

Large Scheme Gated Submission 1 Isle of Sheppey Resilience

1 October 2025

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Glossary

Acronym	Full Term
AMP	Asset Management Period
BPT	Break Pressure Tank
CFO	Chief Financial Officer
CIT	Cost Intelligence Team
EA	Environment Agency
ID	Identification (as in document/annex ID)
IoS	Isle of Sheppey Resilience Scheme
ISAE (UK) 3000	International Standard on Assurance Engagements
KME WRZ	Kent Medway East Water Resource Zone
MD	Managing Director
MEICA	Mechanical, Electrical, Instrumentation, Control & Automation
ML/d	Megalitres per day
PR24	Price Review 2024
RV3	Risk & Value 3
SWS	Southern Water Services
WINEP	Water Industry National Environment Programme
WSR	Water Storage Reservoir
WSW	Water Supply Works

1. Executive Summary

The Isle of Sheppey resilience scheme (IoS) sits within the Kent Medway East Water Resource Zone (KME WRZ) and faces heightened vulnerability due to aging and fragile infrastructure. Water supply to the area relies on critical water mains crossing The Swale (a water course). A major failure of the crossing in 2022, followed by a second rupture during repairs, disrupted service for up to 24,000 residents, exposing serious weaknesses in the system.

To mitigate this, Southern Water (SWS) invested £7.5 million Botex funds during Asset Management Period (AMP) 7 to build a new twin-pipe crossing, reducing the risk of future failures at this key point. However, other single points of failure remain, prompting further action.

Category	Isle of Sheppey Resilience Scheme details
WRZ	Medway East Water Resource Zone (KME WRZ)
Population Impacted	58,846 (24,519 properties)
Primary Assets	Southdown Halfway Houses Water Service Reservoir (WSR), Kingsborough Minster WSR
Scope	Network enhancements to improve the resilience of water supplies to and around the Isle of Sheppey
Excluded Scope	Chlorine contact time upgrades, reservoir safety enhancements, WINEP improvements (Eel regs, INNS transfers)
Delivery Partners	TBD Group (raw water), GMES & Kier (treatment sites)
Estimated Development costs	
Regulatory Drivers	None
Programme Timeline	2025–2030

Table 1 - Isle of Sheppey Resilience Scheme Summary

The following resilience risks have been identified:

- Poor connectivity on the IoS.
- Poor connectivity to/from the Swale crossing.
- Poor resilience in the areas of the KME WRZ which feed IoS.

At the time of the Price Review 24 (PR24) Final Determination submission, the resilience schemes (including IoS) were not sufficiently mature to allow cost benchmarking, benefits analysis and best value appraisals to be carried out. As a result, and with the level of uncertainty associated with the schemes, Ofwat determined that they should be delivered through the 'Large Scheme Gated' process to provide additional oversight for efficient scheme delivery, and to provide value for customers and the environment.

SWS are currently testing the PR24 proposed solutions against further options/components, in order to improve the resilience of water supplies on the Isle of Sheppey. Given the early stages of maturity of this scheme, there remains a high level of uncertainty in scope, cost, benefits and programme estimates. SWS are working to develop this scheme to provide higher levels of confidence in Submission 2 and to allow selection of the preferred solution. In addition, the understanding of risks and issues will mature between October '25 and May '26 that will further drive the confidence in estimates. The details of preliminary findings and recommendations are outlined in this report. SWS seek approval and endorsement from Ofwat to continue the development phase for Isle of Sheppey resilience scheme.

The components SWS will be assessing in advance of Submission 2 are as follows:

- Provision of standby pump at Wallend booster pumping station on the Isle of Sheppey
- Replace 2.2km of mains on the Isle of Sheppey
- Replace 0.85km of mains through Iwade which feed the Isle of Sheppey
- New pumping station to allow water from a separate supply zone to be transferred to the Isle of Sheppey
- Increase the output of Keycol Water Supply Works (WSW) to provide additional water which can be transferred to the Isle of Sheppey

The key delivery risks and mitigations associated with the scope components are as follows:

Risk	Description	Mitigation
Benefits	Insufficient evidence of long-term benefit of components.	Benefit-cost framework and resilience metrics being developed to support the case for investment.
Cost Estimation	Low confidence in cost estimates - all cost estimates are currently indicative due to low design maturity.	Component refinement and scope definition will progress to Submission 2 allowing more accurate cost estimating
Scope Expansion	Increased capacity of Keycol may require alternative nitrate driver solution and additional treatment processes than previously.	Collaboration with nitrate team to reassess options with greater output. Raw water sampling to confirm water quality challenge.

Table 2 - Risk and Mitigations

2. Background and Objectives

The Isle of Sheppey (IoS) sits within the Kent Medway East Water Resource Zone (KME WRZ). Based on the resilience assessment framework, the KME WRZ sits in the middle of the resilience ranking for water supply zones (see Figure 1 for further details). Within the KME WRZ, the IoS is in a particularly vulnerable position due to its location at the end of the supply network, with no other supply sources on the Isle. This is exacerbated by the condition of the pipelines supplying the island.



Water Resource Zone - Overview				
Water Resource Zone	Resilience Score		Total Zone Score	Properties Served
Brighton	0.85		30566	205621.00
Sussex Worthing	0.77		22299	97791.00
IOW	0.74		22810	88328.00
Hampshire Winchester	0.58		16241	38470.00
Thanet	0.57		45977	107247.00
Kingsclere	0.56		3150	7221.00
Medway East	0.53		72564	153695.00
Medway West	0.45		44287	80703.00
Sussex North	0.44		73255	130151.00
Hampshire South West	0.43		43980	77633.00
Andover	0.36		23590	36738.00
Hampshire South East	0.28		140858	196660.00
Hampshire South Rural	0.24		11844	15579.00
Hastings	0.11		52686	59336.00

Figure 1 : Supply Resilience at Water Resource Zone Level

The Isle of Sheppey was previously supplied by two mains which cross The Swale, the waterbody between the mainland and the isle, at the Kingsferry crossing. A simplified schematic is shown below in Figure 2. The IoS was connected to the mainland by an 18" steel main mounted under the bridge deck of the Kingsferry road bridge and a 600 mm diameter main which crossed under The Swale. It was a failure

of the 600 mm main immediately downstream of the crossing which triggered the 2022 supply interruption incident. This was compounded by a second failure when the main was repressurised after the initial repair.

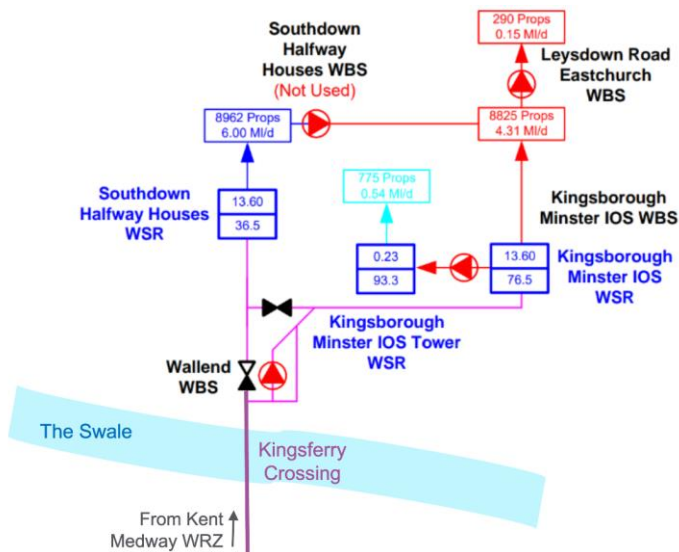


Figure 2 : Simplified schematic of the Isle of Sheppey

The incident which affected up to 24,000 customers highlighted the vulnerability of the water supply system due to the age, condition and inaccessibility of the existing river crossings.

Southern Water invested over £7.5m, from the AMP7 base funding allowance, to construct a new twin pipe crossing of the Swale to mitigate the risk of a failure on the existing crossings; which would be extremely challenging to repair.

This intervention, not included in the scope of this project, has addressed the most obvious and immediate risk, however there are further potential single points of failure in the IoS's water supply network which leave customers exposed to the risk of further supply failures. Further resilience interventions were carried out during AMP7, details can be seen in Annex H. The objective of this resilience enhancement project is to identify and remove the remaining significant points of failure in the area, protecting customers supply for the longer term.

Based on a combination of known risks held in the Asset Risk Management (ARM) system and SME knowledge, SWS have identified several assets for AMP8 investment, which would address significant elements of the residual risks in the Isle of Sheppey supply system. The areas where SWS need to intervene to improve the resilience of water supplies on the IoS are as follows:

- Network Upgrades on the IoS
- Network Upgrades feeding IoS
- Upgrades further upstream in Medway East Water Resource Zone (WRZ)

The benefits of each intervention will be determined using two measures:

- Water Quality Risk Reduction, and
- Resilience Improvement.

Resilience improvement will be assessed using the Resilience Assessment Framework. A copy of the Resilience Methodology was shared at the August LSG Quarterly Review with Ofwat and other key stakeholders.

The Resilience Methodology frames resilience within a risk and controls environment and is implemented in four key stages. This embeds the risk calculations to create a one-to-one relationship between the four risk elements and the corresponding resilience control factors. It enables a better understanding of risk drivers, such as scale of impact, duration, likelihood or vulnerability, and target appropriate resilience response, i.e. redundancy, response & recovery, resistance or reliability (see Figure 3 below) for further details).

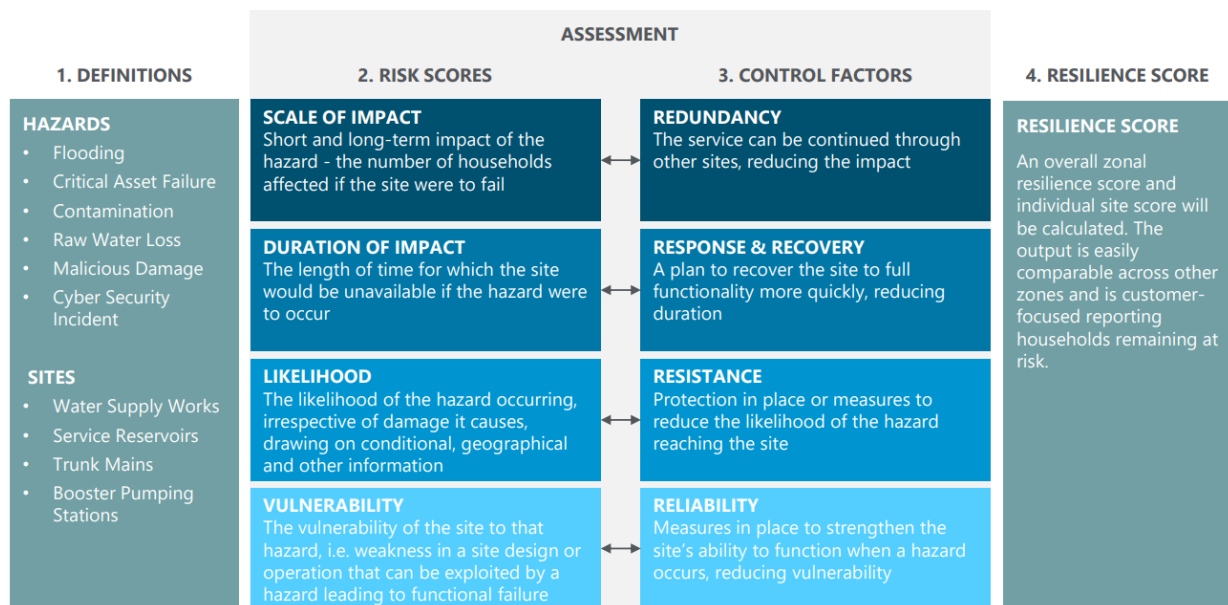


Figure 3 - Outline of the Southern Water Resilience Framework

The PR24 Draft Determination Response (DDR) submission included interventions to improve the resilience of water supplies on the Isle of Sheppey. Since the Final Determination (FD) submission SWS have continued to work on these interventions and on alternative interventions to improve the resilience of Isle of Sheppey water supplies. There are no additional legal instruments for IoS.

3. Optioneering and Solution Design

3.1 Long List to Short Listed Option (R&V3 Stage 1)

A long list of options was completed as part of the PR24 submission process which initially consisted of 9 possible components to make up the wider resilience option for IoS.

An R&V3 Stage 1 workshop has been carried out to review the proposed list and to propose any further potential components. Each component was reviewed within the workshop against the risk, resilience improvement, its predicted cost (TOTEX) and carbon impact. The components were also reviewed on a high-level hydraulic system view basis, to judge the impact they would have on the network / system.

This allowed SWS to condense the components down into a manageable list and understand how they compared to one another from a cost perspective. Outlying components or those that did not meet the need were rejected at this stage.

The shortlist was then input into the 'R&V Options Scorecard' and the project team completed an initial scoring exercise and option shortlist identification. This draft scorecard was then shared with the integrated team at a further workshop where the scores were reviewed and amended and the final option shortlist agreed. The scoring matrix is attached in Annex F2.

Subsequently, in late 2024 further investigation was completed that identified further potential components. The PR24 assessment, and the subsequent components identified, are outlined in Table 3, and are shown geographically in Figure 4.

All components were subject to cost-benefit analysis, analysis (as outlined below in sections 3.2, 3.2 and section 4), with only those demonstrating sufficient resilience improvement and/or risk reduction selected for further investigation, scoping, and assessment. The scoring and cost-benefit analysis will be revisited as more data becomes available.

Following review, it was concluded that the shortlisted components are not mutually exclusive alternatives. Instead, they should be considered as complementary components of a single, integrated proposal. Accordingly, Components 1 to 5 in Table 3 are to be treated as a unified option comprising five distinct but interrelated components, each contributing to overall system resilience.

Ref.	Proposed solution - Description (components of an integrated solution)	Scheme in original PR24 Proposal?	Proposed solution (2025) Included / Rejected	Rationale
1	Wallend WBS standby pump	No	Included	Very easy, cost effective solution - provides standby pump.
2	Replace 2,200m of 600mm DI between the Swale and Wallend	Yes	Included	High leakage rate, and due to the current location, if this main is out of service, repairs will be neither easy nor quick. The time required for the dual main to take on its load increases — resulting in a significantly higher risk.
3	850m of new 450mm DI trunk main to replace existing 18" running through Iwade	Yes	Included	This would address a single point of failure in delivering water to the island, which currently lacks reinforcements or alternative supply options.
4	Distribution booster for rezone resilience from Cromers Wood FMZ into the MX16 trunk main	No	Included	A suitable solution to introduce an alternative supply from a separate supply zone.
5	Keycol WSW recommissioning & upgrade to increase output to 6 Ml/d system input (+4.2 Ml/d)	No	Included	An existing Southern Water Services site and a valid abstraction license are already in place.
6	Replace 300m 18" CI main North of Iwade	Yes	Rejected	An existing dual main is already in place; therefore, this option is considered unnecessary.
7	Replace 1,200m 600mm DI between Iwade and The Swale	Yes	Rejected	
8	Additional WSR at Southdown	Yes	Rejected	Due to high cost and the nature of daily operations, reservoir turnover could lead to potential water quality issues; therefore, this option is considered unacceptable.
9	New WSR at Wallend (redundant WSW)	Yes	Rejected	
10	Bring Wallend WSW back online	Yes	Rejected	This option presents cost and complexity challenges due to known saline conditions in the groundwater.
11	New main round Iwade village	Yes	Potential inclusion as alternative to option / component 1	This option is more costly and complex when compared to Option 1 (Component 1).
12	Deans Hill to Iwade mains replacement	Yes	Rejected	This option would result in excessive mains capacity relative to demand and flow rate, potentially leading to water quality issues.

Table 3 - Components Reviewed in PR24 and through Submission 1

Note, the original PR24 baseline contained items 2,3,6,7,8 represented as follows:

New service reservoir (8)	New 4.75MI WSR with bypass at Southdown site (8)
New connection in Medway	New connection from "30" Eastling to Wigmore main" to "Cromers WSR"
Replace pipework on IoS side of Swale crossing (2)	2200m of dia600 Ferrybridge to Wallend (2)
Replace pipework on Medway side of Swale crossing (7)	1200m of dia600 Iwade to Ferrybridge pt2 (7)
	300m of dia600 Iwade to Ferrybridge pt1 (6)
	850m of dia600 Through Iwade (3)

Table 4 PR24 Baseline

Component 1: Wallend WBS additional booster

This proposal involves the provision of a standby pump at the existing Wallend Water Booster Station (WBS). The site currently only has one pump providing flow up to Kingsborough Water Service Reservoir

(WSR). If this pump fails in high demand periods, SWS are unable to keep Kingsborough WSR full. This is a new component added to the list since the PR24 review. This site is on the Isle of Sheppey.

With reference to the Southern Water Resilience Framework in Figure 3, this component is a redundancy control factor, in that service can be continued through operation of the new standby pump, reducing impact of loss of the duty pump.

Component 2: Replacement of 2,200m of 600mm DI between The Swale and Wallend

The existing 2.2km of 600mm main that runs through the marsh land on the Isle of Sheppey is known to be in poor condition. This proposal involves replacing this main whilst keeping it in service. This removes the need to rely on the other 600mm main for long periods of time to repair the proposed section when there are leaks. This component was in the original PR24 list and has been chosen to progress for further development. This site is on the Isle of Sheppey.

With reference to the Southern Water Resilience Framework in Figure 3, this component is a resistance, reliability and redundancy control factor, in that;

- The replaced main will be of a material appropriate for the aggressive marshland environment, thus offering greater protection to reduce the likelihood of future corrosion and bursts;
- The replaced main will be of as-new condition and thus strengthen the main's ability to function and reduce vulnerability to the failure of this critical asset;
- Reliable service can be continued via this replaced main, reducing impact of loss of the other 600mm main.

Component 3: Replacement of 850m of 18" CI main through Iwade

A known pinch point, this single run of 18" is prone to bursts and leaks, with multiple instances having occurred along this section due to its age. This creates not only an issue for customers within Iwade itself, but as it is a single feed towards the Island, it results in a loss of supply to the island. By replacing this main, SWS will have greater confidence in operation. This enhancement was in the original PR24 list and has been chosen to progress for further development. This site is on the mainland feeding the Isle of Sheppey.

The historical Botex allowance has not covered trunk main replacements and the allocated unit rate for mains replacement does not cover the cost of this work.

With reference to the Southern Water Resilience Framework in Figure 3, this component is a reliability control factor, in that the replaced main will be of as-new condition and thus strengthen the main's ability to function and reduce vulnerability to the failure of this critical asset.

Component 4: New WBS at Grovehurst Rd – Cromers Wood Sheppey transfer

This proposal involves the construction of a new booster station at an existing cross connection with the Cromers Wood supply zone. This would allow Southern Water (SW) to pump water from Cromers Wood towards the Isle of Sheppey if the upstream 18" main or Deans Hill Break Pressure Tank (BPT) were out of service. This is a new enhancement component added since the PR24 review. This site is on the mainland feeding the Isle of Sheppey.

With reference to the Southern Water Resilience Framework in Figure 3, this component is a redundancy control factor, in that service can be continued through operation of the new WBS, reducing impact of loss of the 18" main or Deans Hill BPT.

Component 5: Keycol WSW (increase output)

Keycol Water Supply Works (WSW) is a 1.8Ml/d supply works that is currently out of service. Southern Water are licensed to abstract up to 6Ml/d from this site, but the site has never been capable of abstracting this amount of water. Enhancing the site to abstract and treat the full 6Ml/d license would provide supply

resilience to the Island against issues at Deans Hill BPT or supply issues further up the network. This is a new enhancement component added since the PR24 review. This site is on the mainland feeding the Isle of Sheppey.

Keycol requires new infrastructure such as new boreholes, borehole pumps, disinfection and chlorine contact, to bring it back into service at the higher 6Ml/d resilience output. As the Keycol site has been out of service for an extended period, additional treatment processes may be required than when previously operational – e.g. filtration for turbidity and ion exchange for nitrate removal. Inability to treat high turbidity was the reason for the site being taken out of service. There is a separately funded nitrate-driver scheme being delivered at Keycol in AMP8, with the currently planned solution being blending. The blending may need to be changed to treatment if the site output is to be increased to 6Ml/d. Water quality sampling is required to confirm current water quality challenges and treatment process requirements.

With reference to the Southern Water Resilience Framework in Figure 3, this component is a redundancy control factor, in that service can be continued through operation of the greater capacity WSW, reducing impact of loss of Deans Hill BPT or supply from sites further up the network.

All the above components are currently high-level solutions that require further engineering, environmental investigations and early design decisions for feasibility, along with more detailed cost estimates and the outline design for the chosen solution prior to Submission 2. This work is currently ongoing and will be reported in Submission 2 where SWS will have greater confidence of each solutions design requirements, potential risks, and cost estimates.

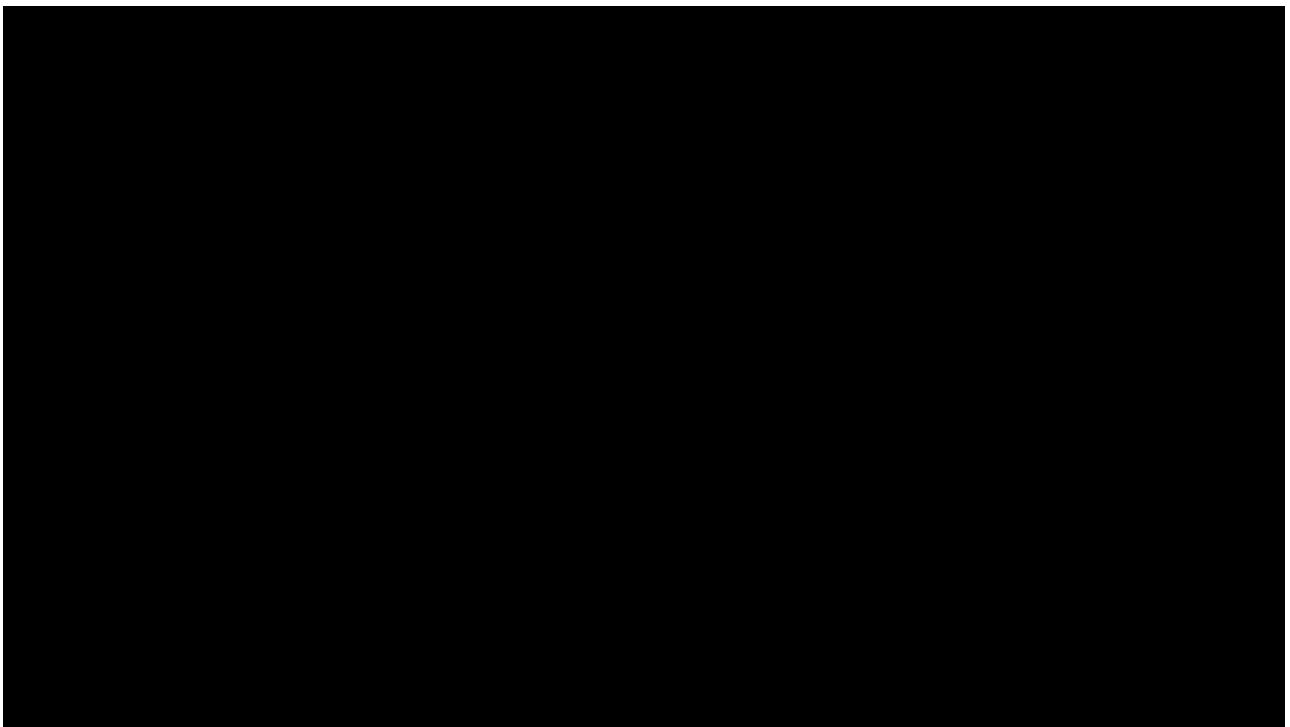


Figure 4 - Approximate Geographic Locations of 5 components

3.2 Risk Scoring for Preferred Solution

Risk is the measure of impact of an event occurring relating to all the relevant consequences. This is monetised through the Service Measure and Valuation Framework in the ARM system to measure customer, social and corporate value of consequence.

Table 5 below, shows the preferred resilience solution, composed by five components scored based on the above statement, showing the reduced cost risk of each option. This is a preliminary assessment completed to help inform the suitability of progressing each of the components.

3.3 Resilience Scoring for Preferred Option

Resilience is the measure of a water supply system's response to different hazards (risk factors) through the control factors, using the resilience 4Rs approach. The scores presented are derived from scenario modelling, in line with the Resilience Assessment Procedure and are measured out of a score of 1. The lower the score, the larger the impact a hazard will have on the system.

Table 5 below shows the baseline risk and resilience, as well as the improved resilience scoring and the variation in risk for each of the preferred solution (consisting of five components):

Component No.	Description	Baseline data			Post implementation of solution(s)					
		Risk (£K)	Resilience score		Impact on risk (£K)		Resilience score			
			Isle of Sheppey (IoS)	Medway East	Risk	Risk Reduction	Isle of Sheppey (IoS)		Medway East	
							New score	Variation (%)	New score	Variation (%)
1	Wallend WBS standby pump	40,482	0.50	0.42	38,188	2,294	0.53	7.28%	0.43	0.98%
2	Replace 2200m of 600mm DI between the Swale and Wallend				40,482	0	0.50	1.43%	0.42	0.29%
3	850m of new 450mm DI trunk main to replace existing 18" running through Iwade				19,990	20,492	0.52	4.79%	0.43	0.98%
4	Distribution booster for rezone resilience from Cromers Wood FMZ into the MX16 trunk main				26,411	14,071	0.57	15.63%	0.44	3.19%
5	Keycol WSW recommissioning & upgrade to increase output to 6 Ml/d system input (+4.2 Ml/d)				9,112	31,370	0.57	14.33%	0.45	4.40%

Table 5 – Preliminary resilience score for each component

It should be noted that at this stage of development, the proposed 2.2km mains replacement does not yield any financial risk reduction. This risk reduction is linked to direct customer impact of customer supply and due to there being other network connectivity components that will keep customers in supply, the risk reduction score does not improve. Though this is the case for risk, the resilience improvement shows that this scheme improves the overall resilience to the customers.

In addition, if all the components are implemented in parallel – as a group and not siloed – the resilience scores would change as follows:

New resilience score		Level of change / improvement (%)	
Isle of Sheppey	Medway East	Isle of Sheppey	Medway East
0.751	0.478	51.45%	13.42%

Table 6 Resilience score

Note: The resilience assessment evaluates six hazards (i.e., Critical asset failure, Flooding, Contamination, Cybersecurity incident, Malicious damage, and Raw water loss. The resilience score for each site is determined by the highest hazard impact.

This list represents the current view of available components that will be further refined, detailed and assessed in line with the processes to present a robust solution, design and cost estimate at Submission 2 whereby some of these components may no longer be viable as SWS work through the detail.

4. Solution Costs and Benefits

As part of the ongoing development of the IoS, the Cost Intelligence Team (CIT)'s Estimating Team has produced cost estimate to support the proposed scheme. The cost estimate is based on scope information and data derived from the PR19/PR24 submissions, alongside updated design and technical inputs provided by SWS' Design Team (including ETS).

The scope information was provided by SWS Design Team, initially and an updated scope was subsequently resubmitted reflecting the refinements and clarifications to the original scope submission. The cost build-up is in-line with SWS' PR24 Methodology entitled "SRN15 Cost and Option Methodology".

CIT has undertaken reviews on the scope items to ensure that relevant yardstick and sizing information is available and correctly presented. CIT reviewed that scope items matched the associated curves and models. Queries were sent out to ensure that the areas of mismatch and/or gaps were addressed from SWS Design Team.

Relevant scope and design information has been provided by SWS Design Team. There have been no detailed drawings on scope or design information. CIT is not responsible for the scope and associated yardstick or sizing information, as well as any gaps in scope or design information. CIT has not undertaken a scope validation exercise, but a high level review of the scope and raised queries to address any anomalies and/or gaps. As part of the cost estimation work, there has been no take offs from drawings by CIT.

The cost models and generated costs were validated and a sense check was applied to the outputs to address any further anomalies. Any further gaps were raised and doubled checked, as well as addressed with SWS Design Team.

4.1 Solution Cost Estimates

Item					Cost
Blended	Total	Project	Estimated	Cost	
(Inc Corp OH for Price Review (PR) Only)					
Corporate OH (11.7% of blended total)					
Blended	Total	Project	Estimated	Cost	
(Exc Corp OH)					
Total Indirect Costs					
Contractor & Client Indirect Costs					
Sites Specifics and TtOR					
Net Direct Works Costs					

Table 7 Summary Cost Breakdown

4.2 Costing Methodology

Net Direct Works

The base cost of the project includes all direct construction and delivery activities, such as:

- Civil, mechanical, and electrical works
- Installation of pipelines, treatment facilities, or infrastructure
- Materials, labour, and subcontractor costs

- Site preparation and enabling works

These components collectively form the Total Net Direct Works, which represents the base cost of the project, i.e., Cost Models and Bottom-Up Estimates and Quotations (inflated to 2022/23) undertaken by SWS CIT

Contractor and Client Indirect Costs

Indirect Costs are applied to the Net Direct Works to account for:

- Site management and supervision
- Temporary works and facilities
- Design and engineering support
- Project controls and administration

These have been applied as a percentage uplift of 76.50% to the Net Direct Works.

Blended Project Total

This is the sum of Net Direct Works and Indirect Costs, representing the full cost of delivering the physical scope of the project.

Risk Allowance

A contingency or risk allowance is added to cover estimating and scope uncertainty. This has been calculated as 20.0% of the Blended Project Total, as per SWS' PR24 Methodology (as detailed above).

Total (Excluding Corporate Overheads)

This subtotal includes all costs required to deliver the project, excluding corporate-level costs.

- Net Direct Works
- Contractor & Client Indirect Costs
- Risk Allowance

Corporate Overheads

Corporate overheads are applied to cover:

- Head office support
- Governance and assurance
- Legal, finance, and HR functions
- Strategic management

Total Project Cost

The Total Project Cost includes all components:

- Net Direct Works
- Contractor & Client Indirect Costs
- Risk Allowance
- Corporate Overheads

This figure represents the full financial commitment required to deliver the project.

This estimate has been classified as being at Class 5. The percentage level of current cost confidence is based upon the current scope / design maturity which underpins the estimate.

4.3 Benchmarking Methodology

No costs have been derived which would require revised benchmarking to have occurred. As part of the scheme development to gated Submission 2, SWS plan to conduct cost benchmarking in line with the

Cost Estimating Approach based on the components and preferred solution that will be developed for Submission 2.

4.4 Change Log - Post PR24 FD

The alternative components for IoS Resilience are not sufficiently mature to be adopted as a formal change at this stage, therefore there have been no material changes to the scope, benefits, site location, route, programme or costs on this project since the PR24 Final Determination in December 2024 (based on Ofwat's PR24 criteria of change). As a result, no change log is included in this submission.

The alternative components will continue to be developed and appraised and will be included, if appropriate, in the Change Log at Submission 2.

4.5 Best Value Appraisal

At this early stage of development, a best value appraisal has not yet been undertaken. The cost estimates for the five new components of the IoS are high-level and subject to refinement. The table below (Table 8) presents indicative cost ranges (Class 5 AACE guidelines) for each component and stage of delivery, reflecting current uncertainties and the strategic nature of the components under consideration:

Option No.	Components of each option	Description	High level cost range (unassured) £m
1	0	PR24 Option	15
2	1	New standby pump at Wallend Water Booster Station	1-2
	2	2.2km main replacement between Swale and Wallend	5-15
	3	850m main replacement at Iwade	2-4
	4	New WBS at Grovehurst Road	1-2
	5	Keycol WSW brought back into service	10-15

Table 8 – Indicative cost ranges for each option and its components

It is important to highlight that currently Option 2 carries the highest cost. This option involves the construction of approximately 2.2 km of new pipeline within a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC). As such, it is expected to require additional environmental assessments, mitigation measures, and regulatory engagement, particularly with Natural England and the Environment Agency (EA), to ensure compliance with statutory obligations and best practice in environmental protection.

The overall IoS is currently estimated to cost between [REDACTED] (high uncertainty and unassured estimate).

The cost ranges presented have been developed using benchmark data from comparable projects, including unit rates (e.g., cost per metre of pipe) applied to the proposed solution lengths. These estimates also reflect typical cost breakdowns for major infrastructure schemes, incorporating allowances for risk, contingency, project management, and regulatory compliance. However, they do not yet account for site-specific constraints, detailed design requirements, or location-based delivery risks, which will be addressed in subsequent stages.

These estimates are intended to support strategic decision-making and option comparison at this stage. SWS aim to provide a more detailed and assured cost estimate based on design at Submission 2, following further design development, stakeholder engagement, and site-specific investigations.

At the time of the PR24 Final Determination submission, the resilience schemes were not sufficiently developed to allow the best value appraisal to be carried out.

The best value appraisal has not been undertaken at this stage and is planned for the early stages of the Submission 2 programme. The costs and benefits for the current list of components are not yet mature enough to allow the final best value appraisal to be carried out. This activity will be undertaken once the planned work has been completed to resolve identified uncertainties and issues for the current feasible option. The final best value appraisal will then be applied to the remaining feasible components (and preferred solution).

The approach to best value appraisal will be informed by:

- Southern Water's corporate value framework for Cost Benefit Appraisal¹ and Risk and Value process. This includes consideration of resilience improvement, risk reduction, embodied carbon, operational carbon and natural and social capital value. Examples of natural and social capital measures include:
 - The level of public trust / institutional support
 - Reduced unplanned works disruption by locating assets away from main thoroughfares
 - Reduced leakage thereby reducing abstraction levels
 - Engagement, networks and partnerships.
- Ofwat's Public Value Principles², which set out expectations that companies should seek to create further social and environmental value while delivering their core services.

4.6 Allocation to base

To ensure that SWS are not double counting any base funding received SWS will account for base funding using the following two methods:

Method 1 – Implicit allowance: Use the methodology outlined in query response OFW-OBQ-SRN-219 to calculate the whole AMP implicit allowance for the area. Determine when 50% (TBC) of the resilience asset interventions will have been implemented. Calculate the implicit allowance for the time after 50% (TBC) of the asset interventions have been implemented.

Method 2 – Deterioration Modelling: Use Southern Water's Pioneer deterioration model to predict how much investment would be required to maintain stable service in the area in AMP8. Determine when 50% (TBC) of the resilience asset interventions will have been implemented. Using the deterioration model output, determine the value of interventions required after 50% (TBC) of the asset interventions have been implemented.

SWS will then average the results of the above two methods and subtract that amount from the resilience.

¹ Southern Water. SRM15 Cost and Option Methodology: Technical Annex (October 2023). Available at: https://www.southernwater.co.uk/media/mjyp0of4/srn15-cost-and-option-methodology_redacted.pdf

² Ofwat. Ofwat's Final Public Value Principles (March 2022). Available at <https://www.ofwat.gov.uk/about-us/our-strategy/ofwats-public-value-principles/>

5. Programme and Planning

5.1 Project Delivery Plan

The below section contains a high-level estimate of the programme to deliver the project. We have ensured that this submission is fully aligned with our DPW4 delivery plan table, including all key milestones and expenditure details. The relevant table is provided in the Annex C1. This replaces our August delivery plan submission as the most up to date baseline, there is likely to be limited change as part of our November 7th delivery plan update to the delivery plan. As part of Submission 2 there may be further changes to the delivery plan baseline.

Since the project is at a low level of maturity, there is still large uncertainty on what is needed to develop the solution through to Submission 2. The below high level programme reflects the uncertainty in actions needed.

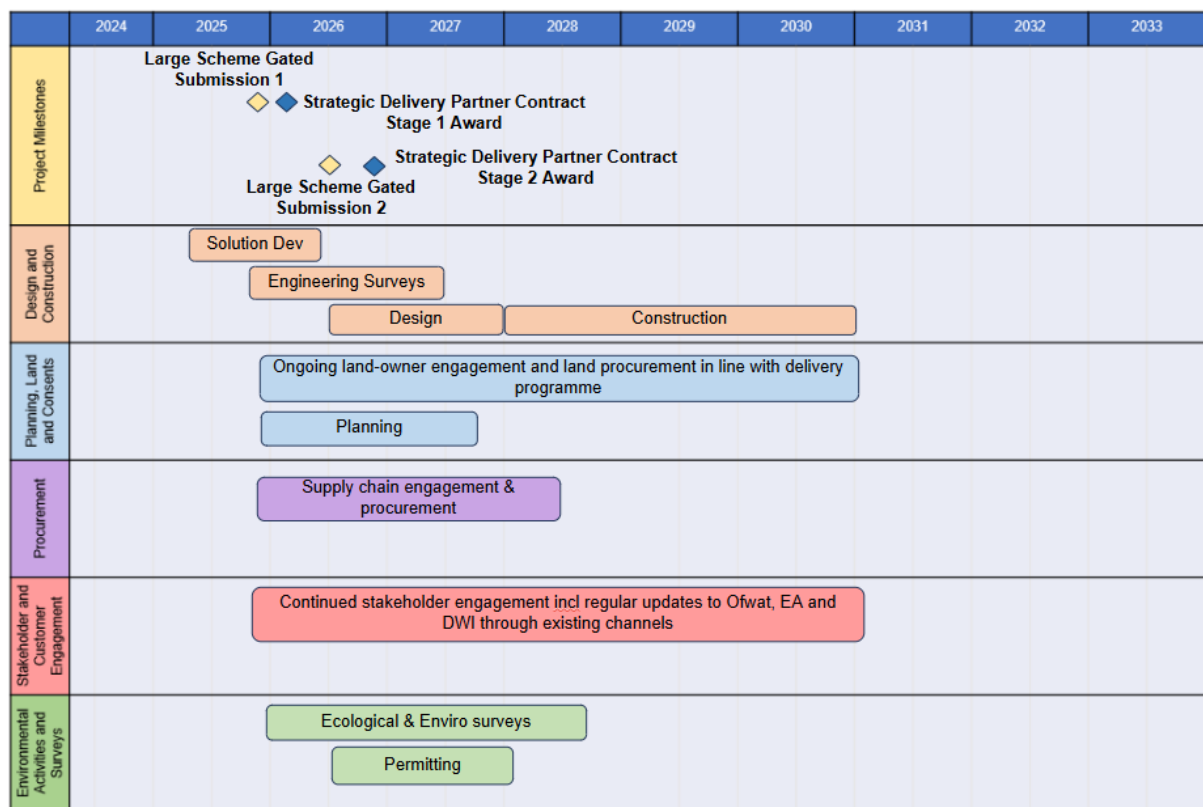


Figure 5 Forward programme

SWS are currently assessing options (and components) that will result in a preferred solution and subsequent delivery programme and cost estimate, therefore there is currently a low confidence in construction phase duration.

As SWS progress through these early stages of scheme development, SWS will have greater confidence in programme and cost estimates. These improved estimates will be completed for Submission 2.

The immediate next steps are:

- Complete components assessment and select preferred solution by February 2026
- Provide Submission 2 to Ofwat by May 2026
- Create design by January 2028

SWS have also begun to plan out possible delivery routes of the physical works. At this stage indicative procurement routes have been identified for the individual components of the overall project, aligning to the type of work and the existing framework contract SWS have engaged suppliers under Strategic Delivery Partner (SDP) framework such as Kier for Keycol development.

5.2 Planning and Consenting Route

At this stage due to the focus being on viability of each component, it is too early in a development phase for planning and consenting route to be considered with certainty. Therefore, this will be developed through Submission 2 as SWS confirm solutions and beyond. However, there are several known issues that will arise due to the nature of the scheme. These are associated with installation of new pipelines near to environmentally sensitive and high amenity areas.

5.3 Key risks and Mitigation Measures

Risk identification and evaluation activities are in progress and will be completed in line with SWS's risk management framework – due to the low maturity of the project, this has not been completed yet and will be updated post Submission 1. The SWS risk management framework defines a process that all capital projects must follow for risk identification, evaluation, mitigation, and review, and is fully aligned with ISO31000 requirements.

Following this process, the key risks (and issues) to achieving the project objectives have been identified, scored, and mitigation measures developed. The high-level RAG status is described in Table 9 below:

Green	No risks and progress is going to plan
Amber	There is a risk that is impeding/could impede progress but there is a plan to manage it
Red	There is a risk that is impeding/could impede the progress of the scheme, and there is no plan to manage this

Table 9 – RAG risk description

At this stage, SWS have identified key risks that will need to be closely managed in development and delivery phases of the scheme. Details are provided in Table 10 below.

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Isle of Sheppey Resilience

Risk Category (and ID)	Risk Description	Pre-mitigation Score	Mitigation Action	Residual Score
Permits KR001	Requirement for special permits in protected areas may prolong delivery programme and impact cost. Some proposed solutions involve works in protected zones, which may trigger the need for special permits and adherence to best available techniques. This could increase complexity, cost, and timelines due to regulatory constraints.		Early engagement with regulatory bodies and environmental consultants to identify permit requirements and incorporate best available techniques into design planning.	
Customer impact KR002	Construction or operational changes may cause more disruption to residents than initially forecast, leading to reputational risk (especially given that this project is positioned as a resilience enabler). If disruption is not well-managed, or if the final solution fails to deliver expected resilience benefits, public trust in Southern Water and regulatory oversight may be undermined.		Implement a proactive stakeholder engagement strategy, including clear communication of resilience benefits and mitigation plans during construction.	
Benefits KR003	Insufficient evidence of long-term benefit may impact the scope & deliverability of the scheme. Regulators may require robust evidence that proposed solutions deliver measurable long-term resilience. Lack of clear benefit-cost analysis or performance metrics could weaken the funding case.		Develop a benefit-cost framework and resilience metrics to support the case for investment, using modelling and benchmarking where possible.	
Consents & licences KR004	Requirement for consents and licences for working in environmentally sensitive areas will need to be included in the programme and cost. This may extend the programme and impact cost		Early engagement between project team and regulatory bodies to identify consenting requirements and aim to mitigate environmental impacts through sensitive design.	
Cost estimation KR005	Low confidence in cost estimates - all cost estimates are indicative and based on current design maturity. They will be refined in Submission 2 following further technical development and market engagement.		Options/components will continue to be refined into Submission 2. This in turn will increase confidence of cost estimates.	
Asset condition KR006	Future surveys may identify assets to be in a different state than assumed, resulting in further works or design		Proceed through options/components assessment & preferred solution definition to provide a more detailed assessment of this risk.	
3 rd party operators KR007	Misalignment with third-party operators resulting in delays		Initiate early coordination meetings with key third parties to align timelines, dependencies, and access requirements.	
Seasonal working KR008	Seasonal constraints on construction (or required surveys)		Throughout the feasibility, outline and detailed design stages SWS will work closely with environmental and ecology teams to ensure that any risks of seasonal working are identified as early as possible and SWS will work together to ensure that these are programmed in to minimise any impact on the programme. SWS will also make best use of SW Organisational licences and District Level Licences to mitigate impacts of protected species in the area. Many of the ecological surveys will occur post Submission 2.	

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Isle of Sheppey Resilience

Risk Category (and ID)	Risk Description	Pre-mitigation Score	Mitigation Action	Residual Score
Regulatory timeframes KR009	Limited capacity for delivery within Regulatory timelines		Early & regular engagement with regulators to align on commitment, timelines & requirements.	
Land Purchase KR010	Land purchase requirements with potential delay on delivery schedule		Assess land purchasing requirements at earliest opportunity and engage with relevant SW functions to ensure alignment and minimal impact on cost & schedule.	
Biodiversity Net Gain KR011	Inability to achieve Biodiversity Net Gain		Ensure best use of permitted development rights where possible, ensure robust & appropriate processes for achieving BNG are in place by engaging cross functional SW teams & processes.	
Scope expansion KR012	Increased capacity of Keycol WSW may affect the separate nitrate driver solution – currently a blending solution but may need to become a treatment solution.		Early collaboration with the Keycol nitrate delivery team to reassess options with a greater output flow from the WSW and identify whether an alternative solution is required.	
Scope expansion KR013	Water quality sampling of Keycol WSW may present greater WQ challenges than previously experienced when operational (e.g. turbidity was known to be a problem).		Early test pumping and water quality sampling of the existing source to be conducted to confirm the WQ challenge and treatment requirements.	

Table 10 Key Scheme Risks

5.4 Proposed Activities for Submission 2

Activities proposed to progress the scheme to Submission 2:

Mobilisation & Early Technical Development

- Confirm preferred solution (consisting of different components) based on Submission 1 feedback and optioneering outcomes
- Begin design scoping and ground investigation planning
- Refine hydraulic modelling and risk reduction modelling as solutions develop
- Site surveys (Keycol)
- Run to waste testing for capacity (Keycol)
- Sample testing (Keycol)
- MEICA requirements (Keycol / Wallend WBS / New Grove Road WBS)
- Electrical Surveys (Keycol / Wallend WBS / New Grove Road WBS)

Pre-Engagement with Stakeholder incl Regulators & Local Authorities

- Early engagement with Local Authorities & Regulators (EA, Natural England) to clarify permitting pathways
- Early engagement with Electrical suppliers

Design & Cost Refinement

- Refine resilience impact analysis
- Update cost estimates (e.g., using contractor input and market research)
- Confirm delivery model and programme logic
- Engagement with supply chain to validate cost assumption and delivery programme
- Cost intelligence benchmarking & refinement

Finalise & Assure:

- Scope and cost breakdown
- Risk register and mitigation strategy
- Delivery strategy and programme
- Internal review and governance assurance

Submission

- Finalise Submission 2 documentation
- Submit to Ofwat by agreed deadline

The above activities are based on the existing assumptions & option components identified. As the scheme matures, SWS may find that some of the programme risks materialise (e.g. land issues, unexpected results from surveys) impacting ability to deliver to Submission 2 timelines. SWS plan to provide regular progress updates to Ofwat and manage expectations around meeting Submission 2 deadlines. The high level plan is provided in Figure 6.

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Isle of Sheppey Resilience scheme

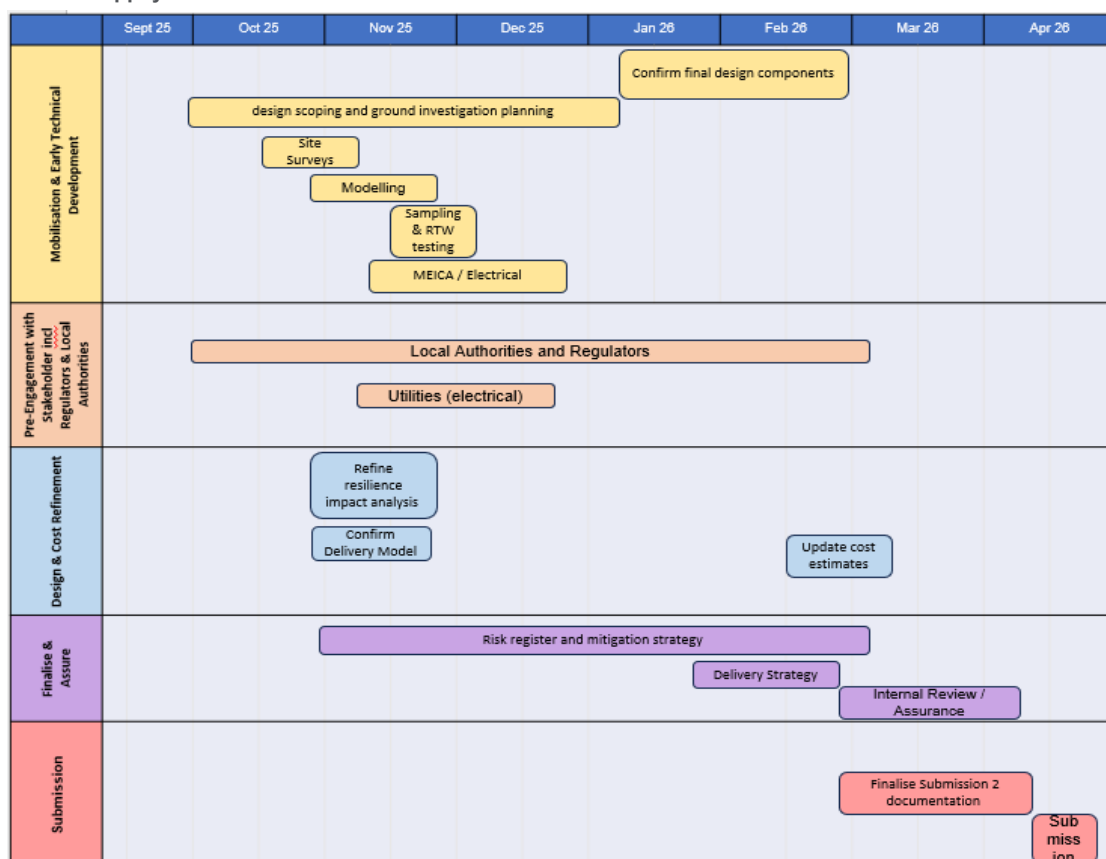


Figure 6 Plan to Submission 2

6. Customer Protection

As part of this scheme, SWS recognise the importance of ensuring customers are protected and have proposed a price control deliverable (PCD), this is in addition to the current PCDW16a on the water resilience and the upgrade of water supply works.

This PCD follows the same conditions as set out in section 8.1.2 of [PR24-final-determinations-Price-control-deliverables-appendix-REDACTED.pdf](#)

The unit rate is currently derived from the total value of the project at the PR24 Final Determination, this will be updated for Submission 2 once final values of the project are available.

The details of PCDW16a are as follows:

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Isle of Sheppey Resilience scheme

Company	SRN
Enhancement area	Resilience
PCD No.	PCDW16d

Common requirements	See Section 8.1.2 of Price control deliverable appendix
Additional company specific requirements	
Description	Upgrade works at SRN water treatment works Testwood, Otterbourne, Hastings and upgrade to Isle of Sheppey resilience
Output measurement and reporting	The company should report the % earned value (EV) delivered against the scope of works specified within each of the submission 2s. The company must annually report delivery progress of all interventions and must deliver all of these interventions by 31st March 2030 or non-delivery payments apply.
Assurance	Companies should provide assurance on the reported data as per the common requirements.
Conditions on scheme	No further conditions

Non-delivery PCD rate	Unit	Under-performance
Hastings	£m per 1% of earned value of project not delivered	0.35
Isle of Sheppey	£m per 1% of earned value of project not delivered	0.15

PCD outputs (cumulative)	Unit	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35
Hastings	%	0	0	0	0	0	0	100%	100%	100%	100%	100%	100%
Isle of Sheppey	%	0	0	0	0	0	0	100%	100%	100%	100%	100%	100%

Table 11 PCD Information

7. Stakeholder and Customer Engagement

7.1 Overview

Southern Water has undertaken extensive stakeholder and customer engagement to inform the IoS. This engagement has been critical in shaping the scheme's scope, identifying key risks, and ensuring alignment with community and regulatory expectations. The engagement programme to date has included direct consultation with regulators, local authorities, and customers - both locally and regionally.

7.2 Customer Engagement

7.2.1 Incident Response and Lessons Learned

Following the July 2022 supply interruption, Southern Water conducted:

- **27 depth interviews** with affected customers and stakeholders.
- **A telephone survey of 200 residents** across Sheppey.

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- A follow-up **survey of 171 customers** in December 2023 to assess perceptions post-investment.

Key findings:

- **99% experienced total supply loss**, with significant impacts on bathing, cooking, and schooling.
- **Trust was low**, with only 47% believing Southern Water understood the incident's impact.
- Customers expressed a strong desire for **direