SSC-DD-06 Enhancement Costs – Supporting Evidence

Contents

Introduction

This appendix provides further evidence to support our enhancement cost representations made in **sections 5 to 8 of our 'SSCDD01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030,'** and should be read in conjunction with that document.

The additional detail provided supports the representations made in the above document in terms of both modelled cost allowances, associated Price Control Deliverables (PCD's) and also in the evidencing of two new enhancement cost requirements in our Cambridge region. These new investment needs have arisen since our initial Business Plan submission in October 2023, with clarity provided in our main response document and within sections 3, 4 and 6 of this appendix as to why the new needs are material and require AMP8 investment.

1. Water Resilience – Demonstrating a best option approach

This section of the appendix should be viewed alongside **section 5.3.1** within our main Draft Determination response document, **'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'** It serves to provide further detail in terms of how we have demonstrated our proposed investment in new boreholes and at one of our treatment works has been done to ensure a best option outcome for our customers.

Figure 1 below demonstrates the investment planning process flow undertaken with Aqua Consulting throughout our PR24 capital planning process - this detail outlines the pathway we have followed to review needs, optioneering from longlist to shortlist and associated cost estimation.

The subsequent tables 1-6 below provide evidence of both costs and multi-criteria analysis outputs of the longlisted options generated in our initial planning stages. We provide this additional detail to evidence a robust appraisal of options throughout the entire investment planning pathway shown in figure 1, and a level of rigour both with internal stakeholders within an assessment framework provided by Aqua Consulting. This process ensured a consistent approach across the board in terms of our approach to identifying investment and applying suitable prioritisation in outputs that best represent our operational resilience plans and our customer needs.

The associated movement through to shortlisting stage, and NPV outputs of our cost benefit analysis applied to these shortlisted options, can be seen in the tables within **sections 5.3.1.1 to 5.3.1.4** of our main Draft Determination response document, **'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'**

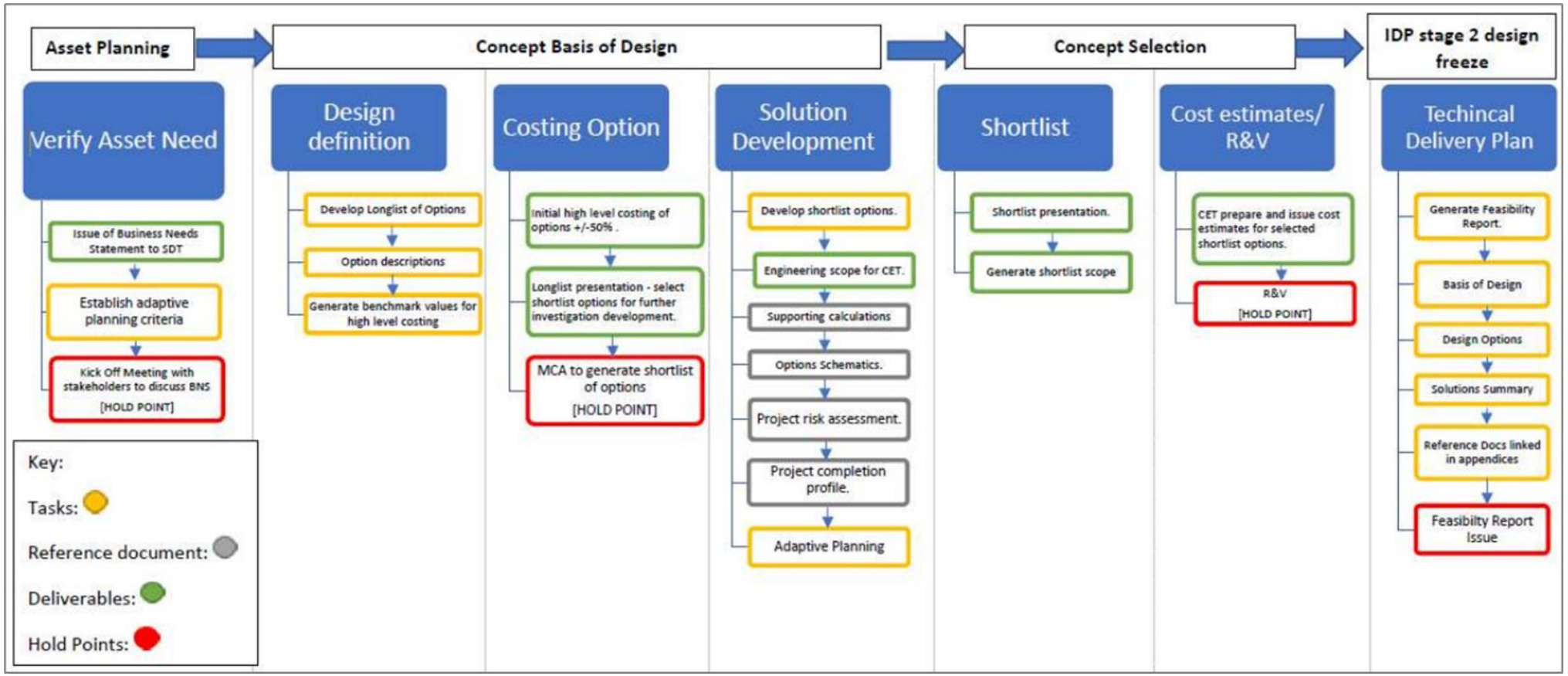


Figure 1 Decision tree used to determine the categorisation of our priority schemes across our base and enhancement programmes

Options	Description	Strengths	Weaknesses	Decision	Capex Cost (£k)	Rationale for decision
Do Nothing	Continue operation with single borehole and no resilience	No capital expenditure	No resilience achieved and risk to water supply interruptions remains the same	Discarded	0	Resilience essential to mitigate water supply interruptions and meet customer feedback showing desire for increased operational resilience
Least Cost Option	Investigation into Pumping issues at Brettenham PS	Potential additional output to reach abstraction licence could be achieved	No additional resilience achieved and risk to water supply interruptions remains the same	Discarded	839	Resilience essential to mitigate water supply interruptions and meet customer feedback showing desire for increased operational resilience
Best value option	Drill new Borehole at Euston PS	Meets resilience driver	Additional operational maintenance required on 2nd borehole	Adopted	2,271	Meets enhancement driver of providing resilience to water supply interruptions risk
Other Alternatives	Upsize pipeline between Brettenham PS and Euston PS plus new borehole at Brettenham PS	Provides additional resilience at Brettenham PS	Pipeline construction risks given river, oil and SSSI challenges	Discarded	6,394	Estimated capital expenditure, is much higher than alternative options

Table 1 - Euston BH - Longlisted solutions with capex costs

Scheme ID	Option Nr		Ability to meet DWI Notices and commend for support letters outcomes				Provide a long term solution to SSW			Providing Green solutions					Technically Feasibility			Deliverability			Cost	Total Weighted Score	Ranking	Selected For Shortlist Solution	Option Comments
			Regulatory Complexity	Problem Resolution	Existing Asset performance during construction	Failure Risk	Business Acceptability	Catchment resilience	Access, amenity and engagement	Net Zero	Environmental impact	Carbon Capture	Natural Capital	Biodiversity Impact	Technology Development Status	Construction/ Buildability	Operability	Client Acceptability	Resourcing	Complexity	Cost band				
		Option Description/ Weight	0.35				0.15			0.20					0.10			0.10			0.10				
Brettenham & Euston																									
NINF-BOR-009	1	Do Nothing	3.00	1.00	3.00	1.00	1.00	3.00	3.00	4.00	4.00	1.00	4.00	1.00	5.00	5.00	2.00	3.00	5.00	5.00	5.00	2.94	4	N	
NINF-BOR-009	2	Drill new BH at Euston	3.00	5.00	5.00	5.00	5.00	2.00	3.00	3.00	3.00	1.00	3.00	1.00	5.00	4.00	5.00	3.00	5.00	4.00	2.00	3.58	1	Y	
NINF-BOR-009	3	Investigations into pumping issues at Brettenham (is it constricting transfer to Euston)	3.00	4.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00	3.00	1.00	5.00	2.00	5.00	3.00	5.00	2.00	3.00	2.97	3	N	Consider pump replacement as an extra item into Options 2 & 4

Table 2 - Euston BH - Multi Criteria Assessment

Options	Description	Strengths	Weaknesses	Decision	Capex Cost (£)	Rationale for decision
Do Nothing	Continue operation with single borehole and no resilience	No capital expenditure	No resilience achieved and risk to water supply interruptions remains the same	Discarded	0	Resilience essential to mitigate water supply interruptions and meet customer feedback showing desire for increased operational resilience
Least Cost Option // Best Value Option	Drill new Borehole at Heydon PS	Meets resilience driver. Reduced operational requirement as all on one site.	Site congested with existing infrastructure. Additional operational maintenance required on 2nd borehole	Adopted	2,363	Meets enhancement driver of providing resilience to water supply interruptions risk
Other Alternatives	Develop observational borehole into operational borehole	Utilisation of existing assets on a congested site footprint	Suitability for existing borehole to become operational instead of observational unknown. Understood to be located outside of site boundary, requiring land purchases and infrastructure installs.	Discarded	2,907	Risk associated with observational borehole not being suitable for conversion into operational borehole.
Other Alternatives	Drill a new borehole at a satellite location	Provides additional resilience at Heydon PS	Purchase of third-party land required; additional infrastructure assets required between two sites	Discarded	3,514	Estimated capital expenditure, is much higher than alternative options

Table 3 - Heydon BH - Longlisted solutions with capex costs

Scheme ID	Option Nr		Ability to meet DWI Notices and commend for support letters outcomes				Provide a long term solution to SSW			Providing Green solutions					Technically Feasibility			Deliverability			Cost	Total Weighted Score	Ranking	Selected For Shortlist Solution	Option Comments
			Regulatory Complexity	Problem Resolution	Exiisting Asset performance during construction	Failure Risk	Business Acceptability	Catchment resilience	Access, amenity and engagement	Net Zero	Environmental impact	Carbon Capture	Natural Capital	Biodiversity Impact	Technology Development Status	Construction/ Buildability	Operability	Client Acceptability	Resourcing	Complexity	Cost band				
		Option Description/ Weight	0.35				0.15			0.20					0.10			0.10			0.10				
Heydon																									
NINF-BOR-064	1	Do Nothing	3.00	1.00	3.00	1.00	1.00	3.00	3.00	4.00	4.00	1.00	4.00	1.00	5.00	5.00	3.00	3.00	5.00	5.00	5.00	2.98	3	N	
NINF-BOR-064	2	New Borehole in existing site	3.00	5.00	4.00	3.00	5.00	2.00	3.00	3.00	3.00	1.00	3.00	1.00	5.00	4.00	4.00	4.00	5.00	3.00	3.00	3.39	1	Y	
NINF-BOR-064	3	A satellite borehole constructed off-site	2.00	5.00	5.00	5.00	5.00	3.00	2.00	1.00	2.00	2.00	2.00	1.00	5.00	4.00	5.00	4.00	5.00	3.00	1.00	3.27	2	N	
NINF-BOR-064	4	Develop observational BH into operational borehole,	2.00	4.00	2.00	4.00	4.00	3.00	3.00	3.00	3.00	1.00	3.00	1.00	3.00	2.00	3.00	4.00	5.00	2.00	3.00	2.92	4	N	

Table 4 - Heydon BH - Multi Criteria Assessment

Options	Description	Strengths	Weaknesses	Decision	Capex Cost (£)	Rationale for decision
Do Nothing	Make no changes to the current operation of the treatment works	No capital expenditure	No resilience achieved and risk to water supply interruptions remains the same	Discarded	0	Resilience essential to mitigate water supply interruptions and meet customer feedback on criticality of resilience
Least Cost Option/Best Value	Install a single re-lift pump for Gentleshaw in car park at works	Meets the driver to provide resilience by being able to re-lift Barr Beacon flow into Cannock High zone	Congested working area as multiple underground services and space constraints in car park	Adopted	1,134	Meets enhancement driver of providing resilience to water supply interruptions risk
Other alternative	Install a single re-lift pump for Gentleshaw next to surge vessel building at works	Meets the driver to provide resilience by being able to re-lift Barr Beacon flow into Cannock High zone	Congested working area as multiple underground services	Considered	1,257	Space constraints thought to be less risk than installing in car park but more expensive cost estimate

