MOTT MACDONALD

Anglian to Affinity Transfer Strategic Resource Option - A2AT Strategic Environmental Assessment

RAPID Gate 1 submission - Annex 2D

June 2021

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Executive summary

This Strategic Environmental Assessment (SEA) supports the *Environmental Assessment Report* that accompanies the Gate 1 submission report to the Regulators' Alliance for Progressing Infrastructure Development (RAPID) for the Anglian to Affinity Transfer (A2AT) scheme. This assessment presents the findings of the SEA applied to the options for the four A2AT options. The options are:

- The Fens Reservoir option
- The SLR (South Lincolnshire Reservoir) to Preston option
- The SLR to WRZ5 Hub option
- The River Trent option.

Three of the options have a 50Ml/d or 100Ml/d capacity alternatives, while the Fens Reservoir option has 50Ml/d and 70Ml/d alternatives.

The four A2AT options have undergone a Stage 1 SEA, adopting the established methodology described in the *WRSE Regional Plan Environmental Assessment Methodology Guidance*, July 2020.

Based on the Stage 1 SEA outputs for residual effects (post mitigation), the options rated the same across the SEA objectives, with the following exceptions:

- Biodiversity: The construction of the Fens Reservoir and SLR to Preston options would result in moderate negative residual effects while the construction of the SLR to WRZ5 Hub and River Trent options would result in major negative residual effects on biodiversity. Operation of the SLR to Preston, SLR to WRZ5 Hub and River Trent options would result in moderate negative residual effects while operation of the Fens Reservoir option would not impact on biodiversity.
- Water: While all options would result in minor negative residual effects on resilience and flood risk during construction, only the Fens Reservoir option would result in minor negative residual effects during operation. Regarding the impact of the options on water quality and water resources, the River Trent option is the only option which would be likely to result in negative residual effects (moderate negative effects during construction and neutral effects during operation); none of the other options would have an adverse effect on water resources.
- Climatic factors: While the construction of all options would result in minor negative residual effects on carbon emissions, operation of the Fens Reservoir, SLR to Preston and SLR to WRZ5 Hub options would result in moderate negative residual effects on carbon emissions while operation of the River Trent option would result in major negative residual effects. Regarding the vulnerability to climate change risks, there are no residual effects expected from any of the options during construction. However operation of the SLR to WRZ5 Hub and River Trent options would result in minor negative residual effects, while the Fens Reservoir and SLR to Preston options would not impact on the vulnerability to climate change.
- Landscape: The construction of all options would result in minor negative residual effects on the landscape and visual amenity. Operation of the SLR to Preston, SLR to WRZ5 Hub and

River Trent options would result in minor negative residual effects while operation of the Fens Reservoir option would not impact on landscape and visual amenity.

Additional assessment considering local level data has been undertaken in line with the methodology in the All Companies Working Group (ACWG) *Water Resource Management Plan (WRMP) environmental assessment guidance and applicability with Strategic Resource Options*, October 2020.

The local level data findings show that all options intersect or lie within 200m of a number of locally important wildlife sites (including Local Wildlife Sites (LWS), Sites of Importance for Nature Conservation (SINCs), Sites of Nature Conservation Importance (SNCIs) and County Wildlife Sites (CWS)) and Tree Preservation Orders (TPO). Three of the four options are within 200m of Conservation Areas. Mitigation can be put in place to reduce the potential effects on these areas.

The Stage 1 findings and additional assessment show potential residual impact for all options, with the Fens Reservoir option performing slightly better and the River Trent option performing worse.

1 Introduction

1.1 Overview

This assessment supports the *Environmental Assessment Report* that accompanies the Gate 1 submission report to the Regulators' Alliance for Progressing Infrastructure Development (RAPID) for the A2AT Strategic Resource Option (SRO). The assessment presents the findings of the Strategic Environmental Assessment (SEA) applied to the four A2AT options

1.2 A2AT

The outputs of the initial SRO screening process identified four distinct options for transferring water from the Anglian Water region to the Affinity Water region. These options are shown in Table 1.1. Further details on the options are set out in Section 2.2.

Table 1.1: A2AT options

Option name	Description overview
Fens Reservoir	Abstraction of raw water from the proposed Fens Reservoir, and treatment at a new WTW. The treated water would then be pumped, via a break tank and intermediate pumping station, to a conditioning plant in WRZ5 – Stort (henceforth called WRZ5 Hub). The treated water would feed a new SR servicing supply zone WRZ5, Stort, in the Affinity Water network.
SLR to Preston	Abstraction of raw water from the proposed South Lincolnshire Reservoir where it would be treated at a new WTW and transferred to a break tank and pumping station near Etton Service Reservoir. The potable water would then be pumped, via an intermediate break tank and pumping station, to Sundon WTW for conditioning. From Sundon, the water would be transferred to Preston SR in WRZ3 for further distribution into the Affinity network.
SLR to WRZ5 Hub	Abstraction of raw water from the proposed South Lincolnshire Reservoir, and conveyance to a new SLR WTW. The treated water would then be pumped, via a break tank and intermediate pumping station, to a conditioning plant in WRZ5 – Stort (henceforth called WRZ5 Hub). The treated water would feed a new SR servicing supply zone WRZ5, Stort, in the Affinity Water network.
River Trent	Abstraction of raw water from the River Trent in the vicinity of East Bridgford, where it would be partially treated to prevent Invasive Non-Native Species (INNS) transfer. The partially treated water would then be transferred via a pipeline to Rutland Water. A new draw-off arrangement and WTW at Rutland Water would abstract, treat, and pump water from Rutland Water to Sundon WTW for conditioning, via an intermediate break tank and pumping station near Grafham. From Sundon, the water would be transferred to Preston SR for further distribution into the Affinity network.

1.3 Methodology

1.3.1 Overview of assessment methodology

The group of water companies involved in developing SROs have been working together to increase consistency in approaches to SRO development across the country. To confirm the list of SEA criteria to be used in the SEA assessment for the SROs, a review of the SEA objectives of the water companies was undertaken to determine if a core set of scheme objectives could be developed. The draft WRMP 2019 guidance [1]and its application to the SRO schemes was also considered. The recommended objectives were then reviewed against the Water Resources Planning Guidelines: Working Version for WRMP 2024. Further information on the

[1] ESSEX AND SUFFOLK WATER (2018), DRAFT WATER RESOURCES MANAGEMENT PLAN 2019, 61 pages. Available online at: https://www.nwg.co.uk/globalassets/customer-pdfs/esw_draft_wrmp_consultation_statement_of_response.pdf

process undertaken to develop the SEA objectives is available in the *Strategic Environmental Assessment: Core Objective Identification document*[2].

An option-level assessment has been undertaken to assess concept design options against the SEA objectives. The SEA assessment was undertaken on 14 SEA objectives based on nine topics (biodiversity, flora and fauna; soil; water; air; climatic factors; landscape; historic environment; population and human health; material assets). For each option, an assessment of the potential impact of construction and operation on each SEA criteria was undertaken. The SEA assessment also considered the assessment of residual effects from construction and operation following the identification of potential mitigation.

While A2AT is a Water Resources East (WRE) scheme, the initial assessments to support the Gate 1 submission were undertaken using the method developed for use on the Water Resources South East (WRSE) regional programme. The WRE environmental assessment approach is currently being finalised following completion of the Integrated Environmental Assessment scoping consultation exercise. It is expected that the WRE methodology will be used to support the work for Gate 2 submission. As the WRSE and WRE methodologies are very similar, this will not invalidate the Gate 1 assessments undertaken for the A2AT SRO.

1.3.2 Structure of the assessment

This document presents the SEA of the A2AT options. There are two parts to the SEA:

The Stage 1 SEA Findings

The Stage 1 SEA has been undertaken in line with the methodology found in the *WRSE Regional Plan Environmental Assessment Methodology Guidance*, July 2020. The outputs of this assessment are described in Section 3 and output tables are contained in Appendix A.

Additional assessment

The additional assessment has been undertaken in-line with the methodology found in the ACWG WRMP environmental assessment guidance and applicability with SROs, October 2020. The outputs of this assessment are described in Section 4. Conservation Areas, locally important wildlife sites (including Local Wildlife Sites (LWS), Sites of Importance for Nature Conservation (SINCs), Sites of Nature Conservation Importance (SNCIs) and County Wildlife Sites (CWS)) and Tree Preservation Orders (TPO) identified within 200m of the options is presented in Appendix B and source of data reviewed is in Appendix C.

In all cases, the findings presented in this document follow the methodologies above and the principles of SEA. The core SEA objectives identified with the ACWG company representatives were reviewed against current and upcoming relevant legislation, policies and other environmental assessments required for WRMPs that were not considered within WRMP19. Further information on the SEA methodology developed is available in the *Strategic Environmental Assessment: Core Objective Identification*[3] document.

This SEA does not include an in-combination assessment with other SROs, water company capital investments or third-party development plans or projects. The SEA will be reviewed at Gate 2 stage to include potential in-combination effects.

[2] All Companies Working Group: Core Objective Identification. Revision 01C. October 2020.

[3] Mott MacDonald (2020). All Companies Working Group. Strategic Environmental Assessment: Core Objective Identification. 29 pages.

2 Scheme Description

2.1 Overview

The aim of the A2AT scheme is to address long term water deficits in Affinity Water's Central region, with the objective of abstracting available raw water from the Anglian Water region, treating it to potable water standards and delivering to Affinity Water customers in WRZ3 and WRZ5 (Lee and Stort communities, respectively). Potential sources of raw water are the River Trent, proposed South Lincolnshire Reservoir, and proposed Fens Reservoir. Treated water would be delivered to one of two existing distribution points: Preston Service Reservoir in WRZ3 or a new hub in WRZ5.

