to be negligible.	High (adverse)	High	Small	Moderate/high	Medium-term	Temporary	Major adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value?	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	For reach 1 the EAR reports a negligible effect for geomorphology. For Reach 2 the EAR reports a Moderate effect. The bank slope is generally steep, but impacts of reduced flows on wetted width are likely to be restricted to localised areas where bank slope is shallow.	Medium	Medium	Medium	Low	Medium	Temporary	Moderate adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No opportunities to enhance ecosystem services function have been identified for this option. There is no requirement for land take and the existing abstraction would be used.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No opportunities for catchment-wide approach to land management have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	There would be emissions associated with abstraction of water. The option is within proximity of sites designated for nature conservation at national level.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions?	There would be emissions associated with the abstraction of water. Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Small	High	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	The EAR reports effects on unknown water dependant assets would be negligible. Also, whilst there are listed buildings and a Registered Park and Garden within 1km there is no construction and therefore no direct effects likely and the drying out of the reach would be short term in terms of effects on settings.	Low (adverse)	Low	Medium	Moderate	Medium-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Topic Objective Indicator questions Detential residual effect on sensitive receptors (assuming on practice construction methods). Commentary Magnitude of effect (indiv/medium/high) Sale of effect: goographical on affected (insmit/medium/large) Permanentary Permanentary Permanentary Permanentary Indiversion of effect (insmit/medium/large) Value/ sensitivity (insmit/medium/large) Value/ sensitivity (insmit/medium/large) Permanentary	SE/	A topics and objectives	Assessment methodology				Assessment of option					
Landscape and Visual 8.10 portect, enhance the quality of and improve access to designated and undesignated landscapes? The River Parg and Sulham Brook in within and forms an essential part of the improve access to designated and undesignated and undesignated landscapes, townscapes and the countryside. Nill it avoid adverse effects and enhance designated areas of and sulham Brook in within and forms an essential part of the drought permits on the river could inpact walkers and others who visit the rare. Sulham Brook and vig and therefore any indexe constraints and therefore any indexe constraints and districtneess (e.g. woodlands) and avoid the loss of landscape features and local districtneess (e.g. woodlands) and avoid the loss of landscape character? The Niver Parg and Sulham Brook with ind noms an essential part of the drought permits could extense by visit the rare. Sulham Brook with ind there you to Sport of Sulhams rook there you to Sport and scope with inde the tory could enter who wist the area. Sulham Brook with inde risks to the there you do Sport and scope with inde th	Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	l Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	I Certainty of effect (low/moderate/h igh)	: Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
	Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The River Pang and Sulham Brook is within and forms an essential part of the landscape of the North Wessex Downs AONB and therefore any impacts of the drought permit on the rivers could impact walkers and others who visit the area. Sulham Brook can dry up and this reach is therefore considered intermittently- flowing. It is possible that the drought permit could extend upstream the length of Sulham Brook which dries by up to 500m. However, it is unlikely to cause any section of the brook to dry out which has not dried historically. The EAR reports a negligible effect on the AONB. The option is within the Chilterns NCA. It is a predominantly wooded and farmed landscape with an underlay of chalk bedrock rising from the London Basin and offering wide views over adjacent vales. Parts of this is also AONB and as negligible effects predicted for the AONB similar is expected for the NCA. The magnitude is identified as low due to the sensitivity of the AONB to this particular effect. In this case the Sulham Brook dries out historically.	Low (adverse)	Low	Small	High	Medium-term	Temporary	Negligible adverse	None

Drought Plan option	Playhatch: The abstra 4.1MI/d - i The droug!	ction is loca ncrease in ht permit co	ated in the S peak abstra ould be imp	South-West ction of exis	Chilterns Ch sting licence .t any time o	nalk groundt e from 8.2Ml If year, how	water body. I/d to 12.3N ever it is ant	It consists c 11/d providir ticipated to	ıf two bore ıg a benefit be applied	holes abstr. t of 4.1Ml/c for up to 6	acting from d. consecutive	the Chalk. months be	Normal abs	traction is a	nnual avera ber inclusiv	ge abstracti e. There is	ion 7.27Ml/ no construc	d, peak abst tion phase a	traction 8.2 associated v	MI/d. Propc with this drc	sed abstract	tion is 2.8 - ٤.
Summary commentary of scheme adverse effects	Overall, ad be negligib	lverse effec ile, as they	cts associate are associat	:d with this ted with neរ្	drought opt gligible hydr	∷ion are min rological eff€	or to negligi ects and the	ible and tem use of ener	porary. The	ere would b additional a	be minor adv	verse effect	ts associated	with emiss	ions to air d	lue to the a	bstraction o	if an additio	nal 4MI/d.	Remaining a	ıdverse effe	cts would
SEA Objectives Adverse Effects Assessment Summary		None	None	None	None	None	None		None			None	None		None	None			None	None	None	None
Summary commentary of scheme beneficial effects	There wou	Id be mode	erate benefi	icial effects :	associated v	with provisic	on of water s	supplies. Als	:o, minor bi	eneficial ef	fects due to	improving	the resilienc	e of water s	upplies to o	drought.						
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	I Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	There is no construction associated with the option. The hydrological impact is reported in the EAR as negligible and the sensitivity of designated sites, NERC species and other notable species within 500m is negligible (due to their susceptibility to flow and level) and no impacts are anticipated. Designated sites, NERC species and other notable species within 1km would be expected to also have negligible sensitivity including the ancient woodland located between 500m and 1km due to the negligible hydrological impact.	t Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem service were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	s n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	e n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	The EAR reports for the following invasive flora species Japanese knotweed Fallopia japonica, Giant hogweed Heracleum mantegazzianum, Himalayan balsam Impatiens glandulifera, as these invasive plant species listed can utilise flow of the watercourse for dispersal but are not reliant on it, implementation of the drought permit will therefore not increase dispersal. For other invasive flora species Australian swamp stonecrop Crassula helmsi; parrot's feather Myriophyllum aquaticum; floating pennywort Hydrocotyle ranunculoides; water fern Azolla filiculoides and Nuttall's pondweed Elodea nuttallii, the EAR reports although the species may be susceptible to changes in flow and level, given the negligible impact magnitude on surface waters this is unlikely to occur.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Option will help to maintain essential public water supplies (provision of up to an additional 4.1MI/d of water) during drought conditions and therefore help maintain public health. Regarding nuisance, whilst there is an AQMA located within 1km there is no construction proposed for this option therefore no adverse effects are expected to public health.	Low (beneficial)	High	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public, rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	c There are a number of marinas located along the River Thames and there is the Thames Path National Trail. Due to the negligible hydrological impact, the EAR reports no impact on navigation from the drought permit. Also there would be no impact on angling. No construction is proposed, therefore the Thames Path would not be affected. No significant effects are therefore anticipated on these resources.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation are expected, therefore no effects on related businesses or tourism are anticipated.	Low (adverse)	High	Medium	Medium	Short-term	Long	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumptior of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery?	Increases in abstraction (4.1MI/d) will result in short-term increases in energy use and waste generation. However, the option will make use of existing infrastructure, minimising this additional energy use and waste generation.	Low (adverse)	Low (adverse)	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The River Thames is located 1km south of the abstraction, with a series of lakes formed from disused gravel pits lying between the river and the abstraction. The lakes are connected to the River Thames. The abstraction is located in the South-West Chilterns Chalk groundwater body and there would be an increase in abstraction of 4.1Ml/d. The EAR reports that even if the full amount of the abstraction increase was taken (via increased infiltration) from the River Thames around Playhatch, the impact on summer Q95 and summer Q99 as measured at the nearest upstream gauge at Reading would be 1.0% and 1.2% respectively and therefore the hydrological impact on the River Thames would be negligible. Regarding Berry Brook the EAR reports that given that the groundwater level within the chalk will already be below the level of the Berry Brook by 4- 9km, abstraction from the chalk aquifer at Playhatch is unlikely to impact on flow in the Berry Brook the IAR reports that given that would have a negligible impact on it. Flow and water level in the Berry Brook would hence be maintained by the large and level-controlled River Thames and, in the vicinity of Playhatch, the nearby Caversham Lakes which it supports.	Low (adverse)	Low	Medium	Moderate/high	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	As the hydrological impact in both reaches is negligible there is considered no risk to water quality deterioration. WFD status sensitivity is reported as negligible.	Low (adverse)	Low	Small	Moderate/high	Short-term	Temporary	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. However, as the hydrological impact in both reaches is negligible, there is considered no risk to other abstractors and therefore no significant effects.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	As the hydrological impact in the two reaches is negligible, impacts on geomorphology are also considered negligible.	Low (adverse)	Low	Small	Moderate/high	Short-term	Temporary	Negligible adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	There are no opportunities to enhance ecosystem services functions have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No opportunities to promote a catchment wide response have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will cause short-term increases in air emissions associated with the abstraction of water (up to 4.1 MI/d). The abstraction site is in proximity (between 500m and 1km) to an AQMA at Reading, however no construction activities are required, and the use of existing infrastructure and treatment facilities will minimise emissions of air pollutants.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure will minimise increases in greenhouse gas emissions. The sensitivity is rated as low as the impact which be short-term and temporary.	Low (adverse)	Low	Medium	Moderate/high	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Minor beneficial