Table 5 - SMTW Gentleshaw Pump - Longlisted solutions with capex costs

Scheme ID	Option Nr		Ability to meet project drivers and regulatory compliance.				Provide a long term solution to SSW			Providing Green solutions					Technically Feasibility			Deliverability			Cost		Total Weighted Score	Ranking	Selected For Shortlist Solution	Option Comments
			Regulatory Complexity	Problem Resolution	Exisitng Asset performance during construction	Failure Risk	Business Acceptability	Catchment resilience	Access, amenity and engagement	Net Zero	Environmental impact	Carbon Capture	Natural Capital	Biodiversity Impact	Technology Development Status	Construction/Buildability	H&S in Operation	Client Acceptability	Resourcing	Complexity	Opex	Capex				
		Option Description/ Weight	0.35				0.20			0.10					0.15			0.10			0.10					
NINF-WTW-010	0	Do Nothing	3.00	1.00	5.00	1.00	1.00	3.00	3.00	5.00	5.00	1.00	5.00	1.00	5.00	5.00	3.00	1.00	3.00	5.00	3.00	5.00	3.03	3	N	Scored par where applicable, but certain categorys preferential when doing nothing (Capex, carbon etc).
NINF-WTW-010	1	New relift pump in car park	3.00	5.00	3.00	3.00	5.00	3.00	3.00	3.00	5.00	1.00	5.00	1.00	5.00	3.00	5.00	5.00	3.00	3.00	1.00	3.00	3.48	2	Y	This option is very similar to option 2 but SSW has highlighted the area in the car park is quite congested with pipework which could add additional complexity in this location. Site surveys needed to confirm this
NINF-WTW-010	2	New relift pump near surge vessel	3.00	5.00	3.00	3.00	5.00	3.00	3.00	3.00	5.00	1.00	5.00	1.00	5.00	4.00	5.00	5.00	3.00	4.00	1.00	3.00	3.56	1	Y	This option is very similar to option 1 but maybe less congested with pipework in the area. Site surveys will need to be carried out to confirm this.

Table 6 - SMTW Gentleshaw Pump – Multi Criteria Assessment

1.1 Water Resilience – Interconnectors

This section of the appendix should be viewed alongside **section 5.3.3.1** within our main **Draft Determination response document, 'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'** It serves to provide further detail in terms of how we have demonstrated our proposed investment in our Burntwood resilience interconnector scheme has been done to ensure a best option outcome for our customers. Specifically, we show below the outputs of our multi-criteria analysis across our shortlisted solution options.

Scheme ID	Option Nr		Ability to meet DWI Notices and commend for support letters outcomes				Provide a long term solution to SSW			Providing Green solutions				
			Regulatory Complexity	Problem Resolution	Exisitng Asset performance during construction	Failure Risk	Business Acceptability	Catchment resilience	Access, amenity and engagement	Net Zero	Environmental impact	Carbon Capture	Natural Capital	Bioiversity Impact
		Option Description/ Weight	0.35				0.15			0.20				
INF-RSL-011	0	Do Nothing	5.00	1.00	1.00	1.00	1.00	3.00	3.00	1.00	1.00	1.00	1.00	3.00
INF-RSL-011	1	Upsize crossconnection	2.00	2.00	3.00	3.00	4.00	3.00	3.00	4.00	3.00	2.00	2.00	3.00
INF-RSL-011	2	Lay new 400	3.00	5.00	4.00	5.00	5.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00
INF-RSL-011	3	Lay New 450	3.00	3.00	4.00	5.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00
INF-RSL-011	4	Lay new 400 alternatiove route	4.00	5.00	4.00	5.00	5.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00

Scheme ID	Option Nr		Technically Feasibility			Deliverability			Cost	Total Weighted Score	Ranking	Selected For Shortlist Solution
			Technology Development Status	Construction/ Buildability	Operability	Client Acceptability	Resourcing	Complexity	Cost band			
		Option Description/ Weight	0.10			0.10			0.10			
INF-RSL-011	0	Do Nothing	3.00	1.00	3.00	1.00	5.00	5.00	5.00	2.15	5	N
INF-RSL-011	1	Upsize crossconnection	5.00	5.00	3.00	5.00	5.00	3.00	4.00	2.64	4	N
INF-RSL-011	2	Lay new 400	5.00	5.00	3.00	5.00	5.00	2.00	2.00	3.07	2	Y
INF-RSL-011	3	Lay New 450	5.00	5.00	3.00	5.00	5.00	2.00	3.00	2.90	3	N
INF-RSL-011	4	Lay new 400 alternatiove route	5.00	5.00	3.00	5.00	5.00	3.00	3.00	3.29	1	Y

Table 7 - Burntwood Resilience Interconnectors - Multi Criteria Assessment

2. Water Resilience – Climate change resilience allowance

This section of the appendix should be viewed alongside **section 5.3.2** within our main Draft Determination response document, **'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'**

Below we provide detail in support of our submission related to Ofwat's Draft Determination climate change allowance for the sector. This is focused on the enhancement of our power resilience. We structure this detail against the enhancement cost assessment gateways throughout this section, highlighting the climate change drivers that sit behind our submission for this allowance, as well as the evidencing of our best value optioneering and approach to ensuring cost efficiency and effective delivery planning.

For detail around the three sites originally submitted as part of our power resilience investment in our October 2023 business plan, please refer to our appendix, **'SSC36 Evidencing our enhancement expenditure in 2025-2030 and beyond,' section 5.5, case 12, Production resilience.**

2.1 Investment need

Within the Cambridge Region we supply water to customers using 100% groundwater. As a result, the availability of our boreholes is critical to managing the supply demand balance and mitigating against water supply interruptions and unplanned outages, particularly during periods of peak demand. To meet these challenges, it is essential the sites are robust, especially to conditions outside of our control such as incoming electrical supplies.

In our Cambridge operating region, we do have site trips which are caused by power interruptions. The main cause of these outages is brownouts, i.e. short-term drops in voltage. It is a common occurrence that these power interruptions, albeit short in duration, will impact several sites at the same time. This is due to the sites being on the same substations. For example, Westley, Great Wilbraham, Dullingham and Weston Coville (Combined 37Ml/d Cambridge east) are frequently affected by the same power outages. The same applies for Babraham, Hinxton Grange and Duxford Airfield (21.6Ml/d) and Fowlmere, Melbourn and Lowerfield (23.3Ml/d Southwest Cambridge).

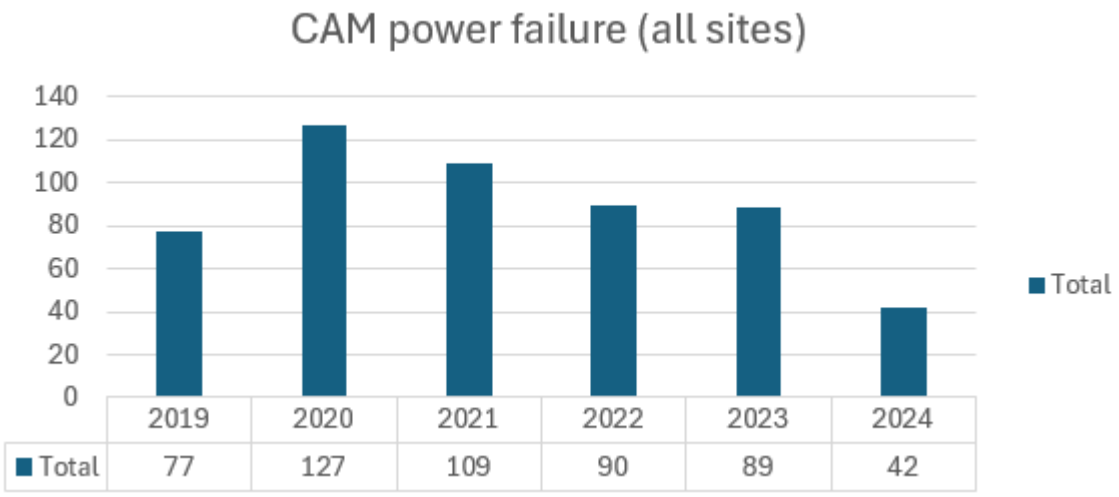


Figure 2 Site trip events per annum in CAM

Figure 2, above, shows the number of site trip events per year in the Cambridge region. Engagement with our operational staff indicate that 2024 has been particularly poor this year so far. The data in the graph for 2024 represents January to

the end of April, i.e. the first four months of the year. If that performance is applied pro-rata to the whole of 2024, the projected number of events will be similar to 2020.

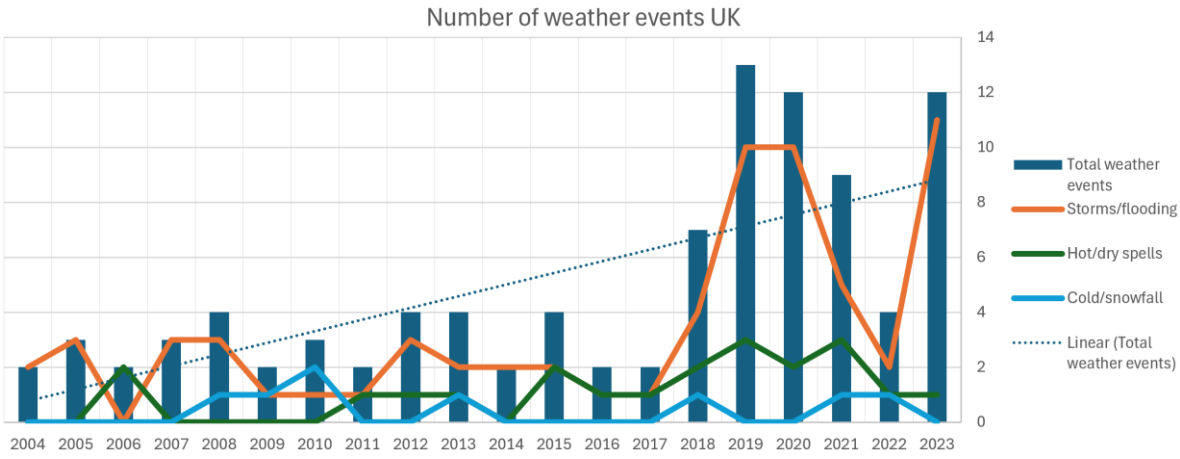


Figure 3 UK weather events

Figure 3 above shows weather event data from the Met Office for the UK over the last 20 years. As the graph shows since 2018 there has been a sustained uplift in weather events and most of these events are caused by storms. These storms generally bring with them powerful winds and heavy rainfall which have an impact to the electrical grid network. There is a causal relationship between the increasing weather events and power outages at our sites, especially in the Cambridge region, which is wholly reliant upon groundwater sites. This presents the need to ensure the resilience of our sites from power failures to maintain a supply of water to our customers.

Table 8 below shows the pumping station sites in our Cambridge region. The table is based on data from 2019 to the end of April 2024 for full site outages due to power interruptions. The average data for each site has provided the number of trips due to power per year for each site. The power generation column indicates if there is power generation at the site. The Peak license column indicates the maximum abstraction at each site. A score is then provided by multiplying power trips per year by site peak license to provide a priority list based on power failure rates against site criticality.