A full scheme description can be found in the A2AT *Concept Design Report*, however a summary of the main aspects of the options is included below.

2.2 Option descriptions

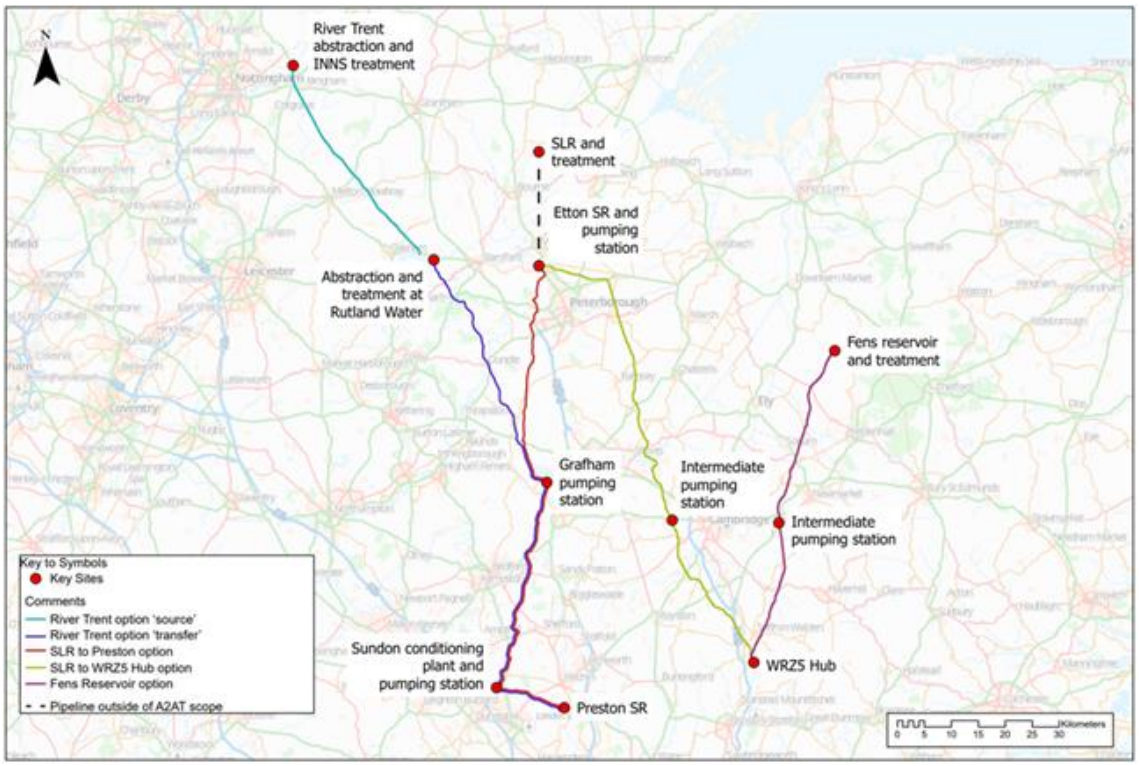
For Gate 1, there are four options for A2AT as described in Table 2.1. A map of the options is shown in Figure 2.1.

Table 2.1: A2AT Gate 1 options

Option name	Option description
Fens Reservoir	Abstraction of raw water from the proposed Fens Reservoir, and treatment at a new Fens Reservoir WTW. The potable water will then be conveyed to a conditioning plant and SR in WRZ5 Hub via an intermediate break tank and pumping station. 50Ml/d and 70Ml/d alternatives. Interdependencies of the option: Fens Reservoir and network enhancement in WRZ5. Indicative intake location: Fens Reservoir Abstraction infrastructure: - See Fens Reservoir scheme
SLR to Preston	Abstraction of raw water from the proposed South Lincolnshire Reservoir, and conveyance to new SLR WTW. The potable water will then be conveyed to Sundon WTW for conditioning, via Etton Service Reservoir and routing past and intermediate break tank and pumping station near Grafham. The treated water will be transferred to Preston SR. 50Ml/d and 100Ml/d alternatives. Interdependencies of the option: SLR SRO and network enhancement downstream of Preston Indicative intake location: South Lincolnshire Reservoir Abstraction infrastructure: See SLR SRO
SLR to WRZ5 Hub	Abstraction of raw water from the proposed South Lincolnshire Reservoir, and conveyance to new SLR WTW. The potable water will then be conveyed to a conditioning plant and SR in WRZ 5 Hub, routing past Etton SR and an intermediate break tank and pumping station. 50Ml/d and 100Ml/d alternatives. Interdependencies of the option: SLR SRO and network enhancement in WRZ5 Indicative intake location: South Lincolnshire Reservoir Abstraction infrastructure: See SLR SRO

Option name	Option description
River Trent	Abstraction of raw water from the River Trent at East Bridgford, and treatment to prevent Invasive Non-Native Species (INNS) transfer. The partially treated raw water will be conveyed to Rutland Water, where a new draw-off arrangement and Rutland Water WTW will abstract, treat, and convey water to Sundon WTW for conditioning, routing via an intermediate break tank and pumping station near Grafham. The treated water will be transferred to Preston SR. 50Ml/d and 100Ml/d alternatives. Interdependencies of the option: Network enhancement downstream of Preston Indicative intake location: River Trent at East Bridgford and Rutland Water Abstraction infrastructure: Inlet bar and fine screens (River Trent), and draw-off arrangement (Rutland Water).

Figure 2.1: Map of the A2AT Options



Source: Mott MacDonald

3 Stage 1 Strategic Environmental Assessment Findings

3.1 Overview

The Stage 1 SEA outputs for each pipeline option are summarised in Table 3.1 and Table 3.2 and discussed in the following sections. The full Stage 1 SEA outputs are presented in Appendix A.

For each option, the tables show ratings for construction and operation phases against each of the SEA objectives. Table 3.1 shows the ratings before any mitigation is applied and Table 3.2 shows the ratings after mitigation is applied. The colour and score used in these tables to reflect the effects are as follows:

- White, (+): Construction/operation of the option would result in minor positive effects against the SEA objective;
- Yellow, (0): Construction/operation of the option would result in neutral effects against the SEA objective;
- Amber, (-): Construction/operation of the option would result in minor negative effects against the SEA objective;
- Orange, (--): Construction/operation of the option would result in moderate negative effects against the SEA objective; and
- Red, (---): Construction/operation of the option would result in major negative effects against the SEA objective.

The applicable mitigation for each SEA objective is described in the following sections.

3.2 Comparison of Stage 1 outputs

Based on the Stage 1 SEA outputs for residual effects (post mitigation), the options rated the same across the SEA objectives, with the following exceptions:

- Biodiversity: The construction of the Fens Reservoir and SLR to Preston options would result in moderate negative residual effects while the construction of the SLR to WRZ5 Hub and River Trent options would result in major negative residual effects on biodiversity. Operation of the SLR to Preston, SLR to WRZ5 Hub and River Trent options would result in moderate negative residual effects while operation of the Fens Reservoir option would not impact on biodiversity.
- Water: While all options would result in minor negative residual effects on resilience and flood risk during construction, only the FLR option would result in minor negative residual effects during operation. Regarding the impact of the options on water quality and water resources, the River Trent option is the only one which would likely result in negative residual effects (moderate negative effects during construction and neutral effects during operation); none of the other options would have an adverse effect on water resources.
- Climatic factors: While the construction of all options would result in minor negative residual effects on carbon emissions, operation of the Fens Reservoir, SLR to Preston and SLR to WRZ5 Hub options would result in moderate negative residual effects on carbon emissions while operation of the River Trent option would result in major negative residual effects. Regarding the vulnerability to climate change risks, there are no residual effects expected from any of the options during construction; However operation of the SLR to WRZ5 Hub and River Trent options would result in minor negative residual effects, while the Fens

Reservoir and SLR to Preston options would not impact on the vulnerability to climate change.

- Landscape: The construction of all options would result in minor negative residual effects on the landscape and visual amenity. Operation of the SLR to Preston, SLR to WRZ5 Hub and River Trent options would result in minor negative residual effects while operation of the Fens Reservoir option would not impact on landscape and visual amenity.

The performance of each option against the SEA objectives are reported in Section 3.3 to Section 3.6.

