

AffinityWater

Drought Plan Strategic Environmental Assessment - Non Technical Summary



Affinity Water



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1 Non-Technical Summary

1.1 Introduction

Affinity Water are a water company situated in the South East of England, supplying parts of Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Surrey, and North West London. They also supply water to the Tendring peninsula in Essex and the Folkestone and Dover areas of Kent. Affinity Water have updated their Drought Plan 2022, covering the period 2022 – 2027, to demonstrate what actions will be taken to protect public water supplies during a drought and how they intend to minimise any resulting environmental impacts.

The Strategic Environmental Assessment (SEA) Directive and Regulations require an assessment of the effects of certain plans and programmes on the environment. Article 3 (2b) states that SEA is required for plans and programmes which are prepared for water management, set the framework for development consents, and/or are likely to have a significant environmental effect. The SEA works to inform the decision-making process through the identification and assessment of significant and cumulative effects a plan or programme may have on the environment.

The draft Affinity Water Drought Plan was published in June 2021 and was subject to public consultation where customers and stakeholders were able to provide feedback on the content and approach of the Plan. SEA and Habitats Regulations Assessment (HRA) were not undertaken as part of the initial development of the draft Drought Plan. Following consultation feedback from Natural England it was identified that these assessments were required to support the Drought Plan. SEA and HRA have therefore now been undertaken to feed into the development of the Drought Plan. The SEA Environmental Report has been prepared for the Drought Plan 2022 and documents the outcomes of the SEA process. The HRA (Ricardo, 2022) is documented in a separate report but has been used to inform the SEA.

This report is a non-technical summary of the SEA Environmental Report and presents an outline of the methodology, assessment results, mitigation and monitoring identified as part of the SEA. It also outlines the process for consultation and next steps.

1.2 Drought Plan 2022

Water companies in England and Wales are required to prepare and maintain Statutory Drought Plans under Sections 39B and 39C of the Water Industry Act 1991, as amended by the Water Act 2003, and in accordance with the Drought Plan (England) Direction 2020.

Affinity Water are currently updating their Drought Plan which was previously published in November 2019. The updated Drought Plan is due to be published in July 2022 and will describe the actions that Affinity Water will take before, during and

after a drought event and when they will be implemented. It outlines how water resources will be monitored, and how water resources will be forecasted in a developing drought. The drought actions outlined in the Drought Plan aim to safeguard supplies for customers, protect the environment and work with customers and stakeholders to understand the environmental and operational impacts of drought, as well as explaining how Affinity Water's customers can help.

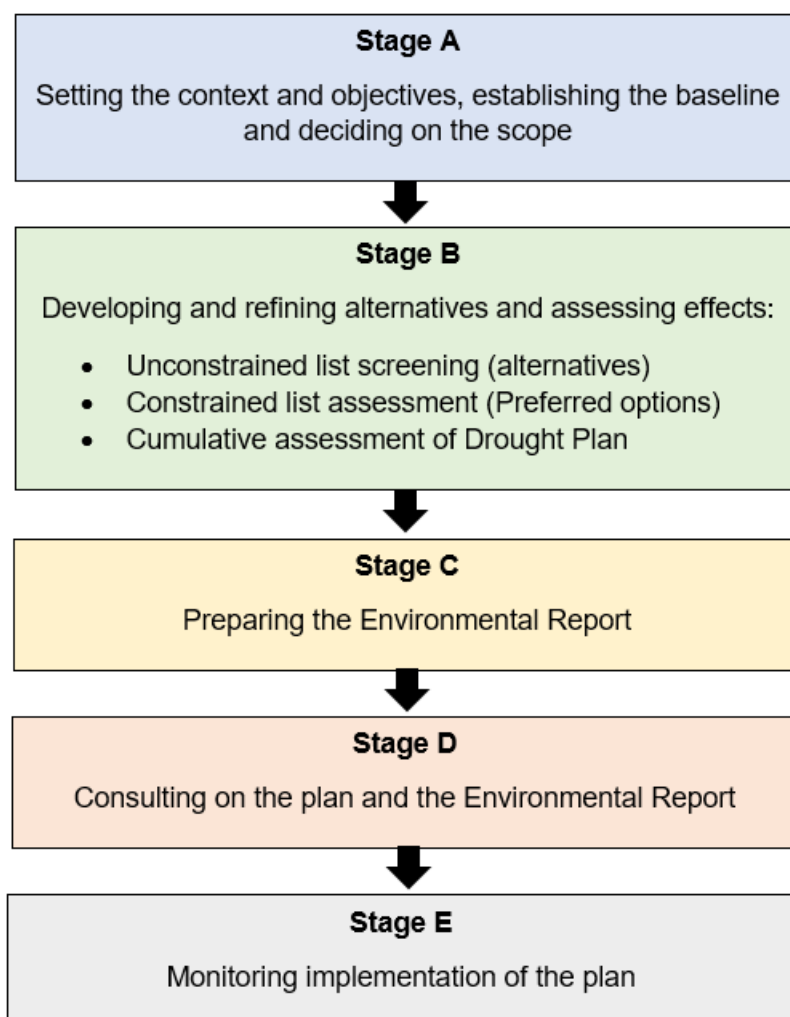
The SEA has assessed the following actions within the Drought Plan:

- Actions to reduce demand (Temporary Use Bans (TUBs) and Non-essential Use Bans (NEUBs))
- Actions to maintain supply (drought permits)

1.3 SEA Methodology

Figure 1.1 shows the different stages in the SEA process for the Drought Plan. The SEA for the Drought Plan is currently at Stage D of the SEA process.

Figure 1.1: SEA Process Stages



A two phased approach has been implemented at Stage B for the SEA of the Drought Plan as follows:

- Phase One: Preliminary assessment of the unconstrained list of options – this was a pre-cursor to the SEA full assessment and involved assessing the unconstrained list of options to identify risks and opportunities to support decision-making on the options to take forward into the constrained list. The unconstrained list includes a range of potential drought permit options that could be selected (these are the alternatives options)
- Phase Two: Full SEA assessment of the constrained list taken forward into the Drought Plan (the Preferred options) and cumulative effects assessments of the Drought Plan (if the preferred drought permit options were implemented together).

Further information on the methodology and the assessment results for both these phases are summarised in the sections below. It should be noted that the options within the Drought Plan will be implemented during a drought period and the drought will already be resulting in environmental effects. The SEA has focussed on assessing the effects of the implementation of the options within the Drought Plan rather than assessing the effects of the drought.

The study area for the SEA covered the Affinity Water region and the specific locations of the drought permit options. These options were stored on the ESRI ArcGIS tool which included buffers up to 5km to ensure all environmental receptors were considered within the assessment. The assessment also went beyond considering effects only in relation to distances and considered effect pathways, for example, a drought permit could have an effect on a designated site or other receptor downstream of the option outside the various boundaries set out in the methodology.

1.3.1 Phase One: Preliminary Assessment of Unconstrained Options

The Preliminary Assessment Summary Report in Appendix I of the Environmental Report presents the preliminary assessment methodology in full alongside the results which are also summarised in Section 1.4.1. The preliminary assessment involved the assessment of 27 unconstrained drought permit options (presented in Table 1.1) for the Drought Plan.

Table 1.1: Unconstrained list of options

Region	Source	Waterbody / catchment
Central	THUN	River Rib
	HADH - BH2	River Ash
	HUNT	River Gade
	HUGH	Hughenden Stream
	PICC	River Gade
	FRIA	River Ver
	AMER	River Misbourne
	WELL	Charlton Mill Pond River Hiz
	OFFS/OUGH	River Oughton
	UTTL	River Cam
	FULL	River Mimram
	BOWB	River Ver
	WHIH	River Beane
	BATC	River Colne
	RUNGS	Lower Greensand/Broughton Brook
	DIGS	River Mimram
	HOLY & MUDL	River Ver
	THEG	River Gade
	SLIP	River Rhee
	BROO	River Beane
ROYD	River Stort	
CHEH & CHAR	River Chess	
STAN	River Stort	
South East	SLYE	River Dour
	SDRE	Alkham Bourne/River Dour

	SBUC	River Dour
	SHOL	River Dour

The options were assessed using a Red-Amber-Green (RAG) approach to identify options with high environmental risks. A set of criteria (shown in full Appendix I of the Environmental Report) were developed based on the Water Resources South East (WRSE) regional plan and Affinity Water WRMP24 environmental assessment processes which have been fully consulted on and agreed with stakeholders and regulators. The key topics, datasets and features used within the assessment criteria are summarised in Table 1.2.

Table 1.2: Preliminary Assessment Criteria Summary

SEA Topic	Dataset	Features
Air Quality	Air quality management areas (AQMAs)	
Biodiversity, Flora and Fauna	Statutory designated sites	Special areas of conservation (SAC), Special protection area (SPA), RAMSAR
		Sites of special scientific interest (SSSI)
	Non statutory designated sites	Ancient Woodland
		National Nature Reserves
		Local Nature Reserves
Priority habitats		
Historic Environment	Statutory designated sites	Listed buildings
		Scheduled monuments
	Non statutory designated sites	Registered Parks and Gardens and Battlefields
Landscape	Statutory Designations	Areas of outstanding natural beauty (AONB)
		National Park
Geology and soils	Agriculture land classification	
	Landfill sites	
Water	Groundwater	Groundwater source protection zones
		Nitrate Vulnerable Zone

SEA Topic	Dataset	Features
	Surface water	Flood risk zones
		Water quality and flows
Operational considerations	Time and work required to commission option	

The RAG assessment considered the potential for both construction effects (if any additional infrastructure was required) and operational effects such as impacts on water quality, designated sites and wildlife. Additional environmental assessments, including the HRA and the Environmental Assessment Reports (EARs), were used to feed into biodiversity, flora and fauna, and water topics within the preliminary assessment where they were available. The results of the preliminary assessment of the unconstrained list are presented in Section 1.4.1 of this NTS and were used in decision-making to select options to take forward into the constrained list for full assessment.

1.3.2 Phase Two: SEA of Constrained Options and Cumulative Effects

The approach to the full SEA to support the Drought Plan development follows the Water Resources Planning Guidance (WRPG) and supplementary guidance¹ and the UKWIR Guidance (2021)². The approach is aligned with what is set out in the Affinity Water's Water Resource Management Plan 2024 (WRMP24) SEA Scoping Report (Mott MacDonald, 2021).

The SEA Scoping Report was prepared to satisfy the requirements of the Scoping Stage and has been consulted on and fully agreed with the Statutory Consultees (Natural England, Environment Agency and Historic England).

It was agreed with the Statutory Consultees that the WRMP24 Scoping Report could be used to inform the SEA for the Drought Plan. As such, a separate SEA Scoping Report was not required for the Drought Plan SEA. The SEA assessment has been undertaken in line with the SEA Framework and methodology set out in the Affinity Water WRMP24 Scoping Report as agreed with the Statutory Consultees.

Affinity Water sits within both Water Resources South East (WRSE) and Water Resources East (WRE). The proposed approach to the SEA aligns with the regional methodologies and provides efficiencies through use of regional environmental assessments as a basis for further assessment work. The options included within the Drought Plan were assessed as part of the WRSE regional plan process. The

¹ EA, NRW, Defra and Ofwat, 2021, Water resources planning guideline, section 1.1.1

² UKWIR, 2021, Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans

assessments undertaken as part of WRSE have been updated to include additional information, such as information obtained from the EARs.

To determine the environmental effects of the preferred options within the Drought Plan, the following tasks were undertaken:

- Options level environmental assessments of the constrained list of options
 - Assessments undertaken as part of WRSE were reviewed and updated with additional information, including information presented within the EARs
- Cumulative effects assessment of the Drought Plan
 - The cumulative effects of the options within the Drought Plan were assessed
 - The cumulative effects of the Drought Plan with other plans were assessed

The SEA objectives used to assess the Drought Plan are presented in Table 1.3. Each SEA objective has a set of defined datasets and a defined scoring system using a qualitative scale of minor, moderate, major positive and minor, moderate, major negative, and neutral as summarised in Table 1.4. The effects of each option were assessed using this scale and a narrative justification provided. The datasets and scoring definitions are presented in full in Appendix E of the Environmental Report and are also summarised in Table 1.4.

Table 1.3: SEA Framework

SEA Topic	Drought Plan (and Affinity WRMP24) SEA Objectives
Biodiversity, Flora and Fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)
Soil	Protect and enhance the functionality, quantity and quality of soils
Water	Increase resilience and reduce flood risk
	Protect and enhance the quality of the water environment and water resources
	Deliver reliable and resilient water supplies
Air	Reduce and minimise air emissions
Climatic Factors	Reduce embodied and operational carbon emissions
	Reduce vulnerability to climate change risks and hazards
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity

SEA Topic	Drought Plan (and Affinity WRMP24) SEA Objectives
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology
Population and Human Health	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing
	Maintain and enhance tourism and recreation
Material Assets	Minimise resource use and waste production
	Avoid negative effects on built assets and infrastructure

Table 1.4: Scoring key and key considerations

Effect	Description	Description of key considerations
+++	Major Positive	Large-scale improvement, enhancement or restoration of a receptor, large scale improvements to integrity/quality, or creation of a new internationally/nationally important resource. This usually applies internationally important environment and social receptors.
++	Moderate Positive	Some improvement, enhancement or restoration of a receptor, improvements to integrity/quality, or creation of a new regionally important resource. This usually applies to nationally or regionally important environment and social receptors.
+	Minor Positive	Small improvement to or addition of one or more key characteristics/ features/elements. Creation of a new locally important receptor/resource. This usually applies to locally important environment and social receptors.
0	Neutral	There is anticipated to be neutral of no effects.
-	Minor Negative	Small measurable change to the receptor and/or change in quality or alteration of one or more key characteristics/ features/elements. This usually applies to locally important environment and social receptors.

Effect	Description	Description of key considerations
--	Moderate Negative	Some loss of or damage to the receptor, but not sufficient to adversely affect its overall integrity. Partial loss of or damage to quality/key characteristics/ features/elements. This usually applies nationally or regionally important environment and social receptors.
---	Major Negative	Complete loss of the receptor and/or severe damage to its integrity/quality/key characteristics/features/elements. This usually applies to internationally important environment and social receptors.
?	Uncertain	Further clarification and classification is required.

1.4 Assessment Results and Conclusions

1.4.1 Phase One: Preliminary Assessment of Unconstrained Options

The results of the preliminary assessment are presented in full in the Preliminary Assessment Summary Report (Mott MacDonald, 2022) in Appendix I of the Environmental Report. As part of the preliminary assessment, overall RAG ratings were provided, discussed and agreed for each drought permit option as part of a workshop between Affinity Water and Mott MacDonald. There were 13 options which were given an overall red rating as potential effects were identified for Natura 2000 sites or they were identified to have an operational lead time of over nine months, making them currently unsuitable as a drought permit option.

The remaining options identified as having an overall green or amber rating were discussed further and it was then agreed whether they would be taken through into the constrained list. The outcomes of this discussion are summarised in Table 1.5. It was identified that the nine drought permit options which were initially included within the Drought Plan were appropriate to be taken forward into the constrained list and have therefore been subject to the full SEA assessment.

Table 1.5: Constrained List Selection Register

Option	Commentary
THUN	Included The option was taken forward into the constrained list. An overall green rating was identified for this option.

Option	Commentary	
PICC	Included	The option was taken forward into the constrained list. An overall amber rating as EAR identified potential minor effects on Croxley Common Moor SSSI and GWDTE.
FRIA	Excluded	The option was not taken forward into the constrained list as per Environment Agency guidance and updated Section 20 agreement governing the emergency operation of the source.
AMER	Included	The option was not taken forward into the constrained list. An overall amber rating as EAR identified potential minor effects Sarratt Bottom SSSI and Frogmore Meadows SSSI (both GWDTE).
WELL	Excluded	The option was not taken forward into constrained list. The source is located in the headwaters of the Upper Hiz and there will be direct impacts as a result of cessation of augmentation in the Charlton Mill Pond and the river downstream of it.
OFFS/OUG H	Excluded	The option was not taken forward into constrained list. The sources are located near the headwaters of the River Oughton and there will be direct impacts on the Oughton Springs and the river itself, as a result of cessation of augmentation.
UTTL	Excluded	The option was not taken forward into constrained list. This was agreed with the Environment Agency following discussions about requirements for compliance with the licence during drought conditions.
FULL	Included	The option was taken forward into the constrained list. An overall amber rating was identified for this option as the EAR identified potential moderate effects on the Tewinbury SSSI.
WHIH	Included	The option was taken forward into the constrained list. An overall green rating was identified for this option.
RUNGS	Included	The option was taken forward into the constrained list. An overall green rating was identified for this option.
SLIP	Excluded	The option was not taken forward into constrained list. The source is located near the headwaters of the Rhee and there will be direct impacts in the Ashwell Springs as a result of cessation of augmentation.

Option	Commentary	
SLYE	Included	The option was taken forward into the constrained list. An overall green rating was identified for this option.
SDRE	Included	The option was taken forward into the constrained list. An overall green rating was identified for this option.
SBUC	Included	The option was taken forward into the constrained list. An overall green rating was identified for this option.

1.4.2 Phase Two: SEA of Constrained Options

1.4.2.1 Introduction

As outlined in Section 1.4.1, the preliminary assessment identified that the nine drought permit options which were initially included in the Drought Plan were appropriate to take through into the constrained list. The nine drought permit options have therefore been subject to the full SEA assessment as part of Phase Two of the project. Phase Two has also involved the assessment of the TUBS and NEUBS options which are identified for each of the nine WRZs. A summary of the options included within the full SEA assessment is presented in Table 1.6. The location of the drought permits in the Central and Southeast regions are presented in Figure 1.2 and Figure 1.3 respectively.

Table 1.6: Summary of the constrained list of options subject to full SEA

Option Type	Region	Code	Waterbody/ catchment	Volume	Description
Drought permit	Central	THUN	River Rib	4.91	Abstraction increase, including relaxing licence flow constraint
Drought permit	Central	WHIH	River Beane	14.82	Sustainability reduction site.
Drought permit	Central	RUNGS	River Lea ³	5.3	New drought permit site not included in DMP19
Drought permit	Central	PICC	River Gade	6.4	Sustainability reduction site
Drought permit	Central	AMER	River Misbourne	8	Sustainability reduction site

³ Although RUNGS is situated within the Lea topographic catchment, this source is in the greensand aquifer and therefore would not significantly impact flows in the Lea

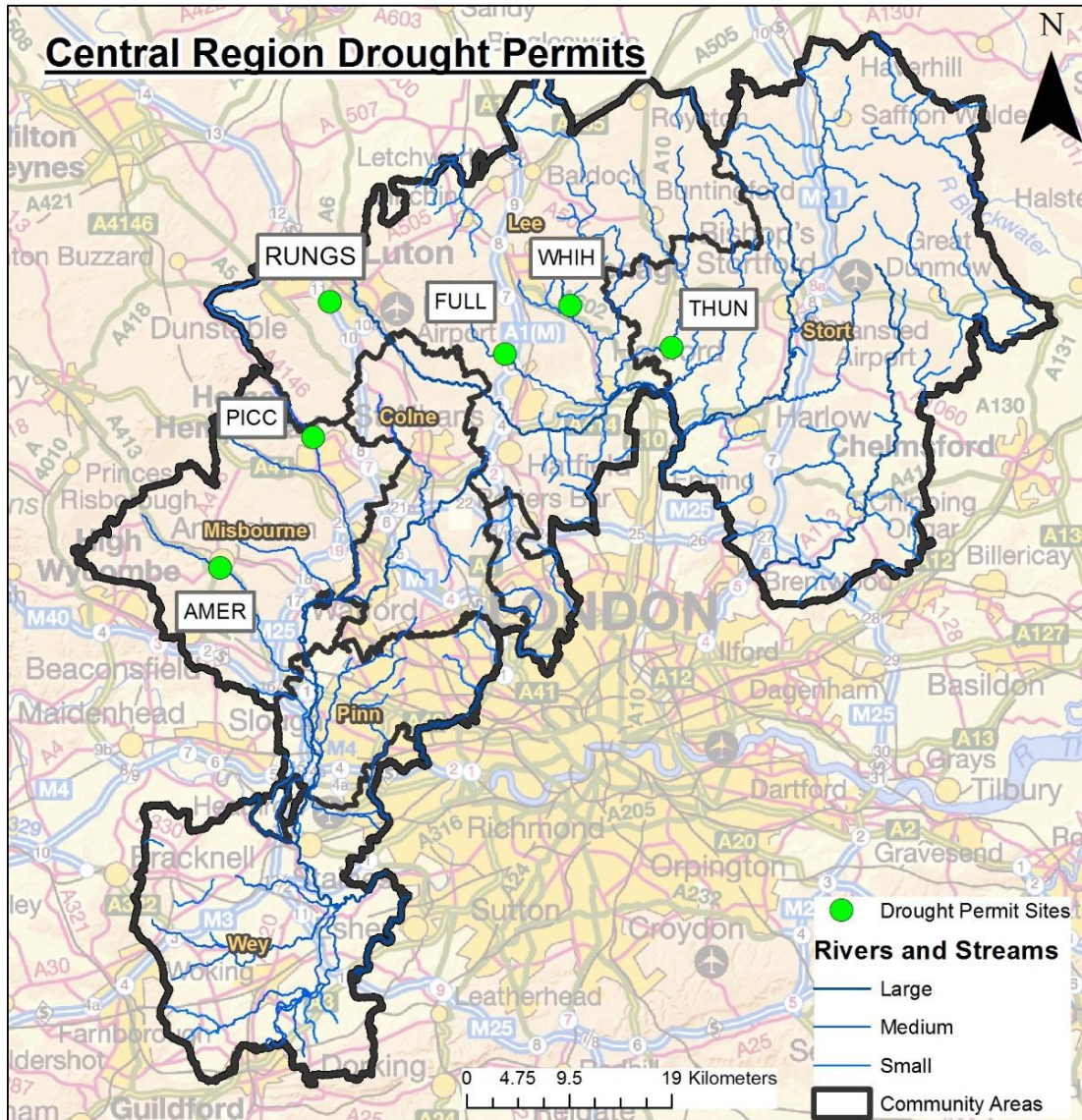
Option Type	Region	Code	Waterbody/ catchment	Volume	Description
Drought permit	Central	FULL	River Mimram	9.09	Sustainability reduction site
Drought permit	Southeast	SLYE	River Dour	3.5	Removal of hands off level constraint
Drought permit	Southeast	SDRE	River Dour	2	Removal of hands off level constraint
Drought permit	Southeast	SBUC	River Dour	2	Removal of low flow constraint and cessation of augmentation
TUBs	WRZ 1 – 9	N/A	N/A	N/A	Restrictions on domestic customers
NEUBs	WRZ 1 – 9	N/A	N/A	N/A	Restrictions on commercial customers

TUBs and NEUBs are measures implemented during a drought to reduce demand. By implementing these measures earlier in a drought period, they help to conserve water resources for later in a drought and reduce the environmental impacts of abstraction during this critical period. The effects of TUBs and NEUBs will therefore occur ahead of any impacts associated with drought permits. The effects associated with TUBs and NEUBs may also occur across the whole of the Affinity Water region as they will be implemented in WRZ 1 – 9 rather than just in a particular physical location like the drought permits.

The drought permit options are one of the last remaining options set out in the Drought Plan and would be used once all other non-emergency options have already been implemented. Affinity Water has never had to implement a drought permit previously as there has never been a drought serious enough for them to be required.

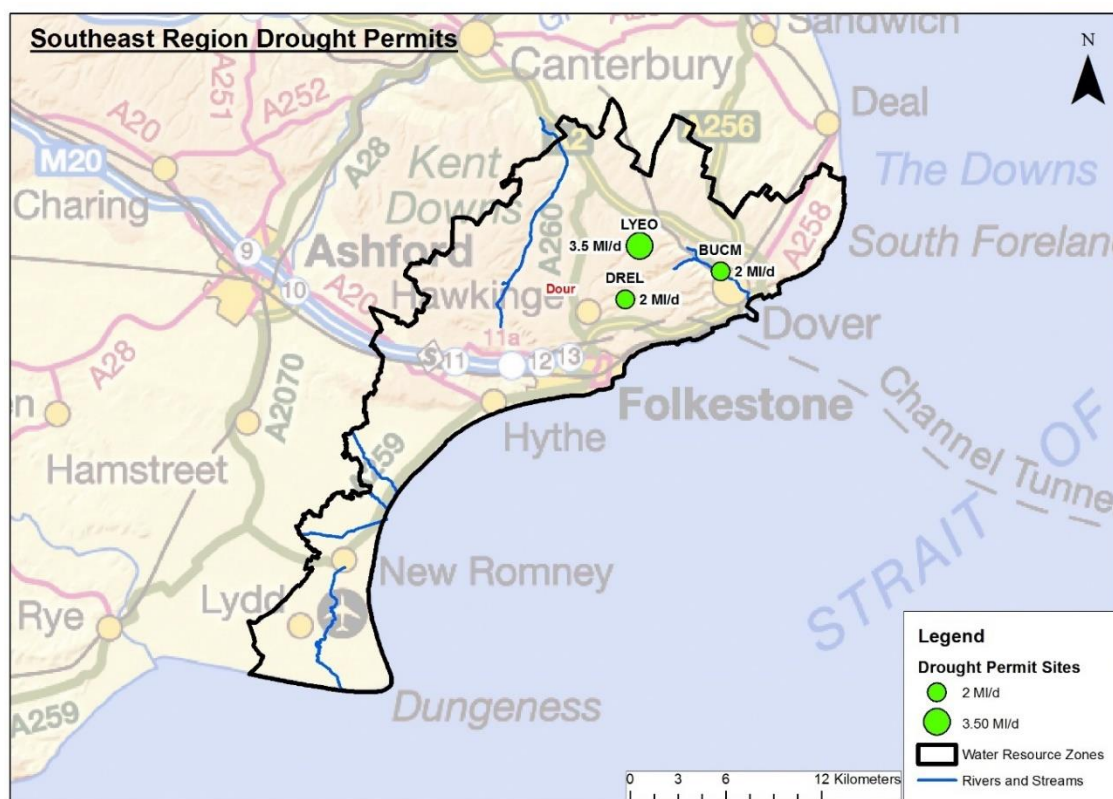
The model outputs which were used to inform the EARs for the drought permits in the Central region and in turn used to inform the SEA use the Hertfordshire Chalk model which represents the Chalk aquifer as two layers. Although this model has a more complex representation of the Chalk than previous models (which represented a single Chalk unit), there are problems with the calibration of flows, in particular low flows, which are generally underestimated by the model. For this reason, the results presented in the EARs and the SEA are generally highly conservative and/or uncertain and would represent the worst-case scenario rather than the expected outcome.

Figure 1.2: Location of drought permits in the Central region



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Figure 1.3: Location of drought permits in the Southeast region



Source: Affinity Water Drought Plan

1.4.2.2 Summary of results

Actions to reduce demand – TUBs and NEUBs

There is no construction related works associated with TUBs and NEUBs options therefore all the effects identified are related to the operational phase. Overall, the TUBs and NEUBs options have the potential to result in positive effects for biodiversity by conserving water in the natural environment, however there may be some localised habitats which are negatively affected by a temporary loss of watering. There is also likely to be positive effects in delivering reliable water supplies to customers given the options aim to conserve water for essential use during periods of drought. The implementation of these options may result in negative effects for the visual amenity of the townscape and landscape given water will be restricted for garden watering, decorative fountains, and the cleaning of buildings. Considering these effects on townscape assets, and on certain domestic and commercial activities, implementation of TUBs and NEUBs may have minor negative effects on the health and wellbeing of the local community and the maintenance and enhancement of local tourism. High levels of communication before, during, and following the implementation of these measures is key to mitigating negative effects.

Actions to maintain supply – Drought Permits

The nine drought permit options identified as part of the Preliminary Assessment were taken forward into the Drought Plan and assessed as part of the SEA process. A summary of these scoring provided for each of the drought permits against the SEA objectives is presented in Table 1.7 with commentary presented below.

Table 1.7: Summary of assessment results of the drought permit options³

SEA Topic	SEA Objective	THUN				WHH				RUNGS				PICC				AMER				FULL				SLYE				SDRE				SBUC			
		Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational	Construction Effects	Operational Effects	Residual Construction	Residual Operational				
Biodiversity, flora and fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (to loss and improve connectivity where possible)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Soil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water	Increase resilience and reduce flood risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Protect and enhance the quality of the water environment and water resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Deliver reliable and resilient water supplies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air	Reduce and minimise air emissions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Climatic Factors	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Landscape	Reduce embodied and operational carbon emissions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Reduce vulnerability to climate change risks and hazards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Population and Human Health	Maintain and enhance the health and wellbeing of the local community including economic and social wellbeing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maintain and enhance tourism and recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material Assets	Maintain resource use and waste production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Avoid negative effects on built assets and infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

³ It should be noted that the Hertfordshire Chalk model outputs were used to inform the EARs for the drought permits in the Central region which in turn have been used to inform the SEAs uses. Although this model has a more complex representation of the Chalk than previous models (which represented a single Chalk unit), there are problems with the calibration of flows, in particular low flows, which are generally underestimated by the model. For this reason, the results presented in the EARs and the SEA are generally highly conservative and/or uncertain and would represent the worst-case scenario rather than the expected outcome.

Out of the nine drought permit options, only one option (RUNGS) has minor construction works associated with it. The potential for minor negative construction related effects were identified for the SEA objectives on biodiversity, water environment, air quality, carbon, population and health, and material assets due to potential generation of dust, visual intrusion, construction traffic, and disturbance to people and wildlife.

The remainder of the effects identified for the drought permits are associated with their implementation within the operational phase. The assessment identified no potential effects for the SEA objectives on soil or landscape across all the drought permits. Neutral effects were also identified for the historic environment as there were not identified to be any sensitive above ground assets in proximity to the drought permit sites. However, there are potential for effects where preserved organic and palaeoenvironmental remains, or known or unrecorded and deeply buried archaeology, are present. It should also be noted that drought permits will be implemented in severe drought conditions and the additional impact of the drought permits on these assets above the drought itself is not likely to be significant. Further baseline collection and assessment may be required at a more detailed stage to explore the hydrological influence around the drought permits in relation to these types of assets.

Overall, all nine of the drought permits have the potential to result in negative effects on aquatic ecology, chalk rivers and Natural Environment Research Council (NERC) species. There are three options (PICC, AMER and FULL) which are identified to have potential effects on nationally and locally designated sites (including Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs)). The effects identified for these sites in relation to drought permit implement include the potential for a reduction in the quality or extent of the habitat as a result of drawdown and the potential for the influx of opportunistic terrestrial species as the site may undergo succession should recharge rates not be not sufficient. However, it should be noted that these effects have been identified on a precautionary basis. The HRA Stage 1 Screening (Ricardo, 2022) identified no likely significant effects for all options on Natura 2000 sites, excluding THUN where the Stage 2 Appropriate Assessment (AA) went on to identify no significant impacts on the integrity of the Lee Valley Special Protection Area (SPA) and Ramsar. The implementation five of the drought permit options (THUN, AMER, FULL, PICC and WHIH) have the potential to result in the spread of INNS.

There is potential for all of the options, excluding RUNGS, to have negative effects on the water environment given impacts on flows and water quality. All the drought permit options are anticipated to increase the resilience of water supplies during a drought period therefore positive effects are identified for maintaining supply to customers. There is potential for minor negative effects on climatic factors given the options are likely to generate operational carbon and by abstracting water during a drought period, they have the potential to reduce the resilience of the natural

environment to climate change. Minor negative effects on recreation were also identified for three (THUN, FULL and WHIH) of the nine drought permit options.

1.5 Cumulative Assessment

An assessment of the potential cumulative effects of the Drought Plan has also been undertaken. This has included an assessment of the options within the Drought Plan alongside an assessment of the effects of the Drought Plan with other plans and programmes. For the TUBs and NEUBs options, positive cumulative effects on biodiversity were identified given they may conserve water across the water resource zones (WRZs), however there is also potential for negative effects from a loss of watering. There may be minor negative cumulative effects on soil quality across the WRZs from TUBs and NEUBs implementation. Positive cumulative effects may occur for the water environment and the resilience of supplies given they will contribute to a reduction in the amount of water required for supply and they allow for the continued delivery of water during drought periods. There may be some negative cumulative effects on landscape and townscape given water will be restricted for watering public and private gardens, use of ornamental fountains, cleaning of building exteriors and windows. There may also be negative cumulative effects as a result of the NEUBs options being implemented across WRZs as they could affect the setting of historic gardens or landscape attached to heritage assets. The implementation of the TUBs and NEUBs options across the WRZs at the same time have the potential to result in negative cumulative effects on the local community as a wider population will be affected. There is also potential for negative cumulative effects on recreation and tourism as a result of the implementation of the TUBs and NEUBs options across the WRZs.

For the drought permit options, the assessment identified that the simultaneous implementation of the FULL, WHIH and THUN have the potential to have cumulative effects on biodiversity and the water environment as a result of potential impacts on the River Lea. There is also potential for cumulative effects on biodiversity and the water environment from the simultaneous implementation of SLYE, SBUC and SDRE, however it should be noted that the requirement for these drought permits is unlikely and therefore it is unlikely that they will be implemented at the same time. The potential for negative cumulative effects were identified for climatic factors as a result of the operational carbon and that the options have the potential to reduce the resilience of the local environment to climate change. There is also potential for cumulative effects on recreation. Potential positive cumulative effects were identified for securing water supplies, allowing for continued and resilient delivery during drought periods. No cumulative effects associated with drought permit options were identified for the SEA objectives on soil, flood risk, air, landscape, historic environment, or material assets.

The cumulative assessment of the Drought Plan with other plans identified that there is not likely to be cumulative effects with other company Drought Plans. However, there is potential for Thames Water abstraction at Lee Navigation at New Gauge to have cumulative effects with the Affinity Water permits affecting the River Lea, however given the Affinity Water abstraction is groundwater, effects are likely to be indirect. An assessment of the cumulative effects of the Drought Plan and the Affinity Water WRMP24 could not be undertaken given it is still being developed. Similarly, the WRSE regional plan and other water companies' WRMP24 are also currently being developed. Local Authorities' Local Development Plans set the context for development and there is potential that the planned growth could increase demand for abstraction during periods of drought.

1.6 Influence of the SEA on the Drought Plan

The preliminary assessment informed decision-making on the options taken forward from the unconstrained list to the constrained list for inclusion within the Drought Plan. It was identified that the nine drought permit options which were initially included within the Drought Plan were appropriate to be taken forward into the constrained list and have therefore been subject to the full SEA assessment.

As part of the full SEA, the individual drought permit assessments and the cumulative effects assessment have been used to prioritise the implementation of the drought permit options. As discussed previously the implementation of drought permit options will only be taken forward once other demand and supply side measures have been implemented. It should also be noted that the conclusions of the EARs and SEAs in the Central region are based on the model outputs of the Hertfordshire Chalk model which has some limitations and as a result, the conclusions are generally highly conservative and/or uncertain, representing the worst-case scenario rather than the expected outcome.

The drought permit options are split across the Central region and the Southeast Region. In the central region, the drought permits are split into a further two categories based on the priority of use. The SEA recommends that the Category 1 drought permits are implemented in the following order: THUN, WHIH and RUNGS. The Category 2 permits are then recommended to be implemented as follows: PICC, AMER and FULL.

For the Southeast region, the modelling carried out for WRMP19 did not indicate a deficit which would require the use of drought permits in this region. The decision was made to not remove them from the Drought Plan completely, but to retain three as a contingency volume. It is highly unlikely that these drought permits will be required. However, the SEA recommended that SBUC and SDRE are implemented first followed by SLYE.

1.7 Mitigation and Monitoring

Mitigation measures have been identified through the SEA process, the HRA process and the Environmental Assessment Reports (EARs). Each drought permit option has specific mitigation and monitoring proposals set out in an Environmental Monitoring Plan (EMP) contained within the EARs.

Provision for monitoring of the effects of the Drought Plan is set out in the Drought Permit EMPs (included within the EARs). The recommendations focus on those environmental features that are assessed as most at risk of adverse effects from the proposed drought permits based on the outcome of the environmental assessment. The EMP monitoring proposals are focused on water and biodiversity which corresponds to the main effects identified in the SEA. Full details on monitoring can be found in the EARs.

The EARs are not published on Affinity Water's website due to national security restrictions, however summaries are provided in the Drought Plan and appendices, and the information in them has been used to inform the SEA work as stated above. Should you wish to view the EARs, they are available at the Affinity Water head office; Affinity Water, Tamblin Way, Hatfield, AL10 9EZ. You can arrange an appointment to view these documents by contacting dmconsultation@affinitywater.co.uk.

1.8 Consultation

The SEA Environmental Report was shared for consultation with the Statutory Consultees (Natural England, the Environment Agency and Historic Environment) between April – May 2022. This allowed the Statutory Consultees to review and comment on the contents of the Environmental Report. A consultation log of responses (Appendix H) has been produced to record the comments received from the Statutory Consultees and the action taken to address them. The Environmental Report has been updated to reflect consultation comments and any changes between the draft and final Drought Plan.

The SEA Environmental Report was published for an eight-week public consultation between June and August 2022. This provided an opportunity for the public to review and comment on the contents of the Environmental Report. No comments were received during the public consultation therefore no further action was required for the SEA Environmental Report or the Drought Plan.