Using this analysis as well as stakeholder engagement we propose to install power generation at Westley, Great Wilbraham, Melbourn, Hinxton Grange and Brettenham PS. Weston Colville is ranked 5th on the list but this site does have a generator hook up point installed. Based on this, and with the recommendations from subject matter experts in our Cambridge region, Brettenham PS is the preferred location for generation installation. Brettenham and Euston PS provide 16% of the deployable output for the region so ensuring these sites are resilient is a high priority.

Site	Type	Average power trips per year	Power generation	Peak license	Score
Westley	Pumping Station	9	No	15.91	143.2
Gt Wilbraham	Pumping Station	9	No	9.09	81.8
Melbourn	Pumping Station	5.6	No	13.64	76.4
Fleam Dyke 36"	Pumping Station	4.4	Yes	17.28	76.0
Weston Colville	Pumping Station	7	No	6.43	45.0
Hinxton Grange	Pumping Station	6.2	No	6.82	42.3
Dullingham	Pumping Station	7	Yes	5.62	39.3
Brettenham	Pumping Station	2.6	No	15	39.0
Duxford Grange	Pumping Station	7.2	No	4.27	30.7
Babraham	Pumping Station	3	Yes	9.09	27.3
Fulbourn 2	Pumping Station	4.2	No	6.43	27.0
Lowerfield	Pumping Station	4.6	No	4.27	19.6
Euston	Pumping Station	1.4	Yes	10	14.0
Duxford Airfield	Pumping Station	2.4	No	5.68	13.6
Fowlmere	Pumping Station	2	Yes	5.4	10.8
Abington Park	Pumping Station	1.8	No	4.55	8.2
Heydon	Pumping Station	3.4	Yes	2.27	7.7
Sawston Mill	Pumping Station	3.4	No	2.18	7.4
Horseheath	Pumping Station	2	No	2.8	5.6
Rivey Hill	Pumping Station	0.8	Yes	2.75	2.2
Linton	Pumping Station	0.8	No	2.73	2.2
Gt Chishill	Pumping Station	1.2	No	1.42	1.7

Table 8 Site prioritisation

2.2 Best option for customers

Table 9, below, provides a summary of information for the power resilience investments and the spectrum of potential options considered. The summaries show the associated strengths and weaknesses for the options, with decisions on if these options were taken forward.

Currently, the market for power resilience to a pumping station doesn't provide many solutions. Due to the power requirements and the loads with varying amperages, current battery technology isn't at the level required to be a viable option. We have considered a generator hook-up point at these sites, but this was discarded as the sites proposed are considered critical to supply, therefore immediate power generation is required to avoid supply interruption.

Options	Description	Strengths	Weaknesses	Decision	Rationale for decision
Do Nothing	Operate site with no power resilience in the event of a power failure	No capital expenditure	No resilience achieved and risk to water supply interruptions remains the same	Discarded	Resilience essential to mitigate water supply interruptions and meet customer feedback on criticality of resilience
Best Value	Power Resilience by installing generator and fuel tank	Provides back up power to site in the event of an electrical outage	Large amount of fuel to be stored, risk of theft, life expiration and contamination	Adopted	Meets enhancement driver of providing resilience to water supply interruptions risk
Other alternatives	Power resilience by	Solution without fuel	Does not immediately	Discarded	The sites proposed are considered critical to supply, therefore

	installing generator hook up point	storage/contamination risk	mitigate supply risk as needs mobile generator sending to site		immediate power generation is required to avoid supply interruption
Other alternatives	Install second incomer power feed to site	Provides resilience against failure on existing incomer	Still reliant on the electric grid and not a cost-efficient solution	Discarded	Discounted mainly due to the small site of the site, the additional equipment/complexity required to enable a secondary incomer power feed would increase the solution cost and would require external liaison with the DNO which may impact delivery timescales

Table 9 Investment options

For details on the longlisting, MCA scoring and shortlisting process that was undertaken please see **section 3** of our appendix, **'SSC37 Our Asset Management approach to best-value investment planning through 2025-2030 and beyond.'** The below table shows the weighting used across solution criteria.

Solutions Criteria	Weighting
Ability to meet project drivers and regulatory compliance	35%
Provide a long-term solution	15%
Technically feasibility	10%
Green solutions	20%
Deliverability	10%
Cost	10%

Table 10 Criteria and weighting

The below multi criteria assessment (MCA) below shows the options considered and scored against the above solutions criteria to provide the best option to enhancing operational resilience at the sites. All options and outcomes were the same for each site, so Westley has been used for the example in Table 11 below.

Scheme ID	Option Nr		Ability to meet project drivers and regulatory compliance.				Provide a long term solution to SSW			Providing Green solutions				
			Regulatory Complexity	Problem Resolution	Exisitng Asset performance during construction	Failure Risk	Business Acceptability	Catchment resilience	Access, amenity and engagement	Net Zero	Environmental impact	Carbon Capture	Natural Capital	Bioiversity Impact
		Option Description/ Weight	0.35				0.20			0.10				
Westley	0	Do Nothing	3.00	1.00	5.00	1.00	2.00	3.00	3.00	5.00	5.00	1.00	5.00	1.00
Westley	1	Battery energy storage	3.00	2.00	5.00	2.00	2.00	3.00	3.00	5.00	4.00	3.00	2.00	1.00
Westley	2	Generator hook up point	3.00	2.00	5.00	3.00	3.00	3.00	3.00	4.00	3.00	2.00	3.00	1.00
Westley	3	Install second incomer	3.00	2.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00
Westley	4	Install new generator to site with fuel tank	3.00	5.00	5.00	5.00	5.00	3.00	3.00	3.00	3.00	1.00	4.00	1.00

Technically Feasibility			Deliverability			Cost		Total Weighted Score	Ranking
Technology Development Status	Construction/Buildability	H&S in Operation	Client Acceptability	Resourcing	Complexity	Opex	Capex		
0.15			0.10			0.10			
5.00	5.00	5.00	5.00	3.00	5.00	3.00	5.00	**3.33**	2
2.00	2.00	4.00	3.00	4.00	2.00	3.00	2.00	**2.83**	4
4.00	4.00	5.00	3.00	3.00	4.00	3.00	4.00	**3.33**	2
5.00	5.00	5.00	2.00	3.00	4.00	3.00	2.00	**2.97**	3
5.00	4.00	5.00	5.00	3.00	4.00	1.00	3.00	**3.85**	1

Table 11 Example of MCA outputs for prioritisation of our investment in climate change resilience

The proposed solution to be installed at the critical sites is a diesel generator with fuel storage. Scope to include:

- Concrete pad.
- Installation of a new SR4 kiosk to house a new generator and control panel.
- Installation of auto change over unit.
- Installation of associated electrical and control cabling and pipework.
- Installation of a new fuel tank and bund (capable of 10 days fuel storage) with security fencing.
- Site earthing upgrade where required.
- Site access adjustments where required.

2.3 Cost Efficiency

The schemes that required costing are the five additional schemes that we have proposed on top of the three existing schemes that were submitted as part of our business plan, in **section 5.5, case 12 of our appendix, 'SSC36 Evidencing our enhancement expenditure in 2025-2030 and beyond.'**

We have reviewed the existing three generator schemes' detailed costs that were developed through Aqua consultants. The original detailed costing process is described in **section 3.3.6 of our appendix, 'SSC36 Evidencing our enhancement expenditure in 2025-2030 and beyond.'** Out of the three schemes the Fleam Dyke generator estimate is very similar to the requirements at the additional five sites we are now including as part of the climate change allowance.

Therefore, utilising the detailed cost breakdown from Aqua Consulting's costing methodology and using the unit rates provided enabled us to produce robust costs for the additional five schemes based on the kW requirements of the generators. The Aqua costing methodology included the below inputs:

- Cost modelling data
- Industry benchmarking
- Engineering experience
- Supply chain relationships.

The cost estimation considers civil, mechanical, electrical and automation requirements across the solutions. This is achieved through models that contains actual outturn costs from similar solutions across the water industry. An example of our cost estimation for Westley generator is provided below in Table 12.

Detailed Cost Breakdown

Westley PS — **OPTION 1 - Install generator**

3.1 - Option 1 Cost Breakdown

Direct Works

Item	*Scope*	*Description*	*Qty*	*YS*	*UoM*	*Rate*	*Total*	*Additional Comments*
Area of Site/Process/Plant Description								
Civil								
1	Investigations /surveys	Carry out ground condition surveys to determine area for generator/fuel tank and cable routing buried services etc	1	1	No.		£ -	Incl. in On Costs
2	Investigations /surveys	Environmental survey	1	1	No.		£ -	Incl. in On Costs
3	Concrete Bund	New bulk tank concrete bund (assume 4.5x2x0.5m)	1	4.5	M3		£ -	Incl. in Standby Generator model
4	Concrete Bund	Generator bunding concrete (2x4x0.5m)	1	4	M3		£ -	Incl. in Standby Generator model
5	Fencing	Fencing around bulk fuel tank	1	20	M	£ 224.99	£ 4,499.80	Modelled cost
6	Access Road	Site access road	1	20	M2	£ 145.95	£ 2,918.94	Modelled cost - Based on Concrete road re-surfacing
7	Site Clearance	Land clearance/laydown area	1	50	M2	£ 90.61	£ 4,530.25	Modelled cost
MEICA								
1	Investigations /surveys	Carry out electrical survey for generator hook up point within MCC main building and site earthing	1	1	No.		£ -	Incl. in On Costs
2	Kiosk	New SR4 rated kiosk 60m3 (3x4x5m) including base slab	1	60	M3	£ 749.86	£ 44,991.50	Modelled cost
3	Storage Tank - Fuel	New double skinned bulk diesel fuel storage tank	1	7	M3		£ -	Incl. in Standby Generator model
4	Standby/Emergency Generator	New 160kVA (130kW) generator (including generator control panel with auto changeover)	1	130	kW	£ 745.62	£ 96,930.60	Modelled cost
5	Interprocess Pipework	Duel contained fuel pipework including isolation valves	1	20	M		£ -	Incl. in Standby Generator model
6	General LV Cabling	Electrical and ICA connections/cabling between generator and main MCC (including ducting)	1	40	M	£ 415.22	£ 16,608.96	Modelled costs - LV Cabling with Ducts and Drawpits (m)
7	General LV Cabling	Electrical and ICA connections/cabling between generator and main MCC (including ducting)	1	40	M	£ 198.34	£ 7,933.43	Modelled costs - ICA Cabling (m)
8	General LV Cabling	Electrical and ICA connections/cabling between generator and main MCC (including ducting)	1	40	M	£ 170.73	£ 6,829.10	Modelled costs - Fibre Optic ICA Cabling (m)
9	Site Earthing	Site earthing upgrade	1	1	No.	£5,000.00	£ 5,000.00	Allow - Scope Unknown
Direct Works Total							**£ 190,242.58**	
Indirect Costs								
Contractor Indirect Costs inc. risk			Water Non-Infrastructure			62.79%	£ 119,457.38	
Construction Cost							**£309,699.96**	
Project On-costs								
Project Overheads						14%	£ 43,357.99	
Project Cost							**£353,057.95**	

Table 12 Example of detailed cost estimation of our investment in climate change resilience

2.4 Customer Support

Our customer engagement programme showed that a "reliable, high-quality supply" remains the number one priority for our customers. Increasing our operational resilience to power issues at our critical sites will support a step change in our ability to deliver this for our customers.

For a detailed review of our customer support for our resilience investment proposals, please refer to **section 5.2.4, case 12,** of our appendix, **'SSC36 Evidencing our enhancement expenditure in 2025-2030 and beyond.'**

2.5 Customer protection

Our climate change driven investment does not meet the PCD materiality threshold of our business plan, therefore, we don't propose applying a PCD at this stage. In reference to Ofwat's query, **'OFW-IBQ-SSC-002'** we do however, acknowledge and accept the inclusion of an appropriate approach for measurement and reporting of the deliverables at final determination.