Table 3.1: Summary Stage 1 SEA outputs – Effects with no mitigation (pre-mitigation)

Pre mitigation

		Fenland Reservoir (FLR)				South Lincolnshire Reservoir to Preston (SLR1)			
SEA Topic	SEA Objective	Construction Effects		Operational Effects		Construction Effects		Operational Effects	
		+	-	+	-	+	-	+	-
Biodiversity, flora and fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	0	--	0	0	0	--	0	--
Soil	Protect and enhance the functionality, quantity and quality of soils	0	--	0	0	0	--	0	0
Water	Increase resilience and reduce flood risk	0	--	0	-	0	--	0	0
	Protect and enhance the quality of the water environment and water resources	0	--	0	0	0	--	0	0
	Deliver reliable and resilient water supplies	0	0	+	0	0	0	+	0
Air	Reduce and minimise air emissions	0	-	0	-	0	-	0	-
Climatic Factors	Reduce embodied and operational carbon emissions	0	-	0	--	0	-	0	--
	Reduce vulnerability to climate change risks and hazards	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	-
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	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
	Maintain and enhance tourism and recreation	0	-	0	0	0	-	0	0
Material Assets	Minimise resource use and waste production	0	--	0	-	0	--	0	-
	Avoid negative effects on built assets and infrastructure	0	--	0	0	0	--	0	0

Pre mitigation

		South Lincolnshire Reservoir WRZ5 Hub (SLR4)				River Trent (RW2)			
SEA Topic	SEA Objective	Construction Effects		Operational Effects		Construction Effects		Operational Effects	
		+	-	+	-	+	-	+	-
Biodiversity, flora and fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	0	---	0	--	0	---	0	--
Soil	Protect and enhance the functionality, quantity and quality of soils	0	--	0	0	0	--	0	0
Water	Increase resilience and reduce flood risk	0	--	0	0	0	--	0	0
	Protect and enhance the quality of the water environment and water resources	0	--	0	0	0	--	0	-
	Deliver reliable and resilient water supplies	0	0	+	0	0	0	+	0
Air	Reduce and minimise air emissions	0	-	0	-	0	-	0	-
Climatic Factors	Reduce embodied and operational carbon emissions	0	-	0	--	0	-	0	---
	Reduce vulnerability to climate change risks and hazards	0	0	0	-	0	0	0	-
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	--	0	-	0	--	0	-
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	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
	Maintain and enhance tourism and recreation	0	-	0	0	0	-	0	0
Material Assets	Minimise resource use and waste production	0	--	0	-	0	--	0	-
	Avoid negative effects on built assets and infrastructure	0	--	0	0	0	--	0	0

Table 3.2: Summary Stage 1 SEA outputs – Residual effects (post mitigation)

Post mitigation

		Fenland Reservoir (FLR)				South Lincolnshire Reservoir to Preston (SLR1)			
SEA Topic	SEA Objective	Residual Construction Effects		Residual Operational Effects		Residual Construction Effects		Residual Operational Effects	
		+	-	+	-	+	-	+	-
Biodiversity, flora and fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	0	--	0	0	0	--	0	--
Soil	Protect and enhance the functionality, quantity and quality of soils	0	-	0	0	0	-	0	0
Water	Increase resilience and reduce flood risk	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
	Deliver reliable and resilient water supplies	0	0	+	0	0	0	+	0
Air	Reduce and minimise air emissions	0	-	0	0	0	-	0	0
Climatic Factors	Reduce embodied and operational carbon emissions	0	-	0	--	0	-	0	--
	Reduce vulnerability to climate change risks and hazards	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	-
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	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
	Maintain and enhance tourism and recreation	0	-	0	0	0	-	0	0
Material Assets	Minimise resource use and waste production	0	-	0	-	0	-	0	-
	Avoid negative effects on built assets and infrastructure	0	-	0	0	0	-	0	0

Post mitigation

		South Lincolnshire Reservoir WRZ5 Hub (SLR4)				River Trent (RW2)			
SEA Topic	SEA Objective	Residual Construction Effects		Residual Operational Effects		Residual Construction Effects		Residual Operational Effects	
		+	-	+	-	+	-	+	-
Biodiversity, flora and fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	0	---	0	--	0	---	0	--
Soil	Protect and enhance the functionality, quantity and quality of soils	0	-	0	0	0	-	0	0
Water	Increase resilience and reduce flood risk	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
	Deliver reliable and resilient water supplies	0	0	+	0	0	0	+	0
Air	Reduce and minimise air emissions	0	-	0	0	0	-	0	0
Climatic Factors	Reduce embodied and operational carbon emissions	0	-	0	--	0	-	0	---
	Reduce vulnerability to climate change risks and hazards	0	0	0	-	0	0	0	-
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	-	0	-	0	-	0	-
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	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
	Maintain and enhance tourism and recreation	0	-	0	0	0	-	0	0
Material Assets	Minimise resource use and waste production	0	-	0	-	0	-	0	-
	Avoid negative effects on built assets and infrastructure	0	-	0	0	0	-	0	0

3.3 Fens Reservoir

This option includes the abstraction of raw water from the proposed Fens Reservoir, and treatment at a new Fens Reservoir WTW. The potable water will then be conveyed to a conditioning plant and SR in WRZ 5 Hub via an intermediate break tank and pumping station. This option includes both 50Ml/d and 70Ml/d alternatives.

Biodiversity, flora and fauna

The pipeline would directly intersect Devil's Dyke SSSI and numerous SSSIs are found within 500m of the proposed option: Newmarket Heath, Balsham Wood, Nunn Wood, Hales and Shadwell Woods and Debden Reservoir). Other designated sites are present within 2km of the option which may be indirectly affected by the option. Several areas of priority habitat would be intersected by the pipeline route resulting in direct loss of habitat and disturbance to other habitats and protected species in proximity to priority habitat. No ancient woodlands are intersected by the option, however several are found adjacent or within close proximity to the option. Regarding the potential for contamination to groundwater during construction and abstraction during operation, depleting groundwater supplies may affect groundwater dependent terrestrial ecosystems.

Therefore, the construction of this option would have moderate negative effects on biodiversity, flora and fauna. To minimise disturbances and habitat loss, best practice methods should be implemented (the use of trenchless techniques, the refinement of pipeline alignment). Where directly impacted, habitat should be reinstated on completion, or compensatory habitat should be considered to replace damaged or lost habitat. Following mitigation, residual moderate negative effects on biodiversity would remain. It is recommended that the outputs of future ecology surveys feed into the design development. It is also recommended that a Habitat Regulations Assessment (HRA) Appropriate Assessment (AA) is undertaken to address uncertain effects on the Chippenham Fen and Snailwell Poor's Fen SSSI/SAC/Ramsar site located at approximately 2kms east of the option. The Habitats Regulations Assessment undertaken on all A2AT options is available in the *A2AT Habitats Regulations Assessment Report*. Operational activities would not result in negative effects on biodiversity. There is low risk of INNS transfer associated with this option.

Soil

The pipeline would intersect Grades 1-3 land causing disturbance to soils during construction. The Fens Reservoir WTW would be located on Grade 1 land and the WRZ5 WTW would be located on Grade 2 land with permanent loss within the footprints. The option would be located within 500m of two historic landfill sites which could potentially result in disturbance of contaminated material during construction. To minimise the potential effects on soil (moderate negative), best construction practices should be implemented, including pollution prevention and control practices to minimise potential contamination risk. Where possible, excavated materials should be reinstated following construction and land should be returned to its former use. Following the implementation of mitigation measures, the effects on soil during construction would be minimised (minor negative), however, loss of Grade 1 and 2 land would be permanent. Operational activities would have no considerable effects on soil.

Water

Sections of the pipeline would pass through Flood Zones 2 and 3, and the new WTW would also be located within Flood Zones 2 and 3, with potential risk of flooding. The construction of both the pipeline and the WTW could increase the risk of flooding, therefore the construction of the option could result in moderate negative effects on resilience and flood risk. These effects could be reduced with the implementation of mitigation measures. The pipeline is unlikely to increase the risk of flooding during operation as it would be underground, however minor negative effects

from operation of the WTW on the risk of flooding would remain. It is recommended that a Flood Risk Assessment (FRA) is undertaken and above ground infrastructure is designed to be flood resilient. Floodplain compensation could be required. The design should consider the future potential increased flood risk for the desalination plant, to ensure operation can continue.

The pipeline would cross several watercourses. Construction could impact water quality and disrupt aquatic communities if diversion of flow is required. The pipeline would cross Groundwater Source Protection Zones (SPZs) 1, 2 and 3 which could result in moderate negative effects on water quality during construction. While the new Fens Reservoir WTW would not be located within an SPZ, the WRZ5 WTW would be located within SPZ 3. Following the implementation of mitigation measures, such as the use of appropriate bedding materials and directional drilling, the option would not result in any effects on the water environment. Operation of the option would not result in negative effects on the water environment. The WFD assessment undertaken on this option identified that no waterbodies require further assessment.

As this option would likely increase capacity in the transfer of water across water companies, this option is likely to result in a beneficial effect on the resilience of water supplies.

Air

The option is not located within an Air Quality Management Area (AQMA), however the Saffron Walden AQMA is located within 2km of the pipeline route. The proposed Fens Reservoir WTW is not located within an AQMA. Construction and operation of this option would likely result in temporary minor negative effects on local air quality. While best practice mitigation measures could be implemented during construction, minor and temporary effects may remain during construction. However, there would not be any operation effects on local air quality.

Climatic factors

Embodied carbon would be generated from materials used to construct the pipeline, construction activities and from operation of the pipeline. The option would result in minor construction and moderate operational carbon emissions. Recommended measures include investigating the use of renewables during construction and operation for energy supply and the use of materials with lower embodied carbon. A carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. However, the negative effects would remain.

No adverse effects on climate change resilient are expected during construction. As no changes to the overall water levels are expected during operation, no change in the vulnerability to climate change is anticipated.

Landscape

The option would intersect the Brecks, South Suffolk and North Essex Clayland and East Anglian Chalk National Landscape Character Areas. Part of the pipeline would pass through the Cambridge Green Belt although neither the new Fens Reservoir WTW or WRZ5 WTW would be located in the Green Belt. Construction would likely result in temporary moderate negative effects on the landscape character and visual amenity due to the extent of the pipeline and above ground assets such as the WTWs. Best practice measures should be implemented to minimise effects during construction although temporary effects during construction would likely remain minor negative. The design of WTWs should consider sympathetic materials and include planting in keeping with the local landscape character to reduce the landscape and visual effects of above ground infrastructure.