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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are listed buildings within 500m and a registered park and garden in the vicinity. However, there is no construction for this option and negligible hydrological effects with the potential to affect setting therefore no significant effects on these heritage assets are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character?	There are no national designations for landscape in the vicinity, there would be no construction and hydrological effects would be negligible therefore significant landscape effects are not anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Fobney Di The River drought pe constructi consecutiv Only a ver	rect: Kennet and ermit would on works w re months b y severe dro	Holy Brook d allow mani ould be asso between Ma ought would	Operating A ipulation of ociated with y and Decer I result in th	Agreement s the Arrowh h the drough nber inclusi nber inclusi sis drought p	pecifies use ead control ht permit. A ve, although ermit being	e of the Arro structure a temporary n it could be g required. 1	owhead con t extreme lo structure w implement The drought	trol structu ow flows (< ill be instal ted at any t permit wo	ire to reduce :173MI/d ga lled in the th time of year buld only be	e flow in the uged at The nird opening implemente	Holy Brook ale) to allow of the cont d when flow	by gate clo v abstraction rol structure ws in the Riv	sure at flow n from Rive e to direct f ver Kennet :	rs below 19: r Kennet at low away fr at Theale w	5MI/d and 1 expense of rom the Hol ere below 1	L73MI/d (Ri flows to Ho y Brook. The .73MI/d. On	ver Kennet g ly Brook, pro e drought pe aly in 1976 h	gauged at Ti oviding a be ermit is anti ave flows ti	heale). Impl enefit of up cipated to b his low beer	ementation to 20MI/d. e applied fo n recorded.	of the Vinor Yr up to 6
Summary commentary of scheme adverse effects	If impleme with reduc in localise amenity o	ented, the d ctions in vel d areas, adv f the park fo	drought perm locities, leve versely affec or walkers a	nit would h Is and wett ting macroi nd those wl	ave a major ed widths. T nvertebrate no visit the p	hydrologica here would s, macrophy park. Howey	l impact on be a mode /tes and phy /er, all adve	Holy Brook rate water o ytobenthos, rse effects i	between t quality risk and fish. H dentified a	the Arrowhe for SRP duri Holy Brook fo are short-ter	ad control s ing the drou orms part of m and temp	tructure and ght permit i the landsca orary, and r	l its conflue mplementa pe and visu tot expected	nce with th tion. Habita al amenity I to extend	e River Ken It availabilit value of Sou beyond six	net. Impaci y would be uthcote Line months.	ts will manii negatively a ear Park, and	fest as a red affected thre d impacts or	luction in lo ough reduct n river level:	west flows o tions in loss s may adver	of up to 40% of marginal sely impact	, along habitats the visual
SEA Objectives Adverse Effects Assessment Summary		None	None				None		None			None	None		None	None			None		None	
Summary commentary of scheme beneficial effects	If impleme permit is i flow at a t	ented the di mplemente ime of natu	rought perm d. Moderate Iral drought	it would ha beneficial will also he	ve a minor l impacts ass Ip to alleviat	peneficial h ociated with te the impa	ydrological i h ensuring s cts of natur	impact on t upply of wa al drought c	he River Ke ater to loca on macroph	ennet from t I population lytes, fish, m	he Arrowhe and other o nammals and	ad control s ustomers/b d birds in th	tructure to f usinesses. N e habitats o	the Fobney Ainor benef f the River I	WTW intak iits associat Kennet.	e. Flows wo ed with imp	ould be incre proving the r	eased by 20 resilience of	MI/d for the	e duration t lies to drou	hat the drou ght. An incr	ıght ease in
SEA Objectives Beneficial Effects Assessment Summary		None	None	None		None		None	None			None	None	None	None	None	None	None		None	None	None

SE/	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it effect WPD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	The hydrological impact of the Fobney Direct drought permit is a reduction of flows by up to 40% and consequently a reduction in velocities, water level and wetted width. Moderate impacts ecological features in Holy Brook are anticipated, I including changes in habitat availability for brown/sea trout and potential impacts on spawning and migration. Moderate impacts on European eel are expected due to potential impacts on habitat availability for brown/sea trout and potential upstream migration. Impacts on macroinvertebrates will likely be minor. Other environmentally sensitive species that are potentially susceptible to the hydrological impacts of the drought permit comprise <i>Ranunculus</i> sp., <i>Ceroclea senili, Macronychus quadrituberculatu, Atrichops crassipe</i> , barbel; bullhead and brook lamprey. As the ecological value of the <i>Ranunculus</i> community is of district importance, overall the impact significance has been assesed as moderate from May to September and minor from October to December. Minor impacts on ecological features in the River Kennet have been identified. An increase in flow at a time of natural drought will help to alleviate the impacts of the River Kennet.	Medium (adverse) Low (beneficial)	Medium	Medium	Moderate	Short-term	Temporary	Moderate adverse	Minor beneficial
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	During low flow conditions it is possible that some invasive flora species will increase in distribution and abundance. This impact is not attributable to the drought permit alone, and may already have been exacerbated by impacts of natural drought. Changes in water quality associated with the drought permit may provide more favourable conditions for the aquatic invasive species that are associated with eutrophic conditions (e.g. floating pennywort). Drought permit implementation is considered to have a minor impact to changes in abundance of invasive flora species (May to August only).	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Implementation of the drought permit will help to maintain essential public water supplies (provision of up to an additional 20MI/d of water) during drought conditions and therefore help maintain public health. Some construction is required for option implementation, therefore there may be minor effects on human health (e.g., noise and dust nuisance).	Low (adverse) Low (beneficial)	Low (adverse) High (beneficial)	Small	Moderate	Short-term	Temporary	Negligible adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist , activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	Holy Brook forms part of the landscape and visual amenity value of Southcote Linear Park. A major impact on river levels will adversely impact the visual amenity of the park for walkers and those who visit the park. Anglers may be affected by any reduction in the presence of fish species in Holy Brook on a temporary basis during drought permit implementation. However there is not expected to be a significant reduction in fish species as such impacts to angling are assessed as minor. There are no significant risks to surface water or groundwater abstractions associated with the impacted reach, and no impacts on navigation are anticipated.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Implementation of the drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation are expected, therefore no effects on essential services are anticipated.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will encourage the productive reuse of waste including energy recovery?	An increase in abstraction (20MI/d) is likely to result in a proportional increase in the use of energy, chemicals and generation of waste. Construction activities will likely generate some waste as well.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None