As outlined in this case the criticality of our sites in the Cambridge region is important to maintain supplies to our customers. Climate change events are predicted to impact the East of England region the most in the future, with hotter drier spells through summer periods and heavier, wetter winter conditions. This further highlights the need for us to ensure our production sites are resilient to the changing climate in this region.

2.6 Delivery

These works will be delivered under the Non-Infrastructure Assets Delivery Framework. These types of works would be considered core scope under this framework contract.

The projects would be either direct allocation with price verification or mini tender competition depending on supply chain programme workloads and capacity. By verifying the price against cost models or a mini tender value for money can be tested.

With the risk profile being low and scope of these projects relatively non-complex, it is envisaged we will use an Option A fixed price contract.

For a detailed summary of the delivery plans for our resilience investment proposals, please refer to the following:

- Section 5.2.8 of our appendix, **'SSC36 Evidencing our enhancement expenditure in 2025-2030 and beyond.'**
- Section 6.4 'Delivering a high quality and ambitious business plan' of our business plan, **'SSC01 Securing your water future – business plan 2025-2030.'**

3. New Water Supply submission – Fenstanton

This section of the appendix should be viewed alongside **section 8.1** within our main Draft Determination response document, **'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'**

3.1 Summary of new investment need

Demand management alone is not sufficient to meet the proposed growth in the region and offset the loss of water available for use due to impending caps to our abstraction licences. New supply side options are required to deliver a positive supply demand balance for Cambridge Water, both in the short term and longer term. This scheme is a new option developed following Defra's review of the revised dWRMPs and subsequent direction to companies issued in December 2023 after submission of our PR24 business plan. The feasibility study has identified a new option which must be delivered in AMP8. This scheme is required to enable the following:

- Regional Growth. There are existing developments in the Cambridge region that are blocked at the planning application stage following objections from the Environment Agency. This is because of the potential impact the water demand for these developments might have which could lead to a deterioration of the environment.

- Licence Caps. Our revised dWRMP includes a moratorium on new non-household connections that lead to a net increase in the demand for water before the Grafham Transfer is available. This is to ensure security of supply to our domestic customers and enable us to meet as many of the proposed licence cuts in 2030 as possible. However, there will be proposals deemed as high priority by the local and national government, such as schools and hospitals, that must be supported.

- Security of Supply. The Environment Agency has outlined 26 Ml/d of abstraction licence caps that are to be implemented by 2030. This equates to a reduction of over 20% of our water available. We are not able to meet all the licence caps by 2030 and will need to implement the remaining ones in 2032 once the Grafham Transfer is in place. We need to undertake all reasonable actions to prevent delaying licence caps, including the recommissioning of sources such as Fenstanton.

This scheme helps support the short-term water resource challenge in Cambridge and unblock much needed development in the region. Fenstanton borehole is an existing Cambridge Water asset; however, the site was decommissioned over 20 years ago due to raw water quality challenges. Treatment for this at the time would have been removal via surface water treatment including clarification and filtration which could not be used at borehole sites. UV technology has since been developed and is being delivered at a nearby borehole site, St Ives. As a result, water from Fenstanton can be reintroduced safely into supply. The Fenstanton borehole does not take water from a chalk aquifer; instead, it abstracts from the shallow gravel aquifer, the same as our St Ives borehole. Due to water availability in this area, the Fenstanton licence is not subject to future proposed licence caps, and this will therefore be a permanent asset.

Fenstanton supply-side option, timeline of events:

February 2023 – dWRMP consultation. Fenstanton selected for 2030. Concerns raised by Natural England and Historic England on the potential environmental impacts of this option.

September 2023 – Revised dWRMP submitted & published. Fenstanton not selected due to updated environmental detail.

October 2023 – Submission of business plan reflecting revised dWRMP.

December 2023 – Further information requests and feedback received from Defra on revised dWRMP. Defra requested a feasibility study to be completed on Fenstanton, with a solution in AMP8 if feasible.

February 2024 – Updated revised dWRMP sent to the Environment Agency. Inclusion of potential investment requirements at Fenstanton within our business plan resubmission to Ofwat as part of query OFW-OBQ-SSC-078. This included reference to the engagement with Defra, confirmation that the feasibility had commenced and a note to state we are keen to ensure Ofwat are aware of the potential need for its inclusion.

June 2024 – Results of initial feasibility study showed that the existing licenced 0.4 Ml/d could be utilised with no environmental impact, with there being a potential to increase up to 1 Ml/d. Further feasibility required to confirm.

July 2024 – A further letter from Defra requesting the results of the feasibility and reiterating their view that the scheme should be delivered by 2030 if the feasibility have deemed it viable. Meetings held with Environment Agency and Natural England to share the outputs of the feasibility and our proposed approach.

Ongoing – Propose to progress with a scheme to enable 0.4 Ml/d, alongside further feasibility studies to understand if the additional 0.6 Ml/d is a sustainable option, which could be included in this scheme once completed.

3.2 Customer support

In section 3.7.2 below, we have provided results from our customer research and engagement from our WRMP and PR24 plan development activities. We cover high level priorities relevant to this supply option to highlight how it delivers against customers' main priorities. We have not been able to engage with our customers directly on this specific supply option but have consulted robustly on customer preferences around best value planning and the balance of options. Our PR24/WRMP24 thematic review report outlines in more detail the findings from our wide-ranging customer engagement programme.

Whilst this scheme was not specifically tested with customers, customers support us being adaptive in our plans. They expect us to manage demand to make the most of the resources available, however they have a priority for us to maintain supply, with a wish for us to ensure we protect the environment. It should be noted that due to the unique water scarcity challenge in the Cambridge Water region and our requirement to take all reasonable action to achieve the licence caps, we must move away from best value planning to some extent.

3.3 Best option for customers

Natural England and the Environment Agency raised concerns about the impact of taking additional water from the Fenstanton location and needed detailed environmental assessments to be completed to determine the viability of the scheme. We updated the option in our plan to include the feedback and as a result the option was not selected in our revised draft WRMP.

However, following Defra's feedback on our revised draft plan in December 2023, they requested we undertake an initial feasibility study to determine the viability of this scheme and if deemed viable, it should be included in the final WRMP24 and our PR24 submission for delivery in AMP8.

This feasibility study was completed in June 2024 and showed that there is not 2 Ml/d available as initially thought – instead there is likely to be a maximum of 1 Ml/d available, but that further feasibility is required to understand the true impacts of accessing that water as modelling showed clear links to a nearby SSSI and two lakes. There is a licence currently available at the site for 0.4 Ml/d.

We will continue onto the next stage of the feasibility study to determine if 1.0 Ml/d is achievable without detriment to the nearby environment. However, given that the scheme has been now deemed viable, we must recommission the site to the existing licence (0.4 Ml/d).

As described in **section 3.7.3** of this document, the WRMP option development process considers many different potential new supply options and through a detailed assessment process this identifies the best feasible options to be put forward for further appraisal. Once this stage is completed, we have then undertaken – at a project level – a process that mirrors, where possible, the investment planning process flow undertaken with Aqua Consulting throughout our PR24 capital planning process, see Figure 1 in section 1 above. To appraise our project level longlist options, we have used information within our investment risk management and optimisation tool, Copperleaf. This generated the Benefit Cost Ratios (BCR) shown below in Table 13, with preferred solutions identified as indicated and discussed below.

Options	Description	Strengths	Weaknesses	Benefit cost ratio (BCR)	Decision	Totex (£k)	Rationale
Do Nothing	Do not return the site to supply to receive the additional water	No capital expenditure	Scheme drivers not met	N/A	Discarded	0	Does not meet the scheme driver to support the need to address regional issues such as the water scarcity position
Return site to supply with treatment at Fenstanton PS	Bring station back into supply with treatment plant at the site	No dependency on any other investments. Aligned to dWRMP24 plan for 2040	Significant capital expenditure required when considering expected treatment needs	13.4	Discarded	4,460	Cost efficiency challenges, although meets project driver by returning site to supply the cost does not compare favourably with other longlist solutions
Return the site to supply with treatment at St Ives PS for 0.4Ml/d	Bring site back into supply but transfer to St Ives for treatment	Meets driver and also more efficient cost delivery	Dependency on other site for treatment and availability i.e. outage at St Ives = potential loss of Fenstanton	30.7	Preferred	1,950	Meets the driver and offers lowest capital expenditure for the investment, also allows for increased delivery efficiencies
Return the site to supply with treatment at St Ives PS for 1.0Ml/d	Bring site back into supply but transfer to St Ives for treatment	Meets driver and also more efficient cost delivery, if additional water is available	Dependency on other site for treatment and availability i.e. outage at St Ives = potential loss of Fenstanton	76.6	Preferred	1,950	Meets the driver and offers lowest capital expenditure for the investment, also allows for increased delivery efficiencies This option allows for potential for achieving maximum available from site, if next stage feasibility deems it available

Table 13 Fenstanton Longlisted Options with Capex Cost

Preferred option: recommissioning the site at 0.4 Ml/d has the potential to unlock growth of c.1,500 –2,000 properties or equivalent. This is in addition to securing supplies in the water scarce region, enabling us to meet more of the proposed licence caps in environmentally sensitive areas. All of this results in a positive benefit-cost ratio and payback for our customers. [BCR 30.7]. Treatment of the raw water at Fenstanton is substantially more cost intensive and is not efficient for customers when there is already an upgrade to a nearby borehole site that can treat the water.

The chosen option includes the following elements: 2 new boreholes (duty/standby) at 25m depth, 2 new borehole pumps and rising mains, 2 new borehole headworks, control building/kiosks for pumps, 20kVA Power connection, 1.2km of 150mm raw water pipeline, mostly across private land with appropriate valving and meters, private land compensation following pipeline installation, MCC and associated telemetry/control and automation.

The design of this scheme remains unchanged even if the full 1.0 Ml/d yield is achievable. We have reviewed costs and have identified that there is no material difference between the two output options so whilst we know that 0.4 Ml/d is available, we can deliver, for similar expenditure the necessary assets and processes for up to 1.0 Ml/d. Clearly the benefit would almost double with a 1.0 Ml/d yield, as shown in table 13 BCR outputs, however, the payback even at 0.4 Ml/d is enough to justify the scheme alone.

Further details on our wider approach to developing WRMP supply-side options can be found in the final section 3.7.3, in this chapter.

3.4 Cost efficiency

To develop the costs for this scheme we used industry cost models and other enhancement costs developed for similar schemes in the original business plan submission. For the raw water main costs, we used the **WRc TR61 methodology and tool**. For elements such as land compensation, flowmeters and pressure reducing valves we used Atkins costing reports from our WRMP19 pricing workbook.

To compare the cost modelling with detailed engineering cost estimates, we have undertaken benchmarking exercises against similar schemes that formed part of our PR24 enhancement case submission in October 2023. This is to ensure we have efficient costs but also ensure that we can deliver this scheme with a challenged but appropriate level of funding.

Within our Production (non-infra) resilience enhancement case, the investments proposed comprised several new borehole installations. We have reviewed these costs, as they have been developed by Aqua Consultants as part of a +/- 20% cost estimation process. Whilst Aqua Consultants have cost models informed by a wealth of data, consisting of actual outturn costs, in certain instances 3rd party companies were approached to provide exact quotes for specific solutions or assets. For more in-depth information and background to our process and development of cost efficiency within our submission please see **Section 3 and 4** of **'SSC37 Our Asset Management approach to best-value investment planning through 2025-2030 and beyond'** – Pages 45 -77.

A review of the costs generated for borehole schemes identified that the borehole works required at Fenstanton, which are shallow in depth, is estimated at £683k per borehole. This estimation is based on taking the costs for 5 proposed borehole installation projects and, using the estimated drilling depths of each borehole, generate the average £/m of new borehole drilling across these estimates (£27.3k/m). This was then multiplied by the notional depth of the required drilling at Fenstanton.