As the land would be reinstated following the construction works, the pipeline is unlikely to result in negative effects during operation.

Historic Environment

The pipeline would cross the Devil's Ditch, Reach to Woodditton scheduled monument. Several listed buildings, scheduled monuments and a Grade II Registered Park and Garden are located within 500m of the proposed option. Construction could affect the setting of these historic assets however the effect would likely be temporary as the pipeline will be buried. There are potential setting effects from the WTWs on listed buildings within Feltwell and excavation would likely impact buried archaeology. Overall, the construction of the option would likely result in major negative effects on the historic environment. Best practice measures should be implemented to minimise the impact on the setting during construction and the design of WTWs should consider sympathetic materials and include planting to minimise setting effects. The use of trenchless techniques to avoid the scheduled monument should also be considered. Further work is required to determine the significance of the effect depending on the presence / absence of buried archaeology. Following the implementation of mitigation measures, the option would likely result in minor negative effects during both construction and operation.

Population and Human Health

The pipeline would predominantly cross rural areas although it would pass through or in proximity to some urban areas (Saffron Walden) where construction would take place in proximity to a hospital, schools and other community facilities and residential properties. Construction would likely produce dust, noise and vibrations and increase traffic congestion which could result in minor negative effects on local communities. As the pipeline would be buried once operational it is unlikely to cause permanent disturbance. As both WTWs would be located within a rural area, this have low potential to cause disruption to the local community. Although best practice mitigation measures such as noise management could be implemented to minimise effects of construction, temporary minor negative effects would likely occur.

The pipeline would cross areas of outdoor recreation (walking, cycling and water-based recreation) therefore disturbance from dust, noise and vibrations during construction would likely affect the public (minor negative). These effects on communities and tourism during construction would likely remain even following the implementation of mitigation measures.

Material Assets

The construction of the option would likely require large quantities of materials (moderate negative), with water treatment likely to require large quantities of chemicals during operation (minor negative). While there is an opportunity to implement sustainable design measures to reduce the impact of the option on resources and waste, it is likely that a residual minor negative effect during construction and operation will remain.

The proposed pipeline would crosse a railway and major roads. The construction works are likely to result in a moderate temporary negative effect on these assets if closures are required, however diversions would be put in place where possible. As best practice measures would be implemented (for example, a Traffic Management Plan) and land along the pipeline would be reinstated following the completion of the construction works, disturbances during construction should be minimised. However, minor temporary effects would still be likely to occur. Directional drilling under the railway and major roads is likely to be required.

3.4 South Lincolnshire Reservoir to Preston

Abstraction of raw water from the proposed South Lincolnshire Reservoir, and conveyance to new SLR WTW. The potable water will then be conveyed to Sundon WTW for conditioning, via Etton Service Reservoir and routing past and intermediate break tank and pumping station near Grafham. The treated water will be transferred to Preston SR. This option includes both 50Ml/d and 70Ml/d alternatives.

Biodiversity, flora and fauna

The pipeline would directly intersect Smithcombe, Sharpenhoe and Sundon Hills SSSI. Several SSSIs are found within 500m of the proposed option: Castor Flood Meadows, Grafham Water and Perry Woods and Galley and Warden Hills. Other designated sites are located within 2km which may be indirectly affected. Several areas of priority habitat would be intersected by the pipeline route resulting in direct loss of habitat and disturbance to other habitats and protected species in proximity to the route. No ancient woodlands are intersected by the option, however several are found adjacent or in close proximity to the pipeline. The construction of this option would have moderate negative effects on biodiversity.

To minimise disturbance effects and habitat loss, best practice methods should be implemented, such as refining the pipeline alignment and using trenchless techniques. Where directly impacted, habitat should be reinstated on completion, or compensatory habitat should be considered to replace damaged or lost habitat. Following mitigation, the moderate negative residual effects on biodiversity during construction and operation would likely remain. It is recommended that the outputs of future ecology surveys feed into the design development. It is also recommended that a HRA AA is undertaken to address uncertain effects on Nene Washes Ramsar/SPA/SAC/SSSI located approximately 6kms east from the option. The Habitats Regulations Assessment undertaken on all A2AT options is available in *A2AT Habitats Regulations Assessment Report*. There is low risk of INNS transfer associated with this option.

Soil

The majority of the pipeline would lie within Grade 1-3 agricultural and non-agricultural land, causing disturbances during construction. The WTW would mostly be located on Grade 3 land and would result in permanent loss of habitat. The option would be located within 500m of one authorised landfill site and two historic landfill sites. To minimise the potential moderate negative effects on soil, best construction practices should be implemented, including pollution prevention and control practices to minimise potential contamination risk. Where possible, excavated materials should be reinstated after construction and returned to former use. Following the implementation of mitigation measures, the residual effects on soil would be reduced to minor negative. Operational activities would not result in negative effects on soil.

Water

Sections of the pipeline would pass through Flood Zones 2 and 3, while the new WTW at Sundon would be located within Flood Zone 1. The construction of both the pipeline and the WTW could increase the risk of flooding, therefore the construction of the option could result in moderate negative effects on resilience and flood risk. These effects could be reduced with the implementation of mitigation measures, however flood risk during construction (minor negative residual effects) may still occur.

The pipeline would cross several watercourses. Construction could impact water quality and disrupt aquatic communities if diversion of flow is required. The pipeline would cross SPZs 1, 2 and 3 which could result in moderate negative effects on water quality during the construction of the option. The Sundon WTW would not be located within an SPZ. Following the implementation of best construction practices, such as the use of appropriate bedding materials and directional drilling, the construction activities would not result in negative effects on the water environment. The WFD assessment undertaken on this option identified that no waterbodies require further assessment.

As this option would likely increase capacity in the transfer of water across water companies, this option would have a beneficial effect on the resilience of water supplies.

Air

The option would not be located within an AQMA nor is there any within 2km of the pipeline route. Construction and operation of this option would likely result in minor temporary negative effects on local air quality. Following the implementation of best practice mitigation measures during construction, temporary minor effects on air quality would remain. The operation of the WTW would not adversely impact on the local air quality.

Climatic factors

Embodied carbon would be generated from materials used to construct the pipeline, construction activities and from operation of the pipeline. The option would result in minor construction and moderate operational carbon emissions. Recommended measures include investigating the use of renewables during construction and operation for energy supply and the use of materials with lower embodied carbon. A carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. However, negative effects during construction and operation would likely remain.

No adverse effects on climate change resilient are expected during construction. As no changes to the overall water levels are expected during operation, no change in the vulnerability to climate change is anticipated.

Landscape

The option would intersect the South Suffolk and North Essex Clayland, Bedfordshire Clays, Bedfordshire Greensand Ridge and Chilterns National Character Areas. The section of pipeline near Sundon, and the Sundon WTW would be located within the London Area Green Belt and within the Chilterns Area of Outstanding Natural Beauty. Construction of this option would likely result in temporary moderate negative effects on the landscape character and visual amenity due to the extent of the pipeline and above ground assets such as WTW. Best practice measures should be implemented to minimise effects during construction although temporary effects during construction would likely remain minor negative. The design of the WTW should consider sympathetic materials and include planting in keeping with the local landscape character to reduce the landscape and visual effects of above ground infrastructure. While the pipeline would unlikely result in negative effects during operation as it will be underground, operation of the WTW would result in minor negative effects on landscape.

Historic Environment

The option would pass through Cainhoe Castle and Wrest Park scheduled monuments; several other scheduled monuments are present within 500m of the option. The pipeline would also pass through Wrest Park Grade 1 Registered Park and Garden and Temple Dinsley Grade II* Registered park and Garden. Several listed buildings are present within 500m of the option. Overall, the construction of the option would result in major negative effects on the historic environment. Best practice measures should be implemented to minimise the impact on the setting during construction and the design of WTWs should consider sympathetic materials and include planting to minimise setting effects. The use of trenchless techniques to avoid the scheduled monument should also be considered. The excavation works required during construction also have the potential to negatively impact buried archaeology if present. The INNS Treatment Plant should avoid direct impacts on the scheduled monument. Further work is required to determine the significance of the effect depending on the presence / absence of buried archaeology. Following the implementation of mitigation measures, the option would likely result in minor negative effects on the historic environment during both construction and operation.

Population and Human Health

The pipeline would predominantly cross rural and urban areas, where construction would take place in proximity to residential properties and community facilities. Construction would likely create dust, noise and vibrations, and increased traffic congestion; construction of the option would result in minor negative effects on local communities. The WTW would be located in a rural area with low potential to cause disruption. Although best practice mitigation measures would be implemented, such as noise management, temporary minor negative effects would occur.

The option would also be located within areas of outdoor recreation (walking, cycling, potentially water-based recreation) including Rutland Water, Grafham Water and three Registered Parks and Gardens. Construction works would likely result in temporary disturbance from dust, noise and vibrations, and to disruption to recreational activities resulting in minor negative effects on the communities. Best practice mitigation measures would likely be implemented, however minor temporary negative effects on tourism and recreational activities would remain.

Material Assets

The construction of the option would likely require large quantities of materials (moderate negative effects), while water treatment would likely require large quantities of chemicals during operation (minor negative effects). While there is an opportunity to implement sustainable design measures to reduce the impact of the option on resources and waste, it is likely that a residual minor negative effect during construction and operation would remain.

The proposed pipeline would also intersect railways and roads during construction resulting in moderate temporary negative effects on built assets and infrastructure. Although best practice measures would be implemented, construction activities would result in temporary minor negative effects. Directional drilling under the railway and major roads would likely be required. Operational activities would not result in adverse effects on built assets and infrastructure.

3.5 South Lincolnshire Reservoir to WRZ5 Hub

Abstraction of raw water from the proposed South Lincolnshire Reservoir, and conveyance to new SLR WTW. The potable water will then be conveyed to a conditioning plant and SR in WRZ5 Hub, routing past Etton SR and an intermediate break tank and pumping station. This option includes both 50Ml/d and 100Ml/d alternatives.

Biodiversity, flora and fauna

The option would directly intersect the Nene Washes Ramsar/SSSI/SPA/SAC. The option would be located within 500m of Debden Water and Bassenhally Pit SSSIs, and Lattersey Field, Mare Fen and Eye Green Local Nature Reserves. There are other designated sites within 500m and 2000m from the option which could be indirectly affected. Several areas of priority habitat would be intersected by the pipeline route resulting in direct loss of habitat and disturbance to other habitats and protected species in proximity. No ancient woodlands are intersected by the option, however several are found adjacent or in close proximity to the pipeline. The construction of this option would likely result in major negative effects on biodiversity. To minimise disturbance effects and habitat loss best practice methods should be implemented, such as refining the pipeline alignment and using trenchless techniques. Where directly impacted, habitat should be reinstated on completion, or compensatory habitat should be considered to replace damaged or lost habitat. However, following mitigation measures, the residual effects on biodiversity would likely remain major negative for construction and moderate negative for operation. It is recommended that the outputs of future ecology surveys feed into the design development. It is also recommended that a HRA AA is undertaken to address significant effects on the Nene Valley Washes Ramsar/SAC/SPA and uncertain effects on Orton Pits, Fenland, Woodwalton Fen and Ouse Washes. The HRA undertaken on all A2AT options is available in the *A2AT*

Habitats Regulations Assessment Report. There is low risk of INNS transfer associated with this option.

Soil

The pipeline would be located within Grades 1-3 agricultural land. The WRZ5 WTW would be located on Grade 2 land and would result in permanent loss of habitat. The option would be situated within 500m of three authorised landfill sites and four historic landfill sites. To minimise the potential moderate negative effects on soil, best construction practices should be implemented, including pollution prevention and control practices to minimise potential contamination risk. Where possible, excavated materials should be reinstated after construction and returned to former use. Following the implementation of mitigation measures, the residual effects on soil would be reduced to minor negative. Operational activities would not result in negative effects on soil.

Water

Sections of the pipeline would pass through Flood Zones 2 and 3 while the WRZ5 WTW would be located within Flood Zone 1. The construction of both the pipeline and the WTW could increase the risk of flooding, therefore the construction of the option could result in moderate negative effects on resilience and flood risk. These effects could be reduced with the implementation of mitigation measures, however flood risk during construction may still occur (minor negative effects).

The pipeline would cross several watercourses. Construction could impact water quality and disrupt aquatic communities. The pipeline would cross SPZs 1, 2 and 3 which could result in moderate negative effects on water quality during the construction of the option. Following the implementation of best construction practices, such as the use of appropriate bedding materials and directional drilling, the construction activities would not result in negative effects on the water environment. The WFD assessment undertaken identified that no waterbodies require further assessment.

As this option would likely increase capacity in the transfer of water across water companies, this option would have a beneficial effect on the resilience of water supplies.

Air

The option would not be located within an AQMA and there would not be any AQMA within 2km of the proposed route. Construction and operation of this option would likely result in minor temporary negative effects on local air quality. Following the implementation of best practice mitigation measures during construction, temporary minor effects on air quality would remain. The operation of the WTW would not adversely impact on the local air quality.

Climatic factors

Embodied carbon would be generated from materials used to construct the pipeline, construction activities and from operation of the pipeline. The option would result in minor construction and moderate operational carbon emissions. Recommended measures include investigating the use of renewables during construction and operation for energy supply and the use of materials with lower embodied carbon. A carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. However, the negative effects would remain.

While no adverse effects on climate change resilient are expected during construction, the resilience of the local environment to climate change may be negatively affected due to the abstraction of water required during operation.

Landscape

The pipeline would intersect The Fens, East Anglian Chalk and Bedfordshire Claylands National Character Areas and it would be partly located within the Cambridge Green Belt, with a booster pumping station located in the Green Belt. Construction of this option would likely result in temporary moderate negative effects on the landscape character and visual amenity due to the extent of the pipeline and above ground assets such as WTW. Best practice measures should be implemented to minimise effects during construction although temporary effects during construction would likely remain minor negative. The design of the WTW should consider sympathetic materials and include planting in keeping with the local landscape character to reduce the landscape and visual effects of above ground infrastructure. While the pipeline would unlikely result in negative effects during operation as it will be underground, operation of the WTW would result in minor negative effects on landscape.

Historic Environment

The pipeline would intersect the Audley End Grade I and Shortgrove Hall Grade II Registered Parks and Gardens. Several conservation areas and listed buildings are located within 500m of the option. Overall, the construction of the option would result in moderate negative effects on the historic environment. Best practice measures should be implemented to minimise the impact on the setting during construction and the design of the WTW should consider sympathetic materials and include planting to minimise setting effects. The excavation works required during construction also have the potential to negatively impact buried archaeology if present. Further work is required to determine the significance of the effect depending on the presence / absence of buried archaeology. Following the implementation of mitigation measures, the option would likely result in minor negative effects on the historic environment during both construction and operation.

Population and Human Health

The pipeline would predominantly cross rural and urban areas, where construction would take place in proximity to residential properties and community facilities. Construction would likely produce dust, noise and vibrations and increase traffic congestion; construction of the option would result in minor negative effects on local communities. The WTW would be located in a rural area with low potential to cause disruption. Although best practice mitigation measures would be implemented, such as noise management, temporary minor negative effects would occur during construction. Operational activities would not result in adverse effects on the community..

The pipeline would be located within areas of outdoor recreation (walking, cycling, water-based recreation) including two Registered Parks and Gardens. Disturbance from dust, noise and vibrations during construction would likely affect the users (minor negative effects). Although best practice mitigation measures would be implemented during construction, temporary minor negative effects would likely remain.

Material Assets

The construction of the option would likely require large quantities of materials (moderate negative effects), while water treatment would likely require large quantities of chemicals during operation (minor negative effects). While there is an opportunity to implement sustainable design measures to reduce the impact of the option on resources and waste, it is likely that a residual minor negative effect during construction and operation would remain.

The proposed pipeline would also intersect railways and roads during construction resulting in moderate temporary negative effects on built assets and infrastructure. Although best practice measures would be implemented, construction activities would result in temporary minor

negative effects. Directional drilling under the railway and major roads would likely be required. Operational activities would not result in adverse effects on built assets and infrastructure.

3.6 River Trent

Abstraction of raw water from the River Trent at East Bridgford, and treatment to prevent Invasive Non-Native Species (INNS) transfer. The partially treated raw water will be conveyed to Rutland Water, where a new draw-off arrangement and Rutland Water WTW will abstract, treat, and convey water to Sundon WTW for conditioning, routing via an intermediate break tank and pumping station near Grafham. The treated water will be transferred to Preston SR. This option includes both 50Ml/d and 100Ml/d alternatives.

Biodiversity, flora and fauna

The pipeline would directly intersect Smithcombe, Sharpenhoe and Sundon Hills SSSI and numerous SSSIs are found within 500m of the pipeline (Harby Hill Wood, Wymondham Rough, North Luffenham Quarry, King's Cliffe Banks, Grafham Water, Perry Woods, and Galley and Warden Hills). The partially treated raw water would enter and be abstracted from Rutland Water, a Ramsar/SPA/SSSI site. There are other designated sites located within 2km of the option which could be indirectly affected by the option. Similarly, numerous areas of priority habitat would be intersected by pipeline resulting in direct loss of habitat and disturbance to other habitats and protected species in proximity to the option. No ancient woodlands are intersected by the option, however several are found adjacent or within close proximity to the pipeline. Construction could also result in groundwater contamination. Therefore, the construction of this option would likely result in major negative effects on biodiversity. During operation, abstraction could deplete water resources within River Trent affecting aquatic communities further downstream, which would result in moderate negative effects on biodiversity. To minimise disturbance and habitat loss, best practice methods, such as refining the pipeline alignment or using trenchless techniques should be implemented. Where directly impacted, habitat should be reinstated on completion of the construction works and compensatory habitat should be considered to replace damaged or lost habitat. However, following mitigation the residual effects on biodiversity would likely remain major negative for construction and moderate negative for operation. It is recommended that the outputs of future ecology surveys feed into the design development. It is also recommended that an HRA AA is undertaken to assess uncertain effects on the Nene Valley Gravel Pits SSSI/SPA, and likely significant effects on the Rutland SPA. Mitigation measures should be implemented to reduce risk of INNS transfer, however negative effects would likely remain.

Soil

The pipeline would intersect Grade 1-3 agricultural land with disturbance to these soils during construction. The WTW would mostly be located on Grade 3 land and would result in permanent loss of habitat. The option would be located within 500m of eight historic landfill sites and three authorised landfill sites. To minimise the potential moderate negative effects on soil, best construction practice measures should be implemented, including pollution prevention. Where possible, excavated materials should be reinstated following construction and land should be returned to its former use. Following the implementation of mitigation measures, the construction of the option would result in minor negative effects on soil. Operation activities would not result in adverse effects on soil.

Water

Sections of the pipeline would pass through Flood Zones 2 and 3 while the new WTW at East Bridgford, Rutland Water and Sundon would be located within Flood Zone 1. The construction of the option would likely result in moderate negative effects on resilience and flood risk. These effects could be reduced with the implementation of mitigation measures, however flood risk

during construction may still occur (minor negative effects) Operation activities would not result on adverse effects on the risk of flooding.

The pipeline would cross several watercourses. Construction could impact water quality and disrupt aquatic communities if diversion of flow is required. The pipeline would cross SPZ 2 and 3, and the new Rutland Water WTW would be located within SPZ 3; the option could result in moderate negative effects on water quality during construction. Increased abstraction could also result in depleted water resources. Following the implementation of mitigation measures such as the use of appropriate bedding materials and directional drilling, the negative effects of operation would be minimised (neutral) however, the negative effects of construction would remain moderate negative. The WFD assessment undertaken identified two waterbodies required further assessment. Further information on the assessment is presented in A2AT Water Framework Directive Assessment.

As this option would likely increase capacity in the transfer of water across water companies, this option would have a beneficial effect on the resilience of water supplies.

Air

The option would not be located within an AQMA and there is not AQMA within 2km of the proposed route. Construction and operation of this option would likely result in temporary minor negative effects on local air quality. While best practice mitigation measures could be implemented during construction, minor and temporary effects would likely remain during construction. No impact on local air quality is expected during operation.

Climatic factors

Embodied carbon would be generated from materials used to construct the pipeline, construction activities and from operation of the pipeline. The option would result in minor construction and major operational carbon emissions. Recommended measures include investigating the use of renewables during construction and operation for energy supply and the use of materials with lower embodied carbon. A carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. However, negative effects during construction and operation would likely remain.

While no adverse effects on climate change resilient are expected during construction, operation could increase vulnerability to climate change as the abstraction of water could result in depleted water resources in the environment.

Landscape

The option would intersect the South Suffolk and North Essex Claylands, East Anglian Chalk, Bedfordshire Clays, Northamptonshire Vales, Forest, High Leicestershire, Trent and Belvoir Vales and Leicestershire and Nottinghamshire Vales National Landscape Character Areas. The northern end of the pipeline and the WTW at East Bridgford would be located within the Derby and Nottingham Green Belt, and the section of pipeline near Sundon, and the Sundon WTW, would be located within the London Area Green Belt. The option would also be situated within the Chilterns Area of Outstanding Natural Beauty. Construction of the option would likely result in temporary moderate negative effects on the landscape character and visual amenity. While best practice measures would be implemented to minimise the construction impact, temporary minor negative effects would likely remain. As the pipeline would be buried once operational, permanent landscape and visual effects would likely be limited to the operation of the WTW. The design of WTW should consider sympathetic materials and include planting in keeping with the local landscape character to reduce the landscape and visual effects of above ground infrastructure. As the majority of the land would be reinstated following the construction works,

operation of the option would result in minor negative effects on landscape as a result of the WTW.

Historic Environment

The Motte and Bailey Castle adjacent to River Trent, a scheduled monument, would be located within the footprint of the WTW at East Bridgford. The pipeline would intersect Cainhoe Castle and Wrest Park scheduled monuments; several other scheduled monuments are located within 500m of the proposed option (Alstoe Moot, part of Alsthorpe deserted medieval village, Blesswell Grange, Palaceyard Wood medieval moated enclosure and associated enclosures, woodland bank and cultivation earthworks identified as heritage at risk). The pipeline would pass through Wrest Park Grade I Registered Park and Garden, Temple Dinsley Grade II* Registered Park and Garden, and Exton Park Grade II Registered Park and Garden, and would be in close proximity to Apethorpe Palace Grade II Registered Park and Garden. Several conservation areas and listed buildings would be located within 500m of the pipeline.

Construction activities could affect the setting of these historic assets. The impact of the pipeline would be temporary as it would be buried, however the WTW could potentially affect the setting of historic assets in proximity to the WTW. Overall, the construction of the option would likely result in major negative effects on the historic environment. While best practice measures would likely be implemented, residual minor negative effects of construction activities would remain. The design of above ground infrastructure should consider sympathetic materials and include planting to minimise setting effects. Direct impacts on scheduled monuments in proximity to East Bridgford should be avoided. The excavation works required during construction also have the potential to negatively impact buried archaeology if present. Further work is required to determine the significance of the effect depending on the presence / absence of buried archaeology. Following the implementation of mitigation measures, the option would likely result in minor negative effects on the historic environment during both construction and operation.

Population and Human Health

The pipeline would predominantly cross rural areas although it would pass in proximity to some urban areas, where construction would take place in proximity to residential properties and community facilities. Construction activities would likely create dust, noise and vibrations, and increase traffic congestion, which could result in minor negative effects on local communities. Pipeline would be buried once operational so it would unlikely cause any disturbance and the WTW would be located in a rural area with low potential to cause disruption.

The pipeline would be located within areas of outdoor recreation (walking, cycling and water based recreation, including Rutland Water and Grafham Water and three Registered Parks and Gardens (RPGS); construction activities could result in minor negative effects from disturbance from dust, noise and vibrations on the communities. The construction of the WTW at Rutland Water would likely result in minor negative effects on users of recreational activities. No adverse effects on communities are expected during operation.

Material Assets

The construction of the option would likely require large quantities of material (moderate negative effects), with water treatment likely to require large quantities of chemicals during operation (minor negative effects). Although it would be possible to implement sustainable design measures and reuse excavated material to reduce the impact, minor negative effects during construction and operation would remain.

The pipeline would intersect rail and roads resulting in moderate negative effects during construction. Best practice measures like a Traffic Management Plan should be implemented,

however minor temporary effects would likely occur. Directional drilling under the railway and major roads would likely be required. No adverse effects from operation are expected.

4 Additional assessment

4.1 Overview

This Section provides additional assessment to supplement the Stage 1 outputs relating to SEA.

4.2 Local level data

The following locally designated areas have been reviewed for each of the pipeline options:

- Conservation Areas
- Locally important wildlife sites (LWS, SINCs, SNCIs, and CWS)), and
- Tree Preservation Orders (TPO)

Appendix B presents the additional constraints identified for each of the A2AT options. It details the Conservation Areas, LWS/SINC/SNCIs and TPO that intersect or lie within 200m of the options. Appendix C presents the sources of the data from which the information was attained.

No data was available online or received from the following Councils at the time of writing:

- Conservation Area data: Rushcliffe District.
- LWS and CWS data: North Hertfordshire District and Rushcliffe District.
- TPO data: Central Bedfordshire District, City of Peterborough District, Fenland District, North Hertfordshire District, Rushcliffe District, and Rutland District.

Three of the four options have parts which are located in proximity to Conservation Areas:

- The Fens Reservoir option is not located within 200 metres from any Conservation Areas.
- The SLR to Preston option is located within 200 metres from four Conservation Areas.
- The SLR to WRZ5 Hub option is located within 200 metres from five Conservation Areas.
- The River Trent option is located within 200 metres from two Conservation Areas.

Consultation should be undertaken with the appropriate councils regarding works within close proximity of the historically protected areas to identify mitigation measures required.

All the options have parts which are located in proximity to locally important wildlife sites:

- The Fens Reservoir option is located within five metres from three locally important wildlife sites.
- The SLR to Preston option is located within five metres from ten locally important wildlife sites.
- The SLR to WRZ5 Hub option is located within five metres from nine locally important wildlife sites.
- The River Trent option is located within five metres from 11 locally important wildlife sites.

Consultation should be undertaken with the appropriate councils regarding works within close proximity of the protected wildlife sites to identify mitigation measures required.

The Fens Reservoir, SLR to Preston and SLR to WRZ5 Hub options are located within 50m from TPO trees. As construction could impact on these trees, it is recommended that an arboricultural survey is undertaken on these TPO trees prior to the works starting on site, to

identify appropriate measures are implemented during construction. The operation of the options is unlikely to impact on the trees.

5 Conclusions

A Strategic Environmental Assessment was undertaken using the Water Resources South East methodology on the A2AT options.

Based on the Stage 1 SEA outputs for residual effects (post mitigation), the options rated the same across the SEA objectives, with the following exceptions:

- Biodiversity: The construction of the Fens Reservoir and SLR to Preston options would result in moderate negative residual effects while the construction of the SLR to WRZ5 Hub and River Trent options would result in major negative residual effects on biodiversity. Operation of the SLR to Preston, SLR to WRZ5 Hub and River Trent options would result in moderate negative residual effects while operation of the Fens Reservoir option would not impact on biodiversity.
- Water: While all options would result in minor negative residual effects on resilience and flood risk during construction, only the Fens Reservoir option would result in minor negative residual effects during operation. Regarding the impact of the options on water quality and water resources, the River Trent option is the only one which would likely result in negative residual effects (moderate negative effects during construction and neutral effects during operation); none of the other options would have an adverse effect on water resources.
- Climatic factors: While the construction of all options would result in minor negative residual effects on carbon emissions, operation of the Fens Reservoir, SLR to Preston and SLR to WRZ5 Hub options would result in moderate negative residual effects on carbon emissions while operation of the River Trent option would result in major negative residual effects. Regarding the vulnerability to climate change risks, there are no residual effects expected from any of the options during construction; However operation of the SLR to WRZ5 Hub and River Trent options would result in minor negative residual effects, while the Fens Reservoir and SLR to Preston options would not impact on the vulnerability to climate change.
- Landscape: The construction of all options would result in minor negative residual effects on the landscape and visual amenity. Operation of the SLR to Preston, SLR to WRZ5 Hub and River Trent options would result in minor negative residual effects while operation of the Fens Reservoir would not impact on landscape and visual amenity.

Additional assessment considering local level data has been undertaken in-line with the methodology in the All Companies Working Group (ACWG) Water Resource Management Plan (WRMP) environmental assessment guidance and applicability with Strategic Resource Options, October 2020.

The local level data findings show that all options intersect or lie within 200m of a number of locally important wildlife sites (including Local Wildlife Sites (LWS), Sites of Importance for Nature Conservation (SINCs), Sites of Nature Conservation Importance (SNCIs) and County Wildlife Sites (CWS)) and Tree Preservation Orders (TPO). All of the options except the Fens Reservoir option are within 200m of Conservation Areas. Mitigation can be put in place in order to reduce the potential effects on these areas.

The Stage 1 findings and additional assessment show potential residual impact for all options, with the Fens Reservoir option performing slightly better and the River Trent option performing worse.

A summary of the key potential benefits and adverse effects of the scheme is presented in Table 5.1.

Table 5.1: Summary of the potential benefits and adverse effects of the scheme

Topic	Benefits	Adverse effects
Biodiversity, flora and fauna	No benefits identified – however all options have an opportunity to protect and enhance biodiversity during operation.	All options are located within 500m of designated sites and would intersect with priority habitats. All options are located in proximity to ancient woodland. Major negative residual effects identified on biodiversity from the construction of the SLR to WRZ5 Hub and River Trent options.
Soil	No benefits identified. No major negative residual effects identified.	All options intersect Grade 1 – 3 land. All options would be located within 500m of historic landfills, while the SLR to Preston, SLR to WRZ5 Hub and River Trent options would also be located within 500m of authorised landfills.
Water	All options deliver reliable and resilient water supplies. No major negative residual effects identified.	The majority of the routes for all options is located within Flood Zone 2 and 3. The SLR to Preston, SLR to WRZ5 Hub and River Trent options are also located in Flood Zone 1.
Air	No benefits identified. No major negative residual effects identified.	All options are likely to generate short-term vehicle emissions and dust from construction activities.
Climatic factors	All options reduce vulnerability to climate change risks and hazards. Major negative residual effects identified on carbon emissions from operation of the River Trent option.	All options will likely result in greater energy use during operation.
Landscape	No benefits identified. No major negative residual effects identified.	The Fens Reservoir and SLR to WRZ5 Hub options would be located in Cambridge Green Belt. The SLR to Preston and River Trent options would be located in London Area Green Belt. Chiltern Area of Outstanding Beauty would be intersected by the SLR to Preston and River Trent options.
Historic environment	No benefits identified. No major negative residual effects identified.	The Fens Reservoir, SLR to Preston and SLR to WRZ5 Hub options pass through scheduled monuments, while the SLR to Preston and SLR to WRZ5 Hub options also intersect Registered Park & Gardens. All options lie within 500m of listed buildings, scheduled monuments and/or registered parks and gardens. The SLR to Preston, SLR to WRZ5 Hub and River Trent options are located within 200m of Conservation Areas.
Population and human health	No benefits identified. No major negative residual effects identified.	All options intersect a number of community facilities and are located within 500m of other community facilities.
Material assets	No benefits identified. No major negative residual effects identified.	All options intersect major roads and railways.

A. Stage 1 SEA output tables

The Stage 1 SEA outputs are available on the South Lincs Reservoir Community SharePoint site here:

https://anglianwater.sharepoint.com/:f:/r/sites/fcmSouthLincsReservoir/Shared%20Documents/A2AT/Gate%201%20submission%20-%20ready%20for%20review/02%20Environmental%20Assessment%20Report/Stage%201%20Environmental%20Assessments/SEA?csf=1&web=1&e=07S05c

The outputs can be provided as digital files upon request.

B. Additional local constraints

Table B.1: Conservation Areas within 200m of the A2AT options

Option name	Name	Approximate distance to closest point of option	Grid reference	Local Authority
Fens Reservoir	n/a	n/a	n/a	n/a
SLR to Preston	Etton Conservation Area	35m	SE981435	City of Peterborough
	Great Gidding Conservation Area	120m	TL116829	Huntingdonshire
	Leighton Bromswold Conservation Area	95m	TL112754	Huntingdonshire
	Preston Conservation Area	60m	TL180246	North Hertfordshire
SLR to WRZ5 Hub	Thriplow Conservation Area	200m	TL442466	South Cambridgeshire
	Heathfield Conservation Area	40m	TL457459	South Cambridgeshire
	Haslingfield Conservation Area	170m	TL404522	South Cambridgeshire
	Holywell Conservation Area	150m	TL340708	Huntingdonshire
	Etton Conservation Area	60m	SE981435	City of Peterborough
River Trent	Preston Conservation Area	60m	TL180246	North Hertfordshire
	Apethorpe Conservation Area	175m	TL022956	East Northamptonshire

Table B.2: LWS/SINC/SNCIs within 200m of the A2AT options

Option name	Name	Approximate distance to closest point of option	Grid reference	Local Authority
Fens Reservoir	Unnamed CWS	0m	TL640750	East Cambridgeshire
	Unnamed CWS	0m	TL612689	East Cambridgeshire
	CWS W91	55m	TL565407	Uttlesford
	CWS W76	60m	TL559393	Uttlesford
	CWS G56	140m	TL554388	Uttlesford
	CWS G60	105m	TL558391	Uttlesford
	CWS G54	85m	TL543365	Uttlesford
	CWS G49	0m	TL535328	Uttlesford
SLR to Preston	East Holmes	0m	TL128965	City of Peterborough
	Nene Valley Railway	25m	TL139987	City of Peterborough
	Milton Park	155m	TL139987	City of Peterborough

Option name	Name	Approximate distance to closest point of option	Grid reference	Local Authority
	Clay and Cow Lanes	0m	TL129997	City of Peterborough
	Oldfield Pond	20m	TF130003	City of Peterborough
	Belsize Wood and Grassland CWS	150m	TF137009	City of Peterborough
	Popple's Coppice CWS	35m	TF133009	City of Peterborough
	Blackthorn Spinney CWS	5m	TF134016	City of Peterborough
	Foster's Coppice CWS	0m	TF135019	City of Peterborough
	Stamford Road Parkland CWS	0m	TF134026	City of Peterborough
	Hayes Wood CWS	105m	TF134030	City of Peterborough
	Steeping Wood and Grasslands CWS	105m	TF143036	City of Peterborough
	Marholm Crossing and Brook Drain CWS	0m	TF151038	City of Peterborough
	Unnamed Cambs Wildlife Site	100m	TL105737	Huntingdonshire
	Unnamed Cambs Wildlife Site	25m	TL126681	Huntingdonshire
	Unnamed Cambs Wildlife Site	85m	TL141667	Huntingdonshire
	Unnamed Cambs Wildlife Site	30m	TL135623	Huntingdonshire
	Lady Wood CWS	155m	TL127552	Bedford
	Palaceyard Wood CWS	45m	TL130544	Bedford
	Unnamed CWS	40m	TL119508	Bedford
	River Great Ouse CWS	0m	TL120505	Bedford
	Manor Wood CWS	40m	TL106443	Bedford
	Exeter Wood CWS	45m	TL101439	Bedford
	Warden Little Wood CWS	15m	TL108441	Bedford
	Unnamed Wood CWS	20m	TL092406	Bedford
	Chicksands Wood CWS	55m	TL103405	Central Bedford
	Unnamed CWS	0m	TL093378	Central Bedford
	Unnamed CWS	30m	TL084342	Central Bedford
	Unnamed CWS	0m	TL070298	Central Bedford
	Holt Wood CWS	195m	TL059284	Central Bedford
	Unnamed CWS	0m	TL088281	Central Bedford
SLR to WRZ5 Hub	Lord's Drain CWS	170m	TF186052	City of Peterborough
	Catchwater Drain CWS	0m	TF191055	City of Peterborough

Option name	Name	Approximate distance to closest point of option	Grid reference	Local Authority
	Middle Drain CWS	0m	TF212049	City of Peterborough
	Thorney Dike CWS	0m	TL275999	City of Peterborough
	Unnamed Cambs Wildlife Site	25m	TL313814	Huntingdonshire
	Unnamed Cambs Wildlife Site	0m	TL353703	Huntingdonshire
	Unnamed CWS	0m	TL349694	South Cambridgeshire
	Unnamed CWS	0m	TL342691	South Cambridgeshire
	Unnamed CWS	0m	TL393536	South Cambridgeshire
	CWS G25	160m	TL493421	Uttlesford
	CWS G34	0m	TL504398	Uttlesford
	CWS W55	130m	TL529359	Uttlesford
	CWS G49	0m	TL535328	Uttlesford
River Trent	Unnamed LWS	50m	SK732317	Melton
	Unnamed LWS	60m	SK732317	Melton
	Unnamed LWS	0m	SK734303	Melton
	Unnamed LWS	165m	SK757275	Melton
	Unnamed LWS	0m	SK764270	Melton
	Unnamed LWS/CWS	0m	SP995995	East Northamptonshire
	Unnamed LWS/CWS	0m	TL009976	East Northamptonshire
	Unnamed CWS	145m	TL040897	East Northamptonshire
	Unnamed LWS/CWS	0m	TL039894	East Northamptonshire
	Unnamed LWS/CWS	110m	TL047889	East Northamptonshire
	Unnamed LWS/CWS	5m	TL055857	East Northamptonshire
	Unnamed LWS/CWS	185m	TL060800	East Northamptonshire
	Unnamed Cambs Wildlife Site	25m	TL126681	Huntingdonshire
	Unnamed Cambs Wildlife Site	85m	TL141667	Huntingdonshire
	Unnamed Cambs Wildlife Site	30m	TL135623	Huntingdonshire
	Unnamed Cambs Wildlife Site	0m	TL105737	Huntingdonshire
	Lady Wood CWS	155m	TL127552	Bedford
	Palaceyard Wood CWS	45m	TL130544	Bedford
	Unnamed CWS	40m	TL119508	Bedford

Option name	Name	Approximate distance to closest point of option	Grid reference	Local Authority
	River Great Ouse CWS	0m	TL120505	Bedford
	Manor Wood CWS	40m	TL106443	Bedford
	Exeter Wood CWS	45m	TL101439	Bedford
	Warden Little Wood CWS	15m	TL108441	Bedford
	Unnamed Wood CWS	20m	TL092406	Bedford
	Chicksands Wood CWS	55m	TL103405	Central Bedford
	Unnamed CWS	0m	TL093378	Central Bedford
	Unnamed CWS	30m	TL084342	Central Bedford
	Unnamed CWS	0m	TL070298	Central Bedford
	Holt Wood CWS	195m	TL059284	Central Bedford
	Unnamed CWS	0m	TL088281	Central Bedford

Table B.3: TPO within 200m of the A2AT options

Option name	TPO Number	Approximate distance to closest point of option	Grid reference	Local Authority
Fens Reservoir	TPO E/06/72	0m	TL589568	East Cambridgeshire District
	TPO E/05/72	160m	TL589568	East Cambridgeshire District
	TPO A24	200m	TL593507	South Cambridgeshire District
SLR to Preston	TPO 266	50m	TL123951	Huntingdon District
	TPO 349	0m	TL124947	Huntingdon District
	TPO 056	75m	TL125884	Huntingdon District
	TPO 133	185m	TL148668	Huntingdon District
SLR to WRZ5 Hub	TPO 8/91/17	0m	TL513378	Uttlesford District
	TPO 3/74	20m	TL434481	South Cambridgeshire District
	TPO 2/74	0m	TL420484	South Cambridgeshire District
	TPO 1/74	0m	TL416490	South Cambridgeshire District
	TPO 2/61	20m	TL401520	South Cambridgeshire District

Option name	TPO Number	Approximate distance to closest point of option	Grid reference	Local Authority
	TPO SC/3/79	0m	TL389584	South Cambridgeshire District
	TPO 15-66	0m	TL375619	South Cambridgeshire District
	TPO 2/72	0m	TL372630	South Cambridgeshire District
	TPO 14/67	0m	TL371641	South Cambridgeshire District
River Trent	TPO 17/013	110m	TL096773	Huntingdon District
	TPO 133	185m	TL148668	Huntingdon District
	TPO 0170	110m	TL047879	East Northamptonshire
	TPO 0125	200m	TL046889	East Northamptonshire
	TPO 0064	155m	TL040897	East Northamptonshire
	TPO 0255	90m	TL021955	East Northamptonshire
	TPO 0018	55m	SK988003	East Northamptonshire

C. Datasets reviewed for the additional assessment

Table C.1: Additional local level data reviewed for SEA effects

Topic theme/SEA directive topic	Additional data reviewed	Source
Biodiversity	LWS/SINC/SNCIs in the Kings Lynn and West Norfolk District	http://www.nbis.org.uk/sites/default/files/documents/Designated_WildlifeSites_2018_600dpi.pdf (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the West Suffolk District	https://maps.westsuffolk.gov.uk/MyWestSuffolk.aspx (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the East Cambridgeshire	https://www.eastcambs.gov.uk/local-development-framework/east-cambridgeshire-local-plan-2015-policies-map (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the South Cambridgeshire District	https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/the-adopted-development-plan/adopted-policies-map/ (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the Uttlesford District	https://udc.maps.arcgis.com/apps/webappviewer/index.html?id=c0c8399f55f84531800cf9c36944226c (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the Huntingdon District	https://www.huntingdonshire.gov.uk/planning/new-local-plan-to-2036/ (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the Fenland District	https://www.fenland.gov.uk/developmentplan (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the City of Peterborough District	https://peterborough.maps.arcgis.com/apps/webappviewer/index.html?id=1e47538c3218418e86741bf13a33a04b (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the East Northamptonshire District	East Northamptonshire District Council
	LWS/SINC/SNCIs in the Bedford District	https://bedford-borough.maps.arcgis.com/apps/webappviewer/index.html?id=0e0c6125ccd84ea98ecd482fa868b126 (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the Central Bedfordshire District	https://www.centralbedfordshire.gov.uk/info/45/planning_policy/462/adopted_north_local_development_framework/5 (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the Rutland District	https://www.rutland.gov.uk/my-services/planning-and-building-control/planning/planning-policy/local-plan-review/ (Accessed 25/03/2021)
	LWS/SINC/SNCIs in the Melton District	https://meltonborough.maps.arcgis.com/apps/webappviewer/index.html?id=e1eb8cf09e6d4a94b4e69674e331446d (Accessed 25/03/2021)
Historic	Conservation Areas in the Kings Lynn and West Norfolk District	https://www.west-norfolk.gov.uk/mynearest?layer=nss_conservation#map (Accessed 25/03/2021)

Topic theme/SEA directive topic	Additional data reviewed	Source
	Conservation Areas in the West Suffolk District	https://maps.westsuffolk.gov.uk/MyWestSuffolk.aspx (Accessed 25/03/2021)
	Conservation Areas in the East Cambridgeshire	https://www.eastcambs.gov.uk/local-development-framework/east-cambridgeshire-local-plan-2015-policies-map (Accessed 25/03/2021)
	Conservation Areas in the South Cambridgeshire District	https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/the-adopted-development-plan/adopted-policies-map/ (Accessed 25/03/2021)
	Conservation Areas in the Uttlesford District	https://udc.maps.arcgis.com/apps/webappviewer/index.html?id=c0c8399f55f84531800cf9c36944226c (Accessed 25/03/2021)
	Conservation Areas in the Huntingdon District	https://www.huntingdonshire.gov.uk/planning/conservation-areas/ (Accessed 25/03/2021)
	Conservation Areas in the Fenland District	https://www.fenland.gov.uk/developmentplan (Accessed 25/03/2021)
	Conservation Areas in the City of Peterborough District	https://peterborough.maps.arcgis.com/apps/webappviewer/index.html?id=1e47538c3218418e86741bf13a33a04b (Accessed 25/03/2021)
	Conservation Areas in the East Northamptonshire District	https://enc.maps.arcgis.com/apps/MapJournal/index.html?appid=a5dbcdceeea74ca69b2ee6403ab729c5 (Accessed 25/03/2021)
	Conservation Areas in the Bedford District	http://apps.bedford.gov.uk/lvplanning/ (Accessed 25/03/2021)
	Conservation Areas in the Central Bedfordshire District	https://www.centralbedfordshire.gov.uk/info/45/planning_policy/462/adopted_north_local_development_framework/5 (Accessed 25/03/2021)
	Conservation Areas in the North Hertfordshire District	https://www.north-herts.gov.uk/planning/planning-policy/local-plan-current-policy/district-local-plan-no2-alterations/local-plan (Accessed 25/03/2021)
	Conservation Areas in the Rutland District	https://www.rutland.gov.uk/my-services/planning-and-building-control/planning/planning-policy/local-plan-review/(Accessed 25/03/2021)
	Conservation Areas in the Melton District	https://meltonborough.maps.arcgis.com/apps/webappviewer/index.html?id=e1eb8cf09e6d4a94b4e69674e331446d (Accessed 25/03/2021)
Landscape	Protected Trees in the Kings Lynn and West Norfolk District	https://www.west-norfolk.gov.uk/homepage/327/tree_preservation_orders (Accessed 25/03/2021)
	Protected Trees in the West Suffolk District	https://maps.westsuffolk.gov.uk/MyWestSuffolk.aspx (Accessed 25/03/2021)
	Protected Trees in the East Cambridgeshire	East Cambridgeshire District Council
	Protected Trees in the South Cambridgeshire District	https://gis.scambs.gov.uk/planning/index_search.html (Accessed 25/03/2021)

Topic theme/SEA directive topic	Additional data reviewed	Source
	Protected Trees in the Uttlesford District	https://udc.maps.arcgis.com/apps/webappviewer/index.html?id=c0c8399f55f84531800cf9c36944226c(Accessed 25/03/2021)
	Protected Trees in the Huntingdon District	https://www.huntingdonshire.gov.uk/environmental-issues/trees/protected-trees/ (Accessed 25/03/2021)
	Protected Trees in the East Northamptonshire District	https://enc.maps.arcgis.com/apps/MapJournal/index.html?appid=a5dbcdceeea74ca69b2ee6403ab729c5 (Accessed 25/03/2021)
	Protected Trees in the Bedford District	http://apps.bedford.gov.uk/lvplanning/ (Accessed 25/03/2021)
	Protected Trees in the Melton District	http://www.melton.gov.uk/address-search?location=change&redirect=mymelton&address=IP12+1GP&layer=#showaddress (Accessed 25/03/2021)

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