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Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The drought permit would have a major hydrological impact on the Holy Brook between the Arrowhead control structure and its confluence with the River Kennet. Impacts will manifest as a reduction in lowest flows of up to 40%, along with reductions in velocities, levels and wetted widths. However, the drought permit would have a beneficial hydrological impact on the River Kennet from the Arrowhead control structure to the Fobney WTW intake. Flows would be increased by 20 MI/d for the duration that the drought permit is implemented.	High (adverse) Low (beneficial)	Medium	Small	Moderate	Short-term	Temporary	Major adverse	Minor beneficial
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	In the adversely impacted Holy Brook, there would be a medium water quality risk for SRP during drought permit implementation. In the beneficially impacted River Kennet, there would be a medium water quality risk for SRP during drought permit implementation. The risk is reduced compared to not having a drought permit (high risk associated). There is no risk associated with dissolved oxygen saturation and ammonia concentration in either Holy Brook or the River Kennet, and no risks associated with discharges. Implementation of the drought permit would have medium, short term, temporary, reversible risks to the status of the Kennet and Holy Brook (GB106039023140) WFD with respect to macroinvertebrates, macrophytes and phytobenthos, and fish.	Medium (adverse) Low (beneficial)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. However, there are no significant risks to surface water or groundwater abstractions associated with the impacted reach.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Sections of Holy Brook are flow sensitive, particularly in the first half of the reach and there is expected to be a moderate geomorphological impact. Hence, habitat availability would be negatively affected through reductions in wetted width and loss of marginal habitats (particularly in the upper part) in localised areas of the brook. As the River Kennet is level-controlled, and managed, reductions in wetted width are unlikely and geomorphological impacts are considered negligible.	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option, as construction activities will occur within an already developed site and no opportunities for enhancing the ecosystem services functions of land have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option, and no opportunities for catchment wide approach to land management have been identified.	- n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat or more deprived area)? 	Construction activities and increased abstraction/treatment would cause an increase in energy use and associated air emissions. The Reading AQMA is within 1km of the affected area.	Medium (adverse)	Medium	Small	Low	Short-term	Temporary	Moderate adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Construction activities and increased abstraction/treatment would cause an increase in energy use and associated greenhouse gas emissions.	Medium (adverse)	Low	Medium	Moderate	Short-term	Temporary	Minor adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High	Small	High	Long-term	Temporary	None	Minor beneficial

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeoenvironmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	Some listed buildings are located within 500m and 1km of the affected area. However, construction activities will be minor and impacts on these buildings are expected to be negligible.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	Holy Brook forms part of the landscape and visual amenity value of Southcote Linear Park. Impacts on river levels may have minor adverse impacts on the visual amenity of the park for walkers and those who visit the park.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None

Drought Plan option	Albury: The Albury licence inc normal ab beyond a l constructio	y abstractio ludes a flo straction, T ower limit on works a	in consists o w constraint WUL may al of flow in a: re required i	f four boreh t whereby al bstract 6.8W ssociated La in order to i	ioles (one di bstraction m 1l/d (peak ai w Brook. It i mplement t	isused) in the ાપડt cease if nd annual av is anticipate he drought દ્ર	e vicinity of flow in Law verage) at Al d the droug permit. This	Law Brook; Brook as ga Ibury (licend ht permit co drought pe	a tributary auged at Al ce number buld be app rmit is unlil	r of the Rive bury falls b 28/39/30/0 Ilied for six kely to be re	er Tillingbou elow 2.27M)209) except consecutive equired but	rne which is //d, howeve when flows months bet if it is requir	itself a trib r, such low s in Law Bro tween May red it would	utary of the flow has ne ok as gauge to Decembe I be at a tim	River Wey ver been re d at Albury er inclusive, e of except	. The abstra corded and fall below a although it ional droug	action is from this licence 2.27MI/d. Pr could be in tht.	m the Hythe condition h roposed dro nplemented	e aquifer of as never m ught optior at any time	the Lower (oderated th) is extensio 2 of year. Be	ireensand g e abstractio n of abstrac nefit of 6.8	;roup. The on. During ction MI/d. No
Summary commentary of scheme adverse effects:	Moderate anticipate geomorph	adverse efi d, as are mi ological cha	fects on wat inor adverse anges are als	ter quality m e effects due so expected	nay occur du ≥ to an incre I. Adverse ef	ie to elevate ase in invasi fects are ları	d SRP conce ve macroinv gely limited	entrations, a vertebrates. I to Reach 2	and modera There wou (Law Brool	ate adverse Ild be mino < from Ford	hydrologica r impacts or Cress Beds I	l effects are angling at to confluenc	expected o ponds along ce with Rive	on the two r ; Law Brook r Tillingbou	eaches of La , and minor rne), and ar	aw Brook. N adverse efi re predomir	Aoderate ad fects associa aantly short-	lverse effect ated with air term and te	ts on NERC : r and green imporary.	species (bro house gas e	wn trout) aı nissions. M	re linor
SEA Objectives Adverse Effects Assessment Summary		None	None		None				None				None		None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate	beneficial	effects are e	expected due	e to provisic	א of additio	nal water si	upply. Mino	r beneficia	l effects ass	sociated with	n improving	the resilien	ce of water	supplies to	drought.						
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	A moderate hydrological impact is predicted for both reaches of Law Brook. Impacts on designated sites due to deterioration in habitat quality and extent/distribution of qualifying features are expected to be negligible. There is also an ancient woodland within 500m of the brook and further areas of ancient woodland within 1km and effects on these areas are also anticipated to negligible. Impacts on NERC species for reach 1 are negligible, whereas minor and moderate adverse effects are likely on white clawed crayfish and brown trout respectively in reach 2. Impacts on other notable species for reach 1 are negligible, whereas negligible inspacts on <i>Ranunculus</i> sp. and minor impacts on <i>Rhyacophila septentrioni</i> due to a reduction in abundance or distribution associated with geomorphological changes in reach 2. Minor adverse effects are expected on the macroinvertebrate community.	Low (adverse)	High	Small	Low	Medium-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	 Will it protect or enhance natural capital and ecosystem services? 	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	An increase in the distribution of invasive macro-invertebrates and competition with/predation of the native white-clawed crayfish may occur, resulting in a minor impact. An increase in suitable habitat availability may occur for the New Zealand mud snail, European physa and <i>Cheliocorophium curvispinum</i> due to delays in the recovery of flow velocity and river level, resulting in a minor impact. Negligible impacts are expected for invasive flora.	Low (adverse)	High	Small	Low	Medium-term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? 	Option will help to maintain essential public water supplies (provision of up to an additional 6.8Ml/d of water) during drought conditions and therefore help maintain public health.	h Low (adverse)	High	Small	High	Medium-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as , public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	Law Brook forms part of the setting of the Downs Link National Trail. Changes to water levels or delays to recovery in Law Brook is anticipated to have minor impacts on the setting of Downs Link National Trail. There are a number of ponds potentially used for fishing along the impacted reach of Law Brook. It is anticipated that there will be minimal disruption to angling. No boating activity takes places on Law Brook, and as such no impact on navigation from drought permit implementation is anticipated.	Low (adverse)	Medium	Small	Moderate/high	Medium-term	Temporary	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	² The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. There may also be minor disruption to angling and associated businesses.	Low (beneficial) Low (adverse)	High (beneficial) Medium (adverse)	Medium	Medium	Medium-term	Long	Minor adverse	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction (up to 6.8 MI/d) will typically result in proportional increases in energy use and waste.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Hydrological effects on Law Brook from Pursers Farm to Ford Cress Beds (Reach 1) and Law Brook from Ford Cress Beds to confluence with River Tillingbourne (Reach 2) are both are identified as moderate. Reach 1 would be dry prior to a drought permit being required. The abstraction could delay recovery of the aquifer by up to a month (occurring sometime between October and March), i.e. delaying the time until groundwater would contribute to flow in the brook. There would be a short period after the resumption of baseflow when groundwater would not contribute as much flow to the river as it would without drought permit implementation, but thi flow reduction would not be associated with reductions in levels, velocities, wetted width and wetted perimeter beyond those experienced in the normal range of hydrological variation. For Reach 2, there would result in a reduction in extreme low flows, most likely to occur around September, and unlikely to last for more than a month. The drought permit would be associated with a reduction in flows, velocities, levels and wetted widths. This would potentially pose a threat to marginal habitats, as parts of the reach are flow sensitive.	Medium (adverse)	Medium	Small	Moderate/high	Medium-term	Temporary	Moderate adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	A major effect with regard to SRP is expected for Reaches 1 and 2, however SRP is a risk in Law Brook even without implementation of the drought permit. Minor impacts for dissolved oxygen and ammonia concentrations are also expected in both reaches. Law Brook is not classified as a WFD waterbody, however is a tributary of the River Tillingbourne which is a WFD waterbody. This has moderate sensitivity and is reported as requiring further assessment, hence effects on WFD status are uncertain.	High (adverse)	Medium	Small	Low	Medium-term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (includine aericulture)? 	Local resource availability is described as 'water not available for licensing'. However effects on other surface and groundwater abstractions are expected to be negligible.	Low (adverse)	Low	Small	Moderate/high	Medium-term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute to machine the avaragement of water surbinability and its true.	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	Overall, geomorphology impacts are expected to be minor in both reaches of Law Brook. There is some uncertainty associated with the availability of information about geomorphology, therefore a high sensitivity has been applied to take a precautionary approach.	Low (adverse)	High	Small	Low	Short	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	 Will it ensure efficient use of land (e.g. make use of previously developed land)? 	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	 Will it contribute towards a catchment-wide approach to land management? 	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to ar AQMA or to sensitive habitat)? 	The option will result in minor increases in air emissions associated with abstraction and treatment of water (up to 6.8 Ml/d). The option is within proximity of sites designated for nature conservation at national level.	Low (adverse)	Medium	Small	Low	Medium	Temporary	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure will minimise increases in greenhouse gas emissions. The sensitivity to this effect is rated as low due to the short term and temporary effect	Low (adverse)	Low	Medium	Moderate/high	Short-term	Temporary	Negligible adverse	None

SE/	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/l igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The Chilworth Gunpowder Works is unlikely to be impacted over the duration of the drought permit implementation. There is also a Registered Park and Garden (Albury Park) and a scheduled monument (Bowl Barrow on Shere Heath) within 500m and listed buildings between 500m and 1km. These are unlikely to be significantly affected as there will be no construction. Impacts on setting are also unlikely as flow reductions would not cause reductions in levels, velocities, wetted width and wetted perimeter beyond those experienced in the normal range of hydrological variation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	The option is within the Surrey Hills AONB. The EAR reports that Law Brook forms part of the setting of this AONB. Changes in water levels in Law Brook (Reach 2) and a delay to recovery (Reach 1) are expected to be negligible, Landscape values are unlikely to be affected as there will be no construction, and flow reductions would not cause reductions in levels, velocities, wetted width and wetted perimeter beyond those experienced in the normal range of hydrological variation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

S Drought Plan option	Shalford: Under norr increase to although it water abst	mal conditi) the existin : could be in rracted fron	ons, the abs ng surface v mplementer n both the F	straction cor water abstra d any time c River Wey ar	mprises 30M action from of year. The nd River Till	VII/d from th the River W River Wey i lingbourne j	1e River Wey 'ey, and remo is a mainly ru just upstrean	y (licence no oving the li ural catchm n of their co	umber 28/3 cence aggre lent of mixe onfluence.	9/30/0066, egates. The ed geology,	, aggregated benefit wou with baseflo	with abstra Id be 5MI/d ww originatin	ction from 1 . The droug g from botl	the Tillingbo ht permit m h the Chalk	ourne licenc lay be imple and Lower (e 28/39/30, emented for Greensand a	/319). Imple r up to 6 cor aquifers. Sha	mentation secutive m alford Wate	of the droug onths betwe r Treatment	ght permit v een May an t Works (Wī	vould involv d December FW) treats s	ve an r inclusive, urface
F Summary commentary of scheme adverse effects	Flow reduc Tillingboun	:tions assoc ne and Gui	ciated with i ildford STW.	implementa . Negligible a	ation of the adverse hyd	drought per drological im	rmit on the R 1pacts were i	River Wey u identified, i	pstream of impacts on	the River T	illingbourne ology, water	will be negi quality and	igible. Dow other abstr	nstream im actors are a	pacts would Iso expecte	d be proport d to be negl	tionally less ligible.	with flow c	ontribution	s coming fro	om the Rive	r
SEA Objectives Adverse Effects Assessment Summary		None	None	None	None	None	None		None		None		None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Moderate I drought.	beneficial i	impacts are	expected w	/ith respect	to ensuring	supply of wa	ater to loca	l populatior	n and other	customers/	businesses.	There is also	o likely to b	e minor ber	neficial impa	acts associal	ed with im	proving the	resilience c	if water sup	plies to
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence o effect (permanent/ temporary)	f Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Effects on designations within 500m are reported in the EAR as negligible for all sites. There is ancient woodland within 1km however as the hydrological impacts are reported in the EAR as negligible, effects on sites further from the permit area of influence are unlikely. Similarly designations beyond the 500m addressed in the EAR are unlikely to be affected.	Low (adverse)	High	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Given the negligible magnitude of impacts of the drought permit on hydrology and water quality, no impacts in invasive species are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to 5Ml/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects on human health (e.g., noise and dust nuisance) are expected.	Low (adverse)	High	Small	Moderate	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as National Trails public rights of ways, including navigation? Does it protect and enhance the green infrastructure network? 	There is no hydrological impact on surface water features as a result of drought permit implementation. Therefore, there no impacts on recreation, angling or navigation are expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Given that there is no adverse surface water hydrological impact associated with the drought permit, there would be no impact on other surface water abstractions. The option will contribute to the maintenance of supply reliability in drought conditions (benefit of up to 5MI/d), ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	Low (beneficial)	High	Medium	Medium	Short-term	Permanent	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An increase in abstraction is likely to result in a proportional increase in the use of energy and generation of waste. However, existing infrastructure would be used, minimising such increases.	Low (adverse)	Low	Medium	Medium	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies?	No opportunities to promote the sustainable management of natural resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The reach of the River Wey from Shalford WTW to the River Tillingbourne confluence is approximately 1.73km. The reduction in flow at the River Wey is reported in the EAR as negligible, as are expected effects on habitats and navigation.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	Adverse hydrological impacts are expected to be negligible, thus no effects on water quality are anticipated.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it affect WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. However as negligible adverse hydrological impacts were identified, no impacts on other abstractors are anticipated. Effects on the WFD status for the Wey is are expected to be negligible.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	As negligible adverse hydrological impacts were identified, no impacts on geomorphology are anticipated. No construction is required for implementation of this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take or construction is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	No construction is required for implementation of this option, although increased abstraction would cause a small increase in energy use and associated air emissions. The site is not within an AQMA.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	No construction is required for implementation of this option, although increased abstraction would cause a small increase in energy use and associated greenhouse gas emissions.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (adverse)	High	Small	High	Short-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There is no construction proposed and negligible effects on hydrology are expected. St Catherine's Chapel is within the area of influence, however is not expected to be affected by implementation of the option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	There will be no hydrological impact from drought permit implementation, therefore, there will be no impact on the amenity of Surrey Hills AONB.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	New Grou The New C in 2005. T currently o between I From its so	nd: Ground bore he abstract operating th May and De Durce, the R	choles abstr ion was due nrough an e cember incl iver Bulbou	ract from th e to cease e mergency li lusive, altho irne flows t	e unconfine ntirely in sur icence (10 da ough it could hrough the t	d Chalk aqui mmer 2008 iys only at a be impleme own of Berk	ifer and are but continue rate of 8.13 ented at any chamsted ale	located 1.2 ed at a redu 8MI/d thro y time of the ong the cou	km northwi ced rate ur ugh agreen e year. No c rse of the C	est of the nu der an eme nent with th onstruction Grand Unior	ormal sourc ergency licer ne Environm n works are o n Canal, ente	e of River B nce until sur ent Agency envisaged. ering and ex	ulbourne at nmer 2011. , with a ben iting it on tv	Dudswell. The propos efit of 6.5 I vo occasior	The boreho ed drought MI/day. The s, until the	les were his permit at N drought pe river joins t	storically licc lew Ground rrmit could l he River Ga	enced for 6. is to resume be implemen de in Hemel	5MI/d until e historical a nted for up Hempstead	the abstrac abstraction to 6 consec d.	tion rate w from boreh utive montl	as reduced oles ns
Summary commentary of scheme adverse effects	No major : Minor wat are also pr assets/res temporary	adverse imp rer quality e ossible due ource use d r.	pacts have b ffects on di to the alter ue to increa	been identif issolved oxy ation to cor ases in ener	ied for implo gen quality, mmunity cor gy use in the	ementation ammonia a nposition ar e increased a	of the New nd reactive nd the reduc abstraction a	Ground dro phosphorus tion/loss of and treatme	ught permi may occur spawning ent of wate	t. Moderate in Reach 1 habitat and r. Adverse i	e adverse im (River Bulbo increased s mpacts are i	pacts have ourne (sourd tress/preda negligible to	been identii e at Dudswo tion on spec e absent in t	fied with re ell) to confl ies. There a he remainin	gard to redu uence with are also like ng reaches c	uced flow/le Grand Unio Iy to be min of the River	evels, as the n Canal). M ior impacts Bulbourne,	e abstractior inor impacts on geomorp and all adve	n is likely to s on macroin hology in R erse effects	delay groun nvertebrate each 1, and identified a	ndwater rec s, fish and l on materia re short-ter	overy. bullhead l m and
SEA Objectives Adverse Effects Assessment Summary		None	None		None	None	None		None			None	None		None	None			None		None	None
Summary commentary of scheme beneficial effects	Beneficial	impacts ha	ve been ide	ntified prin	narily throug	h ensuring s	supply of wa	iter to local	population	and other o	customers/t	ousinesses.	There is also	likely to b	e beneficial	impacts ass	sociated wit	h improving	the resilier	nce of wate	r supplies to	o drought.
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of option					
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (those likely to remain after reasonable mitigation)	Residual beneficial effect significance (those likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No impacts on designated sites have been identified. Minor impacts on macroinvertebrates and fish may occur between December and April due to the alteration to community composition as a result of delayed recovery of flow in the watercourse. A minor impact has also been identified for bullhead (fish) due to the reduction/loss of spawning habitat and increased stress/predation on species as a result of delay in recovery of flows.	Medium (adverse)	Low	Small	Moderate	Short-term	Temporary	Minor adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will work with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing the connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Negligible impacts on invasive macroinvertebrates and invasive flora in Reach 1 (River Bulbourne - source (at Dudswell) to confluence with Grand Union Canal) due to a delay in hydrological recovery, increasing the habitat suitability and therefore distribution of invasive species.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well- being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	Implementation of the drought permit will help to maintain essential public water supplies (provision of up to an additional 6.5MI/d of water) during drought conditions and therefore help maintain public health.	Low (beneficial)	High (beneficial)	Medium	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities , such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	No impacts have been identified regarding recreation, tourism and/or navigation	r n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	 Will it assist in ensuring provision of essential services to support health and well-being? 	Implementation of the drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. No impacts on navigation are expected, therefore no effects on essential services are anticipated.	Low (beneficial)	High (beneficial)	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	An increase in abstraction (6.5MI/d) is likely to result in a proportional increase in the use of energy, chemicals and generation , of waste.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance o water supplies?	No opportunities to promote the sustainable management of natural f resources were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	There would be a moderate hydrological impact on the seasonal (intermittentity-flowing) River Bulbourne from its source (at Dudswell) to its first confluence with the Grand Union Canal. This reach would experience reduced flows associated with a delay in groundwater contributing to flow within the watercourse. This would occur for around one month at any time of year, depending on the timing and duration of drought conditions in the catchment. The abstraction is likely to delay groundwater recovery (so that groundwater would be contributing to flow in the river). Under rare circumstances the drought permit may result in the watercourse, or upper portions of it being dry for consecutive seasons (acknowledging that this has occurred at the watercourse in recent years anyway). Historically, recovery with the abstraction in use usually occurred between December and April, therefore, the impact of the drought permit would likely manifest within this period. There would be a negligible hydrological impact on flow in Reaches 2, 3 and 4.	Low	High	Small	Moderate	Short term	Temporary	Moderate adverse	None

Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	There is a minor risk in Reach 1 (River Bulbourne - source (at Dudswell) to first confluence with Grand Union Canal) associated with oxygen quality and ammonia as a result of low flows in this reach. There is also a minor risk nutrient quality but no risk associated with reactive phosphorus. There is no water quality risk anticipated in Reach 2, 3 and 4. STWs do not pose a risk to water quality within Reach 1.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives.	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Water resource available is described as "water not available for licencing" by the EA. Although there are four licences for groundwater abstraction over 0.5Ml/d, the EAR has assessed the implementation of the New Ground drought permit as posing no risk to the feasibility of other abstractors.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	There would be minor geomorphological impacts, comprising reductions in wetted width, in Reach 1 (River Bulbourne - source (at Dudswell) to first confluence with Grand Union Canal) due to the drought permit compared to the natural river regime. As the channel is accustomed to drying up for extended periods, geomorphological impacts of the drought permit related to wetted perimeters are considered minor.	Low (adverse)	Moderate	Small	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)?	The option will increase air emissions associated with the abstraction and treatment of water (up to 6.5 Ml/d). There is an AQMA within Skm, however emissions will be energy related and possibly not close to the abstraction site, and no construction is planned. Overall effects are thus assessed to be negligible.	Low (adverse)	Low	Local	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non- drought conditions? 	Construction activities and increased abstraction/treatment would cause an increase in energy use and associated greenhouse gas emissions.	Low (adverse)	Low	Small	High	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High (beneficial)	Small	High	Short term	Temporary	None	Minor beneficial
Archaeology and Cuitural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The Roman settlement at the Cow Roast Inn scheduled monument is in the area of influence, however it is unlikely to be impacted by drought permit implementation. Effects are considered negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultura assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo- environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No impacts have been identified relating to landscape and/or visual amenity.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

Drought Plan option	Pann Mill: Water is al of the Rest	bstracted fr toring Susta	rom the Sou: ainable Abst	th West Chi raction pro	ilterns Chalk gramme). Dı	د WFD groun rought perm	ıdwater bod ıit implemer	ly at Pann M ntation wou	iill. From A Id see an ir	pril 2017, t i ncrease fror	he TWUL lice	ence will be d licence of	revised wh 9.5 M/I up	ereby the a to the old d	verage and eployable o	peak abstran Nutput of 16.	ction will de .8MI/d (pro	ecrease from viding a 7.3	ı 22.273 MI MI/d benef	/d to 9.5 M ït).	I/d (revised	as a result
Summary commentary of scheme adverse effects	Major advı impacts of (low flows	erse effects [:] this low flc : and loss of	s have been ow on biodiv f habitat), ar	identified in versity (inclu nd geomorp	n relation to uding loss of ihology (effe) a reduction f habitat and ects in shallo	ו in flow in t d spawning מ אש sections מ	:he River Wγ areas affecti of reaches).	ye (Reach 2 ing Brown ⁻ However, a	- from Pan Trout), and all adverse (n Mill PS to water qualit effects ident	Little Marlo ty (with risk tified are sh	ow STW disc is for SRP in lort-term an	harge) to it: Reach 2). N d temporar	lowest lev inor advers y, and not e	el during dru e impacts h expected to	ought permi Iave also ber extend beyc	it operation en identifier ond six mon	. Moderate d in relatior ths.	adverse ef i to non-nat	fects relate ive invasive	to the species
SEA Objectives Adverse Effects Assessment Summary		None	None		None		None		None			None	None		None	None			None		None	
Summary commentary of scheme beneficial effects	Beneficial	impacts inc	:lude ensurir	ng supply of	f water to lo	xal populati	ion and othe	er customer:	s/businesse	es. There is	also likely to) be benefi	cial impacts	associated	with improv	ring the resi	lience of wa	iter supplies	s to drough	<u>.</u>		
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A topics and objectives	Assessment methodology				Assessment of ont	ion				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/l igh)	Short- term/medium- term/long-term	Permanence o effect (permanent/ temporary)	f effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	No impacts on designated sites have been identified. The EAR identifies a moderate impact on NERC species (brown trout), including reduced habitat availability and loss of spawning areas, and increased mortality die to lack of flow. Moderate impacts on macroinvertebrates and fish are predicted, due to reduced habitat as a result of reduced flows, including loss of spawning habitat	Medium (adverse)	Medium	Small	Moderate	Short-term	Temporary	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will work with catchment groups on climate change resilience.	i n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services.	Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature?	No opportunities for enhancing the connections between people and nature have been identified for this option.	n n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	Will it introduce or allow the spread of Invasive Non-Native Species (INNS)?	Implementation of the drought permit may increase the abundance or range of some invasive flora and fauna species, although the level of impact beyond that of natural drought is uncertain. Invasive fauna potentially affected include the signal crayfish, New Zealand mud snail, flatworm, acute bladder snail and freshwater shrimp. Affected flora includes Canadian pondweed and least duckweed.	Low (adverse)	Medium	Small	Low	Short-term	Temporary	Minor adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will it help to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to 7.3Ml/d of water) during drought conditions and therefore help maintain public health. No construction is proposed, and therefore no effects or human health (e.g., noise and dust nuisance) are expected.	Low (beneficial)	High	Small	High	Short-term	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	The area is considered to be a built-up area with few trails and footpaths associated with the impacted reaches. Despite the major impact in Reach 2 and the moderate impact in Reach 3, the impact on recreation is considered to be negligible. The diversity of the fish community is limited within the River Wye and the Wycombe Marsh Brook. Trout is the most dominant species, but due to the built up nature of the area, angling will probably be limited.	Low (adverse)	Low	Small	Moderate	Short-term	Temporary	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	Low (beneficial)	High	Medium	Moderate	Short-term	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs under normal operation will typically result in proportional increases in energy use and waste generation. Existing infrastructure will bemused to abstract water, maximising the resource efficiency of the drought option	Low (adverse)	Low (adverse)	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources were identified for thi option.	s n/a	n/a	n/a	n/a	n/a	n/a	None	None

SEA	topics and objectives	Assessment methodology				Assessment of opti	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	The implementation of the Pann Mill drought permit is likely to result in flow in the River Wye (Reach 2 - from Pann Mill PS to Little Marlow STW discharge) to be at its lowest, resulting in a major impact. A moderate impact is expected for the same reasons during implementation in Reach 3 (Wycombe Marsh Brook 1km downstream from Pann Mill PS to confluence with River Wye).	Low	High	Small	Moderate	Short-term	Temporary	Major adverse	None
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	The risk of the drought order to SRP has been assessed as moderate and dissolved oxygen saturation as minor in reach 2 (River Wye from Pann Mill PS to Little Marlow STW discharge). There is a minor risk to SRP in reach 3 (Wycombe Marsh Brook from 1km downstream of Pann Mill PS to its confluence wit the River Wye).	Medium (adverse)	Medium	Small	Moderate	Short term	Temporary	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Water resource availability is described as "water not available for licencing" by the EA. There are no significant surface water or groundwater abstractors (over 0.5Ml/day) within the area of influence.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	A moderate impact on geomorphology is expected in Reach 2, where variation in wetted width would occur in the limited shallower sections of the reach. Minor impacts are also identified for Reach 1 (River Wye from it culverted section in High Wycombe to Pann Mill PS) where the steep banks and managed nature of the reach limit the impact of flow.	Low (adverse)	Medium	Small	Moderate	Short-term	Temporary	Minor adverse	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option, and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will increase the emissions associated with the abstraction and treatment of water (up to 7.3 Ml/d). There is one AQMA within 2.5km of the site. However, no construction is required.	Low (adverse)	Low	Low	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction.	Low (adverse)	Low	Medium	Moderate	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	High (beneficial)	small	High	Short term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	The St John the Baptist's Hospital scheduled monument is in the area of influence, however it are unlikely to be impacted by drought permit implementation. Effects are considered negligible.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of opti	on				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	No impacts on landscape and/or visual amenity have been identified. The area of influence is built-up area with few trails and footpaths associated with the impacted reaches.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
	I	1	1								

Drought Plan option	Harpsden The Harps between t other side Sheepland 6 MI/d du	Sheepland: den abstrac he river and of the Rive ls will conti ring drough	tion consist d the abstra Thames to nue to be p t would be	ts of three bo ction. The a o the Harpsd umped at 11 taken, amou	oreholes ab abstraction len borehol L4 MI/d wh unting to a t	ostracting fro is licenced in es. The prop lich is within total output	om the unco n aggregate bosed droug n the bounda of 16.5 MI/a	nfined chal with the Sh ht option w aries of the d.	k aquifer (tł eeplands ał rill be to rela normal ope	nat is overla ostraction, a ax the aggro rating licen	ain by super a group of tl egate condit ise. Typically	ficial gravels hree boreho tion of the c y, 10.5 MI/d	s). The Rive les, also abs urrent abstı of water is	r Thames is stracting fro raction licer abstracted	located abo om the Chall nce and incr from the Ha	out 750m ea k. The Sheep ease total a arpsden bord	ast of the ab plands borel bstraction fi eholes unde	straction, v holes are lo rom both lo er the norm	with the sett acated 3km s ocations to 2 al operating	tlement Lov southeast o 27.9 MI/d. A g license the	ver Shiplake f Harpsden, bstraction a refore an ir	: lying on the at ncrease of
Summary commentary of scheme adverse effects	Negligible	adverse eff	fects are pre	edicted for t	his drought	option and	no construct	tion is prop	osed.													
SEA Objectives Adverse Effects Assessment Summary		None	None		None	None	None		None			None	None	None	None	None			None	None	None	None
Summary commentary of scheme beneficial effects	Beneficial	effects incl	lude maintai	ined of esser	ntial public	water supp	lies during ti	imes of dro	ught. There	is also likel	ly to be ben	eficial impac	cts associate	ed with imp	roving the r	esilience of	water supp	lies to drou	ıght.			
SEA Objectives Beneficial Effects Assessment Summary	None	None	None	None		None		None	None	None	None	None	None	None	None	None	None	None		None	None	None

SE	A tonics and objectives	Assessment methodology				Assessment of ontic	n				
Topic	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over- abstraction on sensitive sites, habitats and species).	 Will it protect and enhance the most important sites for nature conservation? Will it protect and enhance aquatic, transitional and terrestrial species and habitats? Will it contribute to the sustainable management of natural habitats and ecosystems, i.e. within their limits and capacities taking into account climate change adaptability? Will it affect WFD compliance e.g. good ecological potential/status? Will it ensure maintenance or support provision of fish passage with respect to migratory fish functioning habitat connectivity? 	Hydrological impacts associated with drought plan implementation are expected to be negligible, as are effects on the Harpsden Wood SSSI, ancient woodland and NERC species within the area of influence. There is no construction associated with this option and negligible effects on sites within proximity.	Low (adverse)	Low	Small	Moderate	Short	Temporary	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.	Will it protect or enhance natural capital and ecosystem services?	No opportunities for enhancement of natural capital and ecosystem services were identified, however Thames Water will collaborate with catchment groups on climate change resilience.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	 1.3 To strengthen the connections between people and nature and realise the value of biodiversity and ecosystem services. 	 Will it maintain or enhance access to areas of natural heritage conservation interest? Will it engage more people in biodiversity issues and strengthen their connections with nature? 	No opportunities for enhancing connections between people and nature were identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Biodiversity, flora and fauna	1.4 To avoid introducing or spreading INNS.	 Will it introduce or allow the spread of Invasive Non-Native Species (INNS)? 	The negligible hydrological impact of drought permit implementation is unlikely to result in any change to the potential spread or dispersal of invasive species.	Low (adverse)	Low	Small	Moderate	Short	Temporary	Negligible adverse	None
Population and human health	2.1 To protect and enhance health and well-being (including raising awareness of the importance and value of the water environment for health and well-being).	 Will it help to ensure provision of access to a secure resilient access to a secure and affordable supply of drinking water? Will it help to protect or improve drinking water quality? Will it raise awareness of the importance and value of the water environment for health and well-being? Will thelp to promote healthy communities and protect from risks to health and wellbeing (for example through nuisance or resulting from traffic or transport changes, disruption to safe and reliable water/sewerage services)? 	The option will help to maintain essential public water supplies (provision of up to an additional 6MI/d of water) during drought conditions, and therefore help maintain public health. No construction is required, so no adverse effects associated with construction activities will occur.	Low (beneficial)	High	Small	Moderate	Short	Temporary	None	Moderate beneficial
Population and human health	2.2 To protect and enhance the water environment for other users including recreation, tourism and navigation, as well as terrestrial recreational resources (including National Trails and Public Rights of Way).	 Will it protect or enhance opportunities for recreation and tourist activities such as public rights of way, including navigation? Does it protect and enhance the green infrastructure network? 	There will be no impact on navigation from drought permit implementation.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Population and human health	2.3 To promote a sustainable economy with good access to essential services, including a resilient, high quality and affordable supply of water over the long term.	Will it assist in ensuring provision of essential services to support health and well-being?	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Hydrological impacts are negligible, so no impacts on other abstractors or businesses are expected.	Low (beneficial)	High	Medium	Moderate	Short	Temporary	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	 Will it minimise the use of energy and promote energy efficiency? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of sustainable materials (e.g. supplied from local resources)? Will it reduce the amount of waste generated and increase the proportion sent to reuse or recycling? Will it encourage the productive reuse of waste including energy recovery? 	Increases in abstraction over and above what occurs under normal operation will typically result in proportional increases in energy use and waste generation.	Low (adverse)	Low	Medium	Medium	Short	Temporary	Negligible adverse	None
Material assets and resource use	3.2 To promote the sustainable management of natural resources including efficient and sustainable use of water; ensure resilient water supplies for homes and industry in the area is maintained.	 Will it help to minimise the demand for resources (including water)? Will it enable efficient water resource management and ensure maintenance of water supplies? 	No opportunities to promote the sustainable management of natural resources have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.1 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	 Will it lead to a change in river flows, wetted width or river level? Will it alter the flow regime or residence time of surface waters? Will it lead to changes in groundwater levels and recharge? 	Option involves groundwater abstraction of an additional 6 MI/d. The reach potentially affected is Reading gauging station to Newtown. The EAR reports that even if the full additional abstraction was assumed to be at the expense (via increased infiltration) of the River Thames around Harpsden, the impact on summer Q95 and summer Q99 as measured at the nearest upstream gauge at Reading would be 1.5% and 1.8% respectively, and therefore a negligible impact on the River Thames. During a dry period, water level in the river gravels would be maintained by the large and level-controlled River Thames. Surface water features would also be maintained by the river, and therefore, the drought permit would have a negligible impact.	Low (adverse)	Low	Small	Moderate	Short	Temporary	Negligible adverse	None

SEA	topics and objectives	Assessment methodology				Assessment of optio	n				
Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographical &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence of effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To protect and enhance surface and groundwater quality and protect and enhance estuarine waterbodies.	 Will it affect WFD compliance e.g. good ecological potential/status, prevent deterioration of WFD status between status classes? Will it minimise impacts on, or contribute to achievement of, RBMP objectives? Will it present a risk to water quality of groundwater, and surface water or estuarine waters? Will it prevent water pollution? Will it affect water quality compliance? 	No water quality impacts or risks have been identified in the EAR. Negligible impacts on WFD status are identified in EAR.	E Low (adverse)	Low	Small	Moderate	Short	Temporary	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	 Will it ensure sustainable abstractions, taking account of water resources availability status? Will it affect WFD protected areas? Will it prevent the introduction of impediments to the attainment of WFD good status or potential? Will it achieve an appropriate balance of supply with other functions and services (including agriculture)? 	Local resource availability is described as 'water not available for licensing'. However, no impacts on other abstractions within the area of influence are expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Water	4.4 To promote measures to enable and sustain long term improvement in water efficiency.	 Will it promote measures to enable improvements in water efficiency and assist in balancing supply and demand? Will it contribute towards improving the awareness of water sustainability and its true value? 	No opportunities to promote long-term improvement in water efficiency have been identified for this option.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.1 To protect and enhance geology, geomorphology and the quality and quantity of soils.	 Will it avoid damage to and protect geologically important sites? Will it protect and enhance the quality of soils? Will it protect and enhance geological SSSIs or similar nationally protected sites? Will it protect and enhance geomorphology and geomorphological processes? 	No specific soils or geological SSSIs are reported as being impacted in the EAR and no construction is proposed. Adverse hydrological effects are expected to be negligible, and no geomorphological risks have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.2 To protect and enhance the ecosystem services functions of land, soils and geology, including carbon sequestration, flood attenuation, pollutant filtration and nutrient cycling.	Will it ensure efficient use of land (e.g. make use of previously developed land)?	No land take is required for the option and no opportunities to enhance ecosystem services have been identified.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
Soil, geology and land use	5.3 To promote a catchment-wide approach to catchment land management.	Will it contribute towards a catchment-wide approach to land management?	No land take is required for the option and no opportunities for catchment-wide approach to land management have been identified.	; n/a	n/a	n/a	n/a	n/a	n/a	None	None
Air and Climate	6.1 To reduce air pollutant emissions.	 Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or to sensitive habitat)? 	The option will result in small increases in air emissions associated with abstraction and treatment of water.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	 Will it reduce or minimise and greenhouse gas emissions? Will it result in an increase in greenhouse gas emissions over and above that that would be produced to supply an equivalent quantity of water in non-drought conditions? 	Short-term increases in greenhouse gas emissions will occur due to increased abstraction. However, no construction activities are required for this option, and the use of existing infrastructure and treatment facilities will minimise increases in greenhouse gas emissions.	Low (adverse)	Low	Small	Low	Short-term	Temporary	Negligible adverse	None
Air and climate	6.3 To adapt and improve resilience to the threats of climate change.	 Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)? Will it improve resilience/adaptability to likely effects of climate change, e.g. by increasing water storage capacity, or transferring water from areas with surplus? Will it create opportunities to benefit from potential effects of climate change? Will it make use of renewable energy? 	Drought permits/orders are a key component of Thames Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought.	Low (beneficial)	Medium	Small	Moderate	Long-term	Temporary	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	There are no heritage assets within the area of influence, so no impacts on the historic environment are expected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None
SEA	topics and objectives	Assessment methodology				Assessment of optic	n				
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Торіс	Objective	Indicator questions	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Magnitude of effect (low/medium/high)	Value/ sensitivity of receptor (low/medium/ high)	Scale of effect: geographica &/or population affected (small/medium/large)	Certainty of effect (low/moderate/h igh)	Short- term/medium- term/long-term	Permanence o effect (permanent/ temporary)	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.2 To protect, enhance and manage the character and appearance of historic and cultural assets and their settings including maintaining and strengthening local distinctiveness and sense of place.	 Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will it maintain and enhance the historic environment, including palaeo-environmental deposits? Will the hydrological setting of water-dependent assets be altered, such as important wetland areas with potential for paleo-environmental deposits? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region? 	No opportunities to improve access, value, understanding o enjoyment of heritage assets and culturally/historically important assets have been identified for this option.	r n/a	n/a	n/a	n/a	n/a	n/a	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	 Will it avoid adverse effects and enhance designated landscapes? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness? Will it improve access to valued areas of landscape character? 	There is no construction proposed and negligible effects on hydrology reported in the EAR. Therefore landscape would not be affected.	n/a	n/a	n/a	n/a	n/a	n/a	None	None

APPENDIX F

QUALITY ASSURANCE CHECKLIST

ODPM Guidance⁷⁶ on SEA contains a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in **Table F1**, indicating where this Environmental Report meets the requirements.

Table F1Quality Assurance Checklist

Checklist item	Comments
Objectives and context	
The plan's or programme's purpose and objectives are made clear.	The purpose of the Draft DP 2016 is set out in Section Error! Reference source not found. of this Environmental Report.
Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets.	Objectives of other relevant plans and programmes are set out in Section 2.2 and Appendix C.
SEA objectives, where used, are clearly set out and linked to indicators and targets where appropriate.	SEA objectives are set out in Section 4.2 of this Environmental Report.
Links with other related plans, programmes and policies are identified and explained.	Links are identified in Section 2 and Appendix C of this Environmental Report.
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and described	Cumulative effects such as those associated with the draft DP and other plans are addressed in section 6. Thames Water has not identified any objectives for the Drought Plan, hence there are no conflicts with the SEA objectives.
Scoping	
Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report.	The Scoping Report is a part of the consultation process required to meet the requirements of the SEA Directive and was circulated to consultees. Further consultation will be undertaken on the Environmental Report and Draft Statutory DP. The consultation process is described in Section 1.8
	The consultation process is described in Section 1.5
The assessment focuses on significant issues.	The scope of the assessment reflects the geographic extent of TWUL water resource zones, and provides a comprehensive approach to assessment (reflecting the large number of interactions dependent on the continued supply of water) which has enabled the subsequent assessment to determine which impacts are considered to be significant.
Technical, procedural and other difficulties	Difficulties and assumptions are set out in Section
uncertainties are made explicit.	4.5 of this Environmental Report.
Reasons are given for eliminating issues from further consideration.	The SEA objectives provide a comprehensive basis for assessment and at no issues were eliminated at the Scoping stage.

⁷⁶ Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.



Checklist item	Comments		
Alternatives			
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	The appraisal framework was used to assess drought options, as set out in this Environmental Report.		
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.			
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	Assessment of alternatives (the drought options) have been considered in this Environmental Report.		
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	Assessment of alternatives (the drought options) have been considered in this Environmental Report.		
Reasons are given for selection or elimination of alternatives.	Assessment of alternatives (the drought options) have been considered in this Environmental Report.		
Baseline information			
Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described.	The current state of the environment and predicted future baseline is set out in Section 3.3 and Appendix D of this Environmental Report for each SEA topic.		
Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan.	The environmental characteristics of the TWUL's water supply area, and bordering regions where appropriate, are described in Section 1.3.		
Difficulties such as deficiencies in information or methods are explained.	Difficulties and limitations are set out in Section 3.2 (and Section 4.5 for wider methodology)		
Prediction and evaluation of likely significant en	wironmental effects		
Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape), as relevant; other likely environmental effects are also covered, as appropriate.	Potential effects have been set out in the Environmental Report in Section 5, Section 6 and Appendix E.		
Both positive and negative effects are considered, and the duration of effects (short, medium or long-term) is addressed.	The nature and duration of potential effects have been set out in the Environmental Report, using an appraisal framework set out in Section 4 of this Environmental Report. Effects are assessed in Sections 5 and 6 and Appendix E of the Environmental Report.		
Likely secondary, cumulative and synergistic effects are identified where practicable.	These effects have been identified and described in Section 6 of this Environmental Report.		
Inter-relationships between effects are considered where practicable.	These effects have been considered within the assessment in Section 5 and Appendix E and also in		



Checklist item	Comments			
	Section 6 of this Environmental Report where practicable.			
The prediction and evaluation of effects makes use of relevant accepted standards, regulations, and thresholds.	Relevant standards have been used where appropriate in undertaking the assessment in the Environmental Report.			
Methods used to evaluate the effects are described.	The Environmental Report includes information on the methods used for evaluation of potential effects in Section 4.			
Mitigation measures				
Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated.	Mitigation measures for potential negative effects have been incorporated into the assessment undertaken in preparing the Environmental Report, and are described in Section 7.2.			
Issues to be taken into account in project consents are identified.	Such mitigating measures, if required, will be highlighted against the drought options. It is noted that Environmental Assessment Reports which include Environmental Management Plans have been prepared for most of the Drought Permit sites.			
The Environmental Report				
Is clear and concise in its layout and presentation.	The Environmental Report is clear and concise. See Section 1.7.			
Uses simple, clear language and avoids or explains technical terms.	The Environmental Report uses simple, clear language, and explain technical terms, as appropriate.			
Uses maps and other illustrations where appropriate.	The Environmental Report has used maps and illustrations where appropriate.			
Explains the methodology used.	The SEA methodology has been described in Section 1.6 and Section 4 of the Environmental Report.			
Explains who was consulted and what methods of consultation were used.	The consultation strategy, including organisations and dates of consultation will be included in the Environmental Report.			
Identifies sources of information, including expert judgement and matters of opinion.	Sources of information have been detailed in the Environmental Report.			
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA.	The Environmental Report includes a Non- Technical Summary.			
Consultation				
The SEA is consulted on as an integral part of the plan- making process.	This Scoping Report and Environmental Report are part of the consultation process required to meet the requirements of the SEA Directive. Both have been/will be circulated to consultees.			
	The consultation process is described in Section 1.8.			



Checklist item	Comments
Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to express their opinions on the draft plan and Environmental Report.	The Scoping Report and Environmental Report are part of the consultation process required to meet the requirements of the SEA Directive. Both have been/will be circulated to consultees. The consultation process is described in Section Error! Reference source not found. 8.
Decision-making and information on the decisio	n
The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme.	Responses from consultation on the draft Environmental Report will be incorporated in the development of the final Environmental Report. After finalisation of the DP, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the DP.
An explanation is given of how they have been taken into account.	Consultation responses, and how they have been incorporated in the final Environmental Report will be incorporated in the report (see Appendix B for how consultation comments to date have been addressed in the Environmental Report). After finalisation of the DP, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the DP.
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	This will be set out following consultation on the draft Statutory DP and Environmental Report.
Monitoring measures	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	See Section 7.3 of this Environmental Report which provides an overview of proposals for monitoring.
Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA.	Suggestions for monitoring have been made in the Environmental Report (see Section 7.3), with monitoring taking place following implementation of the DP, further to consultation with regulatory authorities including the Environment Agency, Natural England and Historic England.
Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect.)	Suggestions for monitoring have been made in the Environmental Report (see Section 7.3), with monitoring taking place following implementation of the DP, further to consultation with regulatory authorities including the Environment Agency, Natural England and Historic England.
Proposals are made for action in response to significant adverse effects.	Mitigation measures for adverse effects are suggested in the Environmental Report (see Section 7.2).