Within our Distribution Network Resilience (infra) enhancement case, the investments proposed comprised several new pipeline constructions. These costs were developed by Aqua Consultants using the same methodology as described above but they were also then benchmarked against internal project delivery outturn costs, to demonstrate cost efficiency. In this case we felt that our internal benchmarking exercise allowed us to apply an efficiency reduction to the schemes we proposed. As a result, we have used these internal benchmarking schemes to review the cost model outputs for Fenstanton. At a similar pipeline scheme installed in 2022/23 the average unit rate per metre was £303 – with a similar diameter and additional costs. Our Fenstanton scheme has the same unit rate.

We consider the benchmarking, using detailed cost estimate and solution development, as a more appropriate and reflective cost estimation tool, in this instance than the initial industry WRc cost modelling. This is, as explained in more detail further above, due to the increased cost confidence in the Aqua Consultants generated costs and the comparison we have been able to do with costs that we have, through the detail provided in existing cases, been able to demonstrate,

in our October 23 business plan submission, how they have been developed and how they have demonstrated as being efficient.

We therefore propose to take forward in this case the capex funding request of £1,923k, and opex of £0,027k, giving a total of £1,950k totex in AMP8.

3.5 Customer Protection

The requested funding of this scheme falls beneath the 1% TOTEX materiality threshold so we do not propose to have a price control deliverable (PCD) in place for this scheme, though it should be noted that this scheme is now included as part of our revised draft WRMP24, and becomes the statutory instrument driving customer protection for the scheme.

Due to the profile of the drivers this scheme is looking to support, we expect to have ongoing and detailed engagement with a number of external bodies and regulators such as Environment Agency, Defra, government commissioned (Water Scarcity Group), and Natural England. This governing oversight, along with that provided by Ofwat, means that customers are protected against non-delivery due to the criticality and significance of the driver for this project.

3.6 Delivery

This section should be read in conjunction with **Section 6.4 'Delivering a high quality and ambitious business plan'** of our business plan, '**SSC01 Securing your water future – business plan 2025-2030.'** The notional solution proposal for Fenstanton PS requires construction/installation of new borehole shafts and pumps, headworks, control building for pumps and provision of a power supply. Additionally, this project would require 1200m of 150mm raw water pipeline for transfer to St Ives PS.

The works on site at Fenstanton PS will be delivered under the Non-Infrastructure Assets Delivery Framework. These types of works would be considered core scope under this framework contract. It is not envisaged that the scale of the works would be a challenge for the supply chain. The borehole works would form part of a batch of similar type of works, alongside the requested funding for boreholes in our Production Resilience enhancement case, to benefit from economies of scale. The pump, headworks and other elements would be a single project delivery.

The delivery of this project will align with the ongoing programme for the reintroduction of St Ives PS to supply. Despite the progression of the St Ives project, we intend to review the treatment, process design and quality requirements, for the combined solution of St Ives and Fenstanton water. To do this we will need to undertake additional water quality testing at Fenstanton, to determine any impact of anything not being treated for at St Ives. This will allow us to incorporate additional flow, from 0.4Ml/d up to 1Ml/d, with design and process revisions on the St Ives reintroduction project. We will proceed with procurement and construction when we have the outputs from the feasibility stage and can approve the required design and process controls. This approach will help to ensure we can deliver this project with programme efficiencies realised.

The delivery outcome will ensure that when the work at Fenstanton is completed, we will have the assets and processes in place at St Ives to receive, treat and distribute the water.

3.7 Other supporting info

3.7.1 Cambridge Water's WRMP background information including Fenstanton supply scheme

The WRMP24 process for Cambridge Water assesses the future water demand needs for our region, including those for both household and non-household customers as well as for the environment. This process has shown that there is a

significant increase in demand required in the Cambridge Water region of approximately 18% by 2050. This is driven by the ambitious growth forecasts in the region. Whilst many other regions across the country are experiencing household growth, Cambridge Water is forecasting significant non-household growth in high water consumption in activities such as laboratory and medical functions. The non-household growth constitutes 54% of forecasted demand increase.

Additionally, there are significant abstraction reductions that need to be met. Most of the Cambridge Water supply comes from chalk aquifers, for which there is a need to cap these licences by nearly 30 Ml/d by 2030 to prevent deterioration of these water environments. This equates to over 25% of our current abstraction capacity. The Environment Agency National Framework, released in 2021, also identified the potential scale of abstraction reductions required prior to 2050 to protect the environment from climate change and help deliver the Water Framework Directive objectives for watercourses to meet good ecological status. These abstraction reductions, when combined with the earlier ones, will lead to a reduction in over 50% of our current water resource availability.

Every 5 years, water companies develop the Water Resource Management Plan outlining how they intend to sustainably meet the forecasted water demand needs of customers and the environment. Demand management is prioritised, and then if needed, supply side options are evaluated in order determine the best value plan for resolving any deficits.

Cambridge Water's draft WRMP24 was submitted to Defra and the Environment Agency in 2022 and was issued for consultation in early 2023. Following this, we reviewed all the consultation feedback and provided a revised draft WRMP. We received feedback from Defra on this revised draft plan in December 2023, post submission of the PR24 plan in October 2023. To enable the abstraction reductions required to support the protection of the environment whilst meeting the needs of the additional growth, Defra stated we should explore the feasibility of a supply side option not selected in our revised draft WRMP24 due to environmental concerns. If this feasibility shows the scheme is viable, Defra stated we should include this in both our WRMP and PR24 plans for delivery in AMP8 to provide additional support to the Cambridge region. We highlighted this additional requirement to Ofwat in February 2024 through query OFW-OBQ-SSC-078.

The Defra driver for accelerating this option aligns with the focus of the new Water Scarcity Group, commissioned by the Government in 2023. The groups focus is looking primarily at how to unlock the existing growth in the Cambridge region that is currently blocked at planning stage due to concerns around the sustainability of any additional water demand. Additional new sustainable supplies of water available in the near time will enable the unblocking of some of this growth and is a key driver for this scheme.

In addition, our WRMP outlines that we will not be able to meet all of the proposed abstraction reductions until the Grafham Transfer of water is available in 2032 as we would not have enough available supply to meet the forecasted demand. This means we will need to submit over-riding public interest cases to the Environment Agency to delay the capping of some of our licences. As part of these cases, we need to demonstrate we have undertaken all reasonable actions to prevent this approach; this option is an important step to demonstrate this and enable us to make all of the licence reductions we can by 2030.

A feasibility study was completed in June 2024, and it showed that there is potentially 1 Ml/d available from the Fenstanton location. Cambridge Water already have an existing abstraction licence for 0.4 Ml/d at this site which is available to use, although our borehole at this site, and all associated infrastructure, was decommissioned circa 20 years ago due to cryptosporidium presence in the raw water with no suitable treatment available at the time.

Therefore, the study has shown that there is a potential for an additional 0.6 Ml/d abstraction based on water availability. However, the study highlighted that this additional volume of abstraction could lead to potential impacts on nearby locations including a site of special scientific interest (SSSI) and two lakes. Further detailed feasibility studies are required to understand the reality of these potential impacts and whether these can be mitigated to provide satisfactory evidence to the Environment Agency and Natural England that the full 1 Ml/d abstraction can be recognised without causing environmental deterioration.

Due to this uncertainty, it is not currently appropriate to include the WRMP option for reinstatement of the Fenstanton borehole from the WRMP, as per the original WRMP option referred to in the Defra letter. However, the feasibility has identified the opportunity to utilise the 0.4 Ml/d of existing licence at the site and pump this to our St Ives site for treatment. St Ives is currently undergoing a refurbishment programme and therefore can be adapted to accept this flow. This option therefore offers better value to our customers as we would need a smaller amount of investment at Fenstanton in comparison.

Therefore we are proposing the inclusion of the pumping scheme from Fenstanton to St Ives. We are also proposing to undertake the next stage of feasibility work at Fenstanton during AMP8 in order to determine whether the additional 0.6 Ml/d can be accessed for public water supply without detriment to the environment. If this feasibility demonstrates a positive outcome for this, we will apply to the Environment Agency to alter our abstraction licence at Fenstanton to enable this additional abstraction. We would then use the proposed scheme to deliver the full 1 Ml/d from Fenstanton to St Ives for treatment.

Our previous enhancement case for WRMP supply side options included the Grafham Transfer and the Fens Reservoir, which secure the medium and long term supply resilience for Cambridge Water customers, as well as enabling critical abstraction reductions from the chalk aquifers which will deliver environmental improvement aligned to the Water Framework Directive objectives and protection from climate change. This scheme will deliver an increase in supply in AMP8 to help enable the planned growth for the region.

The WRMP24 focuses on demand management in the first instance to meet the new demand and close the gap between lost water resource availability. Our plan aims to achieve the Environment Act targets, published in December 2022, including:

- 50% leakage reductions by 2050, including all interim targets.
- Reduce household consumption to 122 l/p/d by 2038 and 110 l/p/d by 2050.
- Reduce non-household consumption by 9% by 2038 and 15% by 2050.

However, due to the scale of the non-household growth planned in the Cambridge region, it is not possible to reduce overall non-household consumption by 9% and 15% from the baseline 2019/20 level as this would require all new development to be water neutral as well as reducing existing consumption. As such, we deliver a reduction equivalent to 9% and 15% of the 2019/20 baseline by these respective dates.

Despite these ambitious demand reductions proposals, there is still a significant deficit to be resolved to achieve an appropriate supply demand balance. Our proposed demand management programme will offset the growth, but new supply side options are required to meet the significant abstraction reductions we need to make in order to protect the environment. As such, new supply side options are required to enable the abstractions reductions required as well as meet the significant growth in the area. However, due to the chalk geology of the Cambridge Water area, there are very limited opportunities for new supply options in the area. At WRMP24 pre-consultation phase, many options were screened out through our environmental assessment process or removed following feedback from the Environment Agency. Our initial long list of potential options numbered over 130, but following these reviews we are now reduced to 18 feasible options, several of which are iterations of the same option (e.g. different size transfers from the same source). Most of these rely on our neighbouring water companies through transfers, licence trades or effluent reuse.

Since submission of our PR24 plan we have received feedback from Defra on our revised draft WRMP. In this they requested us to undertake feasibility to determine whether an additional supply side option could be accelerated and delivered in AMP8 by 2030. This option is the refurbishment and recommission of Fenstanton borehole; an existing, but decommissioned, Cambridge Water abstraction point.

Previously, during consultation on our draft WRMP24, significant concerns were raised in stakeholder feedback regarding the impact this option may have on the local environment that would need detailed investigation and suitable risk

mitigation demonstrated if it were to be feasible. This option was therefore updated for the revised draft WRMP and the option was no longer selected later in the plan.

However, there are two significant drivers for resolving the viability of this scheme and implementing it in AMP8:

- Growth forecasts for the region – Cambridge has one of the highest forecasted growth rates in the UK.
- Licence caps and abstraction reductions required to protect and improve the environment required by the end of AMP8, equalling a reduction of 26 Ml/d water resource availability.

Since 2022, there have been regular meetings between Cambridge Water, the Environment Agency, Defra and the Greater Cambridge Shared Planning teams regarding the risk that the existing levels of growth pose to the environment and the water resource availability in the area. The Environment Agency has objected to several proposed developments on the ground of water resource availability in the catchment and the risk that any increases in demand may pose to the environment. We are also a member of the Government led Water Scarcity Group in Cambridge and heavily involved in the development and delivery of additional opportunities to unlock the current development blockages. These Government funded actions will support those delivered by the WRMP as we work together to ensure resilience of supply and protection of the environment.

These are issues we are facing in the region now based on the current level of proposed growth, and this option will support this short term challenge until our larger scale options, such as the Grafham Transfer and Fens Reservoir, can be delivered.

3.7.2 Customer Support - detailed research findings

Decision making area	What we learnt at WRMP24 / PR24	Summary of how insight has informed our plan
Customer priorities for where we need to invest	Across all our engagement, our customers top priorities are: • Ensuring affordable bills joins high-quality and reliable water supply as a 'super hygiene factor'. • Whilst it remains the overall number one priority, a 'high-quality and reliable water supply' has lost priority importance weighting and there is now a more even distribution across customer priorities. • Leakage reduction continues to grow in priority, as does wider environmental improvements - such as water recycling and other water saving initiatives and investing in local bio-diversity schemes. • Helping customers who may need extra support is more prominent due to the COVID pandemic and then cost of living increases. • Great customers service remains a priority, but with more focus on ensuring high-class digital services. Customers of all generations are clear though that a wide range of contact channels are needed to ensure no customer is left behind when accessing our services. • The regional differences found at PR19 remain, but they are no longer significant. In our long-term priorities customer research we see improving water quality, tackling water poverty, leakage reduction and drought resilience as the highest priority areas for investment, highlighting a common thread between short and long-term priorities.	Alongside the key priority areas, these threads sit at the heart of discussion in our plan: • Protect and restore the water environment; • Being at the heart of the local community; • Protecting vulnerable customers; • Engagement, transparency and empowerment for users of water services; • Fairness when making policy decisions; • Collaboration to solve challenges; • Sustainability agenda – pro-actively tackling carbon and waste reduction; and • Use of innovation and technology to meet current and future challenges.

Decision making area	What we learnt at WRMP24 / PR24	Summary of how insight has informed our plan
Environmental destination	Specifically focusing on environmental destination as a customer priority, we find: • Most customers are very clear that the environment must be a long-term priority to address and are looking for a careful balance between the costs of protecting the environment and keeping their personal or business financial burden to acceptable levels. • Customers continue to be against investments and WRMP options that negatively impact the environment. The majority of customers are not aware of previous levels of abstraction causing environmental damage, but that they wanted to see rivers and streams recover. • Customers, overall favour an enhanced environmental destination and there is evidence that some, namely more affluent customers in our Cambridge region, are willing to pay for this. • Environmental stakeholders, particularly in our Cambridge region, are looking for us to address environmental concerns now.	• We will deliver our environmental obligations. This includes implementing river enhancement and restoration projects for seven chalk streams in our Cambridge region as part of our WINEP obligations. • We used insight from environmental groups to develop a ten-year programme of river restoration measures for these chalk streams in Cambridge.

Decision making area	What we learnt at WRMP24 / PR24	Summary of how insight has informed our plan
Best value planning	Customer were agreed that any supply or demand side option should meet the following criteria: **Planning:** plans should be adaptable in case of new or emerging conditions. Water quality, reducing leakage, minimising environmental impact, and reliable supply were all considered important areas in long term planning. **Affordability:** there was a mixed response from customers. Some were accepting of the best plan rather than the cheapest and thus saw affordability as a lower priority overall. For others, affordability was a top 3 priority and should be an area or priority when planning. Water companies need to provide universal access to an essential product. **Environmental protection**: viewed as crucial for the future of the planet. A healthy environment results in wildlife thriving and an increase in natural areas for the public to visit. **Having a robust demand side delivery plan**: making the most of what resources we have is considered common sense and should be the primary focus before committing to new initiatives. Resources should be in place to prevent leaks (considered a huge waste by customers). Customers feel that water companies would set a good example by fixing leaks and reducing the amount of water wasted before looking for new sources of water t meet future demand. **Water quality**: is viewed as an essential part of service, a necessity and a right. **Supply reliability**: any interruptions felt like an inconvenience to customers as they expect a constant supply. A loss of supply can be a major problem if it lasts a long time.	• We have increased our ambition in demand side management to ensure we promote water efficiency.

Decision making area	What we learnt at WRMP24 / PR24	Summary of how insight has informed our plan
Adaptive planning	We engaged our customers about the use of adaptive planning as an approach to ensure we delivered on their priorities. We find that: • Overall, 71% of household customers found the use of adaptive planning acceptable. The figure was 75% among business customers and 65% among future customers. • The key reasons given by household customers who found concept of adaptive planning acceptable were that the adaptive plan / having an adaptive plan is required/sensible – particularly given the uncertainty around changing climate and water demand estimates. This response was cited by 74% of household Cambridge Water customers.	• From completing the initial feasibility study we are proposing to adapt our plan to ensure we delivery our customers core priorities.

3.7.3 WRMP options development process

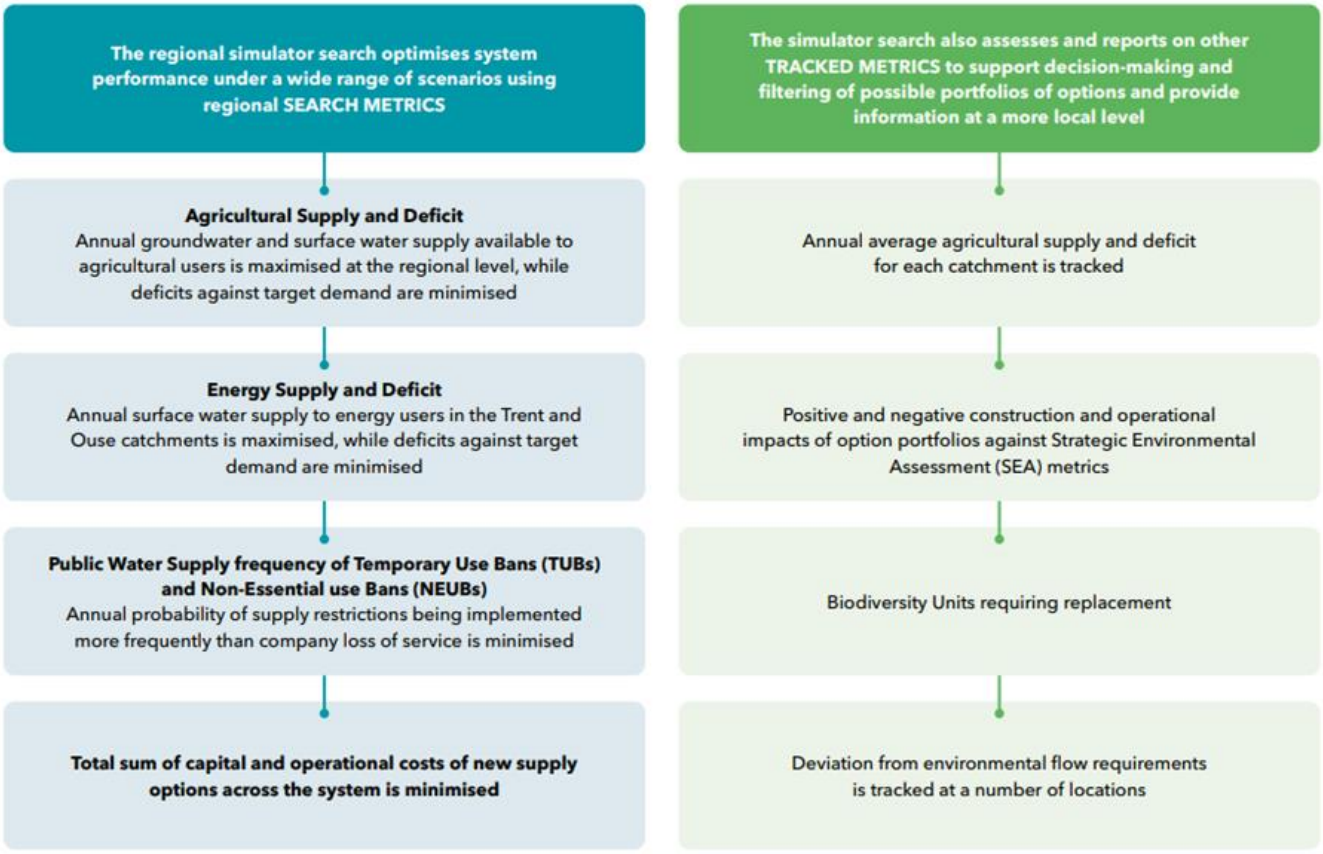
As part of developing the Cambridge Water WRMP24, and in terms of the initial identification of Fenstanton as a viable investment need, we outline the key stages in our options development. Our planning process looks to the value each option provides; here value does not only relate to cost but also to additional benefits afforded through the option such as flood reliance, tourism and amenities, natural capital, and biodiversity. All options are included in the Water Resources East (WRE) multi-criteria analysis tool, called the simulator. The simulator then assesses each option against the others to determine the best value options required to solve the challenge. Following selection of the schemes through this method, the options are included in the Economic Balance of Supply and Demand model (EBSD) which determines the required timing for these options. These options include:

- New groundwater
- New surface water
- Licence trades
- Water transfers
- Groundwater enhancement
- Water reuse

These options must then be screened to ensure they are feasible and so these have a high-level environment assessment to identify any concerns that cannot be mitigated. Any options that pass this screening process progress as feasible options, and these are shared with key stakeholders and regulators at pre-consultation phase. As a result of feedback at this stage, additional options, predominantly groundwater options and licence trades relating to chalk aquifers, were also screened out. This led to a final feasible options list of just 18 options. These options include:

- Groundwater enhancement
- Water transfers
- New surface water

To determine the best plan to meet the deficit, each option is costed. As well as the financial costs, the more indirect costs and benefits are calculated; carbon, flood mitigation, biodiversity, natural capital, tourism and amenity and others. These benefits are all used to compare the options and feed into the multi-criteria analysis tool, known as the simulator. This then selects the best value options to solve the supply demand deficit; this process is outlined below:



WRMP regional modelling process

4. Fens Reservoir - AMP8 Strategic Resource Option

4.1 Cost Efficiency

This section of the appendix should be viewed alongside **section 8.2.2** within our main Draft Determination response document, **'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'**

The cost heads and cost estimates where the 'Non Lead' role will incur external and internal costs are listed below:

Cost head	Description	Estimated cost
Development agreement reserve matters assurance – external commercial advisory required for light touch assurance of key project submissions; strategies and decisions for deliverability; customer impact and company risk/liabilities insurance Reserve matters prescribed by the Development Agreement for water company approval	Regulatory submissions assurance	£50K
	Commercial and procurement strategy	£100k
	Tender documents and contract awards for ITA, PDP, IP and main works	£100k
	Planning DCO documentation	£50k
	Technical design review of physical and operational interfaces	£200k
Contract and transaction support – external legal, commercial and technical advisory to support negotiation, internal governance and execution	Development agreement	£600k
	IPA and BSA	
	Ofwat licence amendment	
	Ofwat allowed revenue directive	
Existing lender consents and financial models		£500k
Shadow credit rating process (RESRAS)		£500k
Internal costs – cost to serve; supporting project £240k pa c 5 yrs 0.5 FTE senior primary, plus 1.5 FTE		£1.2m
Total estimated AMP8 costs[1]		**£3.3m**

The cost heads and cost estimates where the 'Non Lead' role will incur external and internal costs have been developed jointly by the Fens Project team commercial team, including KPMG, using precedent projects such as the Havant Thicket Reservoir and Thames Tideway Tunnel as points of reference. They have also been reviewed with Cambridge Water direct advisor PWC, and a third party assurance review has been carried out by independent advisor to the project, Agilia Infrastructure Partners.

The cost estimates outlined above are challenging to estimate particularly as there is still uncertainty with regard to the specifics of the commercial model and the detailed form of the various contracts and legal instruments.

Given the nature of the activity, the inherent uncertainty in the process, and the limited precedents, there is a level of uncertainty in the estimate. As such we would be open to the concept of a re-opener to review cost forecasts mid-AMP8 to ensure adequate funding, value for money and efficiency of spend.

[1] Price base current, August 2024.

The Agilia Infrastructure Partners report is provided in full in section 4.4 below. The review concludes that the heads of cost are consistent with expectations and that the cost estimate reflects a reasonable budget estimate given the immaturity of the project and inherent uncertainty. It is also supportive of the concept of a re-opener.

4.2 Customer protection

The estimated costs are under the materiality threshold, so we are not proposing to establish a PCD on that basis. A re-opener process could be used to support a value for money and efficiency of spend assessment.

4.3 Delivery

Project development delivery will be managed by the 'lead' party, in this case Anglian, with strategies for procurement a reserve matter under the Anglian Water Cambridge Water development agreement. As a reserve matter, Cambridge Water will have oversight of, and be given the opportunity to comment on and accept proposed strategies, tender documents and contract awards.

With regard to expenditure directly we would incur for advisory services in AMP8, any contracted commissions will be driven through the competitively tendered Professional Services framework for the AMP8 period. This framework contract is currently out to tender.

4.4 Agilia report

19th August 2024

BY EMAIL

James Lee
Anglian Water

Dear James

HIGH-LEVEL REVIEW: CAMBRIDGE WATER COST ESTIMATE FOR THE FENS RESERVOIR

Section 1: Introduction

1. Agilia Infrastructure Partners Limited ("**Agilia**") have been commissioned on behalf of the Cambridgeshire Fens Reservoir Project Team ('The Project Team") which is jointly promoted by Anglian Water Service ('AWS') and Cambridge Water ('CW') to provide a high-level, desktop review of the Cost Estimate for AMP8 spend required by the non-lead party (CW) in relation to the development of the Project.
2. The purpose of this letter is to set out the background and context of the Cost Estimate and the summary outputs arising from the Agilia review.

Section 2: Background and Context

3. The Fens reservoir is seeking to use the Specified Infrastructure Project Regulations ('SIPR') for the delivery of the project.
4. To date, Fens has been developed jointly between AWS and CW with both parties acting in a Joint Lead capacity. Development costs have also been funded equally between AWS and CW.
5. We understand that from 1st April 2025 (and confirmed by the funding allowances in Draft Determination for PR24), that the responsibility for developing the project will be reconfigured and AWS will take over as the sole lead developer for Fens.
6. CW will become a non-lead member of the Project, and the intention is to enter into a Development Agreement ('DA') soon after the changeover which will govern the relationship during the Development Phase and will set up a Stakeholder Steering Group where oversight, assurance and DA 'Reserved Matters' can be tabled. Upon operational commencement, the relationship will then be governed by a Bulk Supply Agreement (the 'BSA').
7. Under the BSA, it is likely that charges will be payable by CW to AWS in return for the transfer of water from AWS to CW. Such charges are likely to include a capacity charge (which represents the costs of constructing, operating, maintaining and financing the

reservoir) and a volumetric charge which represents the incremental costs of supplying water to CW.

8. In terms of funding during the Development Phase, CW's funding requirement will be limited to covering the costs of its own direct activities. These activities are likely to comprise those required to fulfil CW obligations as stipulated in the DA as well as undertaking assurance to provide CW Board and wider governance on key matters of interest. The BSA itself will also require development and negotiation on key commercial aspects.
9. To identify the costs associated with CW's revised role, the Project Team have prepared a Cost Estimate covering proposed CW activities for the development phase. In total this equates to £3.3m in current 2023/2024 prices and details of the Cost Estimate as provided by the Project Team are set out in Appendix 1.
10. The Cost Estimate itself does not provide for any specific risk items or contingency, however recognising the potential risk of variations in actual costs incurred (due to matters deemed to be outside of CW control), it is understood that CW will propose to Ofwat a form of re-opener mechanism during the AMP 8 period which will be combined with annual reviews to ensure efficient and effective cost management.
11. This review commenced on 8th August 2024. Our conclusions are set out in this report and in the verbal feedback we have provided.

Section 3: Review Structure and Limitations

12. Our review is desktop only and is limited to a high-level limited line of defence, review carried out for the Project based on the Cost Estimate developed by the Fens Project Team.
13. In terms of assessing the costs available, benchmark data is limited in terms of the costs associated with similar activities to those likely to be undertaken by CW. Our primary reference point being our experience from the Thames Tideway Tunnel ('TTT') project and Portsmouth Waters Havant Thicket Reservoir ('HTR'). Consequently, when considering the quantum and nature of costs as part of this review, our approach has been to utilise the experience of our review team members who undertook key client and adviser roles on the TTT and HTR projects.
14. At the time of preparing the cost estimate, uncertainty still remains over key areas of the project including fundamental aspects such as which party will be responsible for the operation of the reservoir. Key strategies and activity plans (such as commercial and procurement) are also still under development by the Project Team.
15. Similarly, whilst discussions are commencing in relation to preparing the DA, matters pertaining to the governance and working arrangements between AWS and CW are still to be determined. This includes the 'Reserved Matters' which may include activities such

as the approval of key project strategies and plans as well as other significant project milestones (such as construction contracts, appointment of key advisers etc). The nature and content of such 'Reserved Matters' will likely direct those areas and activities CW will need to provide focus and effort on.

16. External support will be required to assist CW in carrying out its activities. This will comprise Financial, Legal and Technical expertise and it is understood these will be drawn from CW Frameworks (existing and proposed). Detailed scopes for the advisers are still to be developed as well as the proposed levels of resource input. Activities required from the advisers will likely cover the provision of assurance, input to key commercial and technical matters (particularly those Reserved Matters under the DA) and the commercial negotiations for the BSA.

17. The successful completion of the BSA will be a key focus for CW activities during the development phase. It is understood AWS (via the Project Team) will be responsible for the legal drafting however CW will need to input into key commercial and technical positions and undertake appropriate assurance to meet CW Board and governance requirements. The nature and content of the BSA is still to be determined and Appendix 3 highlights some of the key areas that will require CW consideration and agreement.

18. The impact of the Fens project on CW Lending Debt Arrangements and Covenants will need to be considered given the scale and complexity of the project. Whilst the precise risk profile and implications of the project are still unknown this will require assessment and may require CW seeking Lender Consents and updated Credit Rating assessments. This will require close co-ordination at an early stage with the Treasury and Finance function within CW.

19. The spend profile for the cost estimate assumed by CW is set out in Appendix 1. It is assumed that the profile aligns with the relatively high-level Strategic Schedule which has been developed by the Project Team. It is understood that within the Project Team, detailed activity plans and schedule are still under development so the spend profile will need to remain under review to reflect any changes in the project schedule.

20. It is recognised by CW, (as is usual at this early stage of the project), that considerable uncertainty exists as to the precise nature and timeline of the activities that are required to be undertaken. As a consequence, it is understood that CW will look to propose a mid AMP re-opener mechanism to Ofwat that will consider costs along with some form of annual review which will determine whether costs are efficient. Under this arrangement this will potentially negate the need for pricing any risk or contingency into the initial Cost Estimate.

Section 4: Overall Conclusion

21. The Fens Project is at an early stage in its development cycle and the Cost Estimate undertaken by the Project Team represents an initial high-level estimate. Within the project itself, detailed plans covering organisational design, project scope as well as key strategies covering aspects such as commercial and procurement are all at an early stage of development. Similarly key elements such as the DA and BSA arrangements are still to be developed so CW's input and activities are not yet fully defined. Consequently, as expected given the maturity of the project, considerable inherent uncertainty exists in relation to any Cost Estimate undertaken at this stage.

22. The application of SIPR itself is also a highly complex process which marries a flexible merger and acquisition process with all relevant legal, regulatory and other Stakeholder requirements. Multiple critical project dependencies exist within the Project (ie achieving a satisfactory and timely DCO) all of which can affect the Project Schedule and have an impact upon costs generally both for the Project and wider Stakeholders.

23. Whilst cognisant of the current level of maturity of the project (and associated uncertainty and complexity), we have however reviewed the nature and Heads of Cost detailed in Appendix 1. We consider that based on our understanding of the proposed role of CW and the likely activities to be undertaken, the Heads of Cost are consistent with what we would generally expect to see.

24. Appendix 2 also sets out our more detailed observations in relation to the quantum of each of the Heads of Cost and in general we conclude that the Cost Estimate provision of £3.3m reflects a reasonable estimate for the budget setting process at this stage.

25. We note however, that given the level of information currently available to CW and the level of uncertainty that is inherent in the early-stage planning processes of the project, that the level of confidence in remaining within the £3.3m budget throughout the full Development Phase is likely to be relatively limited at this stage.

26. It is also noted that the Cost Estimate for the non-lead party includes no general provision for risk or prolongation (which may address the level of uncertainty). Recent experience of mega-projects e.g Lower Thames Crossing (and resulting delay in the DCO and impact upon costs) highlight the difficulty in fixing funding levels and allowances at the early development stage of a project. Consequently, where possible in mitigating risk for CW, some flexibility in funding should be sought and the proposed CW re-opener mechanism (if implemented and agreed with Ofwat) may provide the required comfort in this area.

27. The observations and set out in Appendix 2 should hopefully support the management and planning of the budget throughout the next phase and we would be happy to discuss any of these points further if you think it would be helpful.

Yours sincerely

Mike Pugsley
for **Agilia Infrastructure Partners Limited**

Appendix 1 –FENS AMP8 Activities - Cost Estimate

Cost Element	Total £
1. External Commercial Advisory and Assurance	500,000
2. DA and BSA Negotiation and Support	600,000
3. Existing Lender Consents	500,000
4. Shadow Rating Process	500,000
5. Internal Project Resource Costs	1,200,000
Total	**3,300,000**

Spend profile for the £3.3m - based on current programme

10% Yr1 (FY25/26)
20% Yr2 (FY26/27)
30% Yr3 (FY27/28)
30% Yr4 (FY28/29)
10% Yr5 (FY29/30)

Appendix 2 – High-level Observations and Commentary

Cost Element Commentary	Observation
External Commercial Advisory and Assurance £500,000	
This cost provision comprises coverage of the external commercial advisory inputs required for light touch assurance of key project submissions, strategies and decisions for deliverability, customer impact and CW risk/liabilities assurance. This also includes Reserve Matters prescribed by Development Agreement ('DA') for CW approval. A breakdown of the estimate is as follows: ○ Regulatory submissions assurance £50K ○ Commercial and Procurement strategy £100K ○ Tender documents and contract awards for ITA, PDP, IP and Main Works £100K ○ Planning DCO documentation £50K ○ Technical design review of physical and operational interfaces. £200K	• We understand CW are currently in the process of appointing advisers and have a preferred candidate in place to act as lead adviser (Financial/Commercial) with supplementary advisers to be appointed for Technical. Legal and DCO as required. • The scope for each adviser will need to be established and will partly be dependent upon activities required to fulfil obligations of CW under the DA as well as wider assurance to satisfy CW Board and governance requirements. • The estimates for each of the assurance categories are currently ballpark round sum figures which is understandable at this stage. The intention is a retainer with the lead adviser for ongoing support with fixed or cost plus for specific work packages depending on scope clarity. • The ultimate nature of the adviser fees (ie fixed fee services compared to reimbursable day rates) will have a bearing upon the ultimate cost outcome and it will be important for CW to get the right mix to ensure optimum value. • The approach to undertaking the assurance will need to be determined (ie progressive assurance as against retrospective) as will the CW interface with the AWS project team. This will all need to be tightly defined and managed if costs are to be maintained within the budgeted sums. • The nature and type of assurance looks to cover the key aspects envisaged with the role CW are undertaking. Project delays and

	time overruns or issues leading to protracted discussions will however likely lead to additional cost and advisers will need tight management control from the CW team.
DA and BSA Negotiation and Support £600,000	
The costs cover external legal, commercial and technical advisory to support negotiations with AWS, internal governance and execution. Particular focus will be on the following: ○ Development Agreement. ○ ITA and BSA. ○ OFWAT License amendments. ○ OFWAT Allowed Revenue Directive.	• In terms of adviser's similar matters apply as detailed above in that advisers have not yet been appointed. • It is envisaged for the BSA and DA that the Fens Project Team on behalf of AWS will be responsible for drafting the documents and taking the lead in the process. • It is expected that discussions and negotiations between AWS and CW will be undertaken in a structured, collaborative and professional manner. • Similarly, governance arrangements for both CW and AWS covering the DA and BSA will be clearly articulated, timely and progressive in terms of developing and agreeing key commercial and technical positions. • Whilst maintaining budget is achievable any protracted discussion or negotiation in relation to the key documents will likely lead to cost overrun in the budget. Similarly tight cost control of advisers (and their fee mechanisms) will be required.
Existing Lender Consents £500,000 and Shadow Rating Process £500,000	
The estimates are made to cover (1) Costs associated with seeking consent from CW Lenders as a consequence of the project impacting upon the terms and conditions of CW debt covenants (ie ratios etc); and (2) Costs required to cover any potential Shadow Rating Process assessments undertaken to reflect the potential risk and impact of the project on CW.	• At this early stage of the process, it is unclear as to what the requirements will be to seek consent from CW Lenders and undertake additional Shadow Rating Processes. • CW debt Arrangements and Covenants will therefore require review as the associated risks and commercial arrangements of the Project evolve further in order to determine the impact. • Whilst the costs provided for are round sum provisions, (should they be required), such costs are likely to cover Financial Advisory support and Modelling, Ratings Agency Fees and Lenders Arrangement and Lenders Advisory fees.

	• The Treasury and Finance function within CW should review and identify any consents that may need to be sought from Lenders and the level of costs provided for should be kept under review as further information becomes available.
Internal Project Resource Costs £1,200,000	
These represent the CW internal costs for supporting project. £240K per annum x 5 years 0.5 FTE senior primary, plus 1.5 FTE. £1.2M	• The internal team will lead all CW activities as well as manage and oversee all external adviser inputs. Sufficiently blended skillsets will need to reside within the internal team in order to ensure the full breadth of external advisory support and outputs are managed effectively. • Responsibilities of the internal team will also include the interface with AWS as well as reporting and managing internal governance arrangements and the interface with Ofwat. • The internal team will need to be able to understand the complexities of the project sufficiently in order to be able to articulate the CW position effectively as well as promote CW interests on a collaborative and progressive basis. • It will be important to maintain consistency in relation to CW internal resources to build up and maintain cumulative project knowledge. Given the potential demands of the project. it will also be important to maintain sufficient resilience and capacity within the team to ensure the timeliness of CW input. • It is suggested that the internal resource requirements be kept under review as the DA and plan for preparing the BSA are developed. This will ensure that any potential shortfall in internal resource is identified expediently. • Consideration should also be given as to what level of resource will be required to support CW transition through the next phase of the project through to operational commencement. Confirmation should then be sought that if any further support is required during the development phase that this can be accommodated within the 1.5FTE.

Appendix 3 - BSA Considerations

CW will need to **understand and manage the risk** to their business.

Matters that CW will likely need to engage with as a minimum with regards to the BSA with CW:

- Governance
  - How will CW ensure that their interests are accounted for if they are not part of the development team?
  - Significant technical and commercial input into governance process required

- Commercial/Regulatory
  - How will IP LD's & incentives be aligned to the BSA obligations of AWS to CW?
  - What are the regulatory risks CW are exposed to if the AWS fails to supply?
  - CW will need to engage with the RAPID commercial guidance - this includes:
    - role of the IP
    - role of AWS (commercially and technically)
    - incentives & penalties for AWS, including LD's and Economic Profit
    - BSA HoT
    - Fair Shares (what happens when there isn't enough water)
  - How will charges be allocated between AWS and CW?
  - (Not strictly BSA) Are CW exposed to any penalties as part of the RAPID process?
  - Mixture of SIPR process and BSA: CW exposure to Termination and overrun beyond Threshold Outturn (if there is exposure, how are CW going to have sufficient oversight/governance to manage the risk?)

- Technical
  - Level of service (quantity, quality under drought scenario)
  - Point of supply
  - Relief events
  - Operational governance (how will CW request water, coordinate planned maintenance etc)
  - What's the level of resilience required? (is the level of resilience needed by AWS and CW the same, or do they differ?)

Appendix 4 – Agilia Review Team

Mike Pugsley is the Co-founder and Joint CEO of Agilia. He led the procurement process for the Infrastructure Provider (IP) whilst at TTT and has a comprehensive understanding of the full process and project related activities associated with a SIPR/RAB based project. Mike has vast experience of setting up teams for privately financed projects, having supported hundreds of PFI/PPP projects. Mike will lead on our review for this assignment.

Amar Qureshi is the Co-founder and Joint CEO of Agilia. He led the development of the SIPR commercial model whilst he was Commercial Director at Thames Tideway Tunnel (TTT). He also led the development of commercial and regulatory model for the Havant Thicket Reservoir and leads Agilia's engagement on Sizewell C.

Helen Orton is a Project Director at Agilia. Helen is a former Finance Director at Portsmouth Water and has extensive regulatory experience across the sector, which includes acting as a Director at PWC. Helen is currently leading on the Agilia activities into Thames Water SESRO project.

5. Water efficiency

This section of the appendix should be viewed alongside **section 5.1.3** within our main Draft Determination response document, **'SSC-DD-01 - Representations on Ofwat's draft determination of our business plan for 2025 to 2030.'**

5.1 Water efficiency activities and costings

Our Cambridge and South Staffs WRMPs include the same water efficiency activities across household and non-household properties. These are:

- household water efficiency audits;
- housing association audits; and
- non-household water efficiency audits.

Below, we set out our approach to each of these in turn.

5.1.1 Household water efficiency audits

Home water efficiency visits can result in useful reductions in water use by providing water saving kits and plumber installed retrofits, and by encouraging behaviour change. Evidence from Thames Water's AMP7 activity and Waterwise/Ricardo[2] suggests that around 5% of households have a 'leaky loo' and that the average water loss from this is about 200 litres a day. For this option, we have assumed a reduction of 31.4 litres per property per day through a visit and by providing water saving devices. This option will be less efficient than targeting using a smart network as it will be applied to all households, not just those with high water use.

As part of the 'Yes we Cam' water efficiency behavioural change campaign that we are currently running in our Cambridge region, we are using a plumbing company from our contracting supply chain to carry out free leaky loo repairs for our customers. Their work is geographically planned to maximise efficiency, and they carry a range of common parts to reduce the need for revisits as far as possible. Through this activity, we have identified that, on average, a single person can deliver four jobs a day. We have used this for our calculations even though our South Staffs region is much larger, which means it will be more difficult to deliver the same level of geographical efficiency. We discuss our approach to enhancing this in section 5.1.2, and we are confident in our ability to deliver four jobs a day.

We have also looked at the most cost-effective way of delivering these water efficiency audits. We now have costs from our contracting supply chain, which are based on competitively tendered and negotiated framework agreements. We have compared these costs to direct employment of resources, and found direct employment to be more cost efficient. It also enables us to flex resource easier across all the water efficiency activities we will be carrying out, and across our two regions where required to cover holidays and sickness.

Below, we outline the yearly costs for a qualified and competent person to take on this role as a direct employee.

Consideration	Cost
Employment costs (including salary, pension, etc)	£55,000
Cost of vehicle	£10,000
Parts for repair, water efficiency devices	£15,000
Total	**£80,000**

[2] Leaky Loos Phase II (waterwise.org.uk).

For comparison, the current contractor costs for delivering this activity have outturned at an average of £9,700 a month, giving an annual total of £116,400. So, we are proposing to recruit our own employees to deliver this work.

Our WRMPs outline the savings achievable. Based on the saving per visit and the number of visits each individual can complete in a day, we can determine the number of employees we need to deliver our commitment, as shown in the table below.

	Benefit delivered (Ml/d)	No. of visits required	Visits per year	Visits per day[1]	Jobs per day	No. of people required	Total cost across AMP8 (£k)[2]
SST	0.75	23,885	4,777	19	4	4.7	1,866
CAM	0.77	24,522	4,904	19	4	4.8	1,916

Notes:

1. Based on 256 working days a year.
2. Based on £80,000 per employee.

5.1.2 Housing association audits

Based on figures from the Office of National Statistics (ONS), social housing makes up around 17% of properties in England. We estimated that approximately a quarter of these would be refurbished in any five-year planning period, and that, of these, around half would be suitable for water efficiency retrofits.

We think this option could yield a saving of 30 litres per property per day, based on analysis carried out for our 2019 WRMPs. This is lower than the household option described above because housing association properties are managed, and so are more likely to identify and resolve issues such as leaky loos. This is also validated by findings from Northumbrian Water during its AMP7 leaky loo activity.

As we outlined for the household water efficiency visits, we have calculated the number of directly employed individuals we will need to deliver the WRMP commitment, and the cost of this. This is shown in the table below.

	Benefit delivered (Ml/d)	No. of visits required	Visits per year	Visits per day[1]	Jobs per day	No. of people required	Total cost across AMP8 (£k)[2]
SST	0.71	23,667	4,733	18	4	4.6	1,849
CAM	0.18	6,000	1,200	5	4	1.2	469

Notes:

1. Based on 256 working days a year.
2. Based on £80,000 per employee.

However, it is more efficient to look at both activities together as they are very similar in nature and would require the same employee competencies. So, we would combine these work streams, enabling better geographical planning, as well as better support for sick leave and holidays. This means we would not need to seek external support to backfill this, which would reduce the cost. We demonstrate this in the table below.

	Benefit delivered (Ml/d)	No. of visits required	Visits per year	Visits per day[1]	Jobs per day	No. of people required	Total cost across AMP8 (£k)[2]
SST	1.46	47,552	9,510	37	4	9.3	3,715
CAM	0.95	30,522	6,104	24	4	6.0	2,385
Total	**2.41**	**78,074**	**15,614**	**61**		**15.3**	**6,100**

Notes:

1. Based on 256 working days a year.
2. Based on £80,000 per employee.

This leads to a total cost of £6.1 million to deliver the two household-related water efficiency activities. This equates to a unit cost of £2.53 million/Ml.

5.1.3 Non-household water efficiency audits

In our business plan submission, we included non-household water efficiency audits and costs based on data from Thames Water. The company has carried out a substantial programme during the current five-year planning period to fit non-household enhanced meter technology and deliver water efficiency visits to non-household customers as a way of identifying potential water savings and leakage. Thames has seen significant success with this approach, finding average savings of 3,000 litres per property per day for 3,000 visits a year, with an average cost of £250,000 per Ml/d saving.

We reviewed this and adapted it for our modelling. We have far fewer non-household customers, and fewer larger users across our operating areas. So, we consider it is more appropriate to assume a reduced saving of 500 litres per property per day. This is because our average non-household consumption is 3,100 litres per property per day.

While there will obviously be some very large users where the savings potential is much greater, we are keen to ensure we look at all non-household customers with specifically tailored programmes based on their size. We also think our costs will be higher as we start this new activity and develop the programme, in addition to the lower benefits we are expecting.

We have validated this using the same approach as the household water audits in section 5.1.2 above. We outline this below, based on a 500 litre per property saving for each non-household customer audited.

	Benefit delivered (Ml/d)	No. of visits required	Visits per year	No. of people required	Total cost across AMP8 (£k)[1]
SST	0.75	1,500	300	1	400
CAM	0.4	800	160	1	400

Note:

1. Based on £80,000 per employee.

This shows our costs are robust and efficient. The cost for this activity is below Ofwat's median. It is cheaper than household water audits because of the scale of water usage at each non-household property; our calculations show that 16 household water audits would need to be carried out to save the same volume of water as one non-household audit.

As with the two household water efficiency activities, we will incorporate all employees into the same team, and they will carry out all three types of water efficiency activities. This will further support better geographic scheduling of work and f sickness and holiday cover to ensure we deliver four jobs a day.

So, we are proposing a cost of £800,000 to carry out this activity, which translates to a unit cost of £0.92 million/Ml.

6. Cyber enhancement – new investment [redacted]

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[redacted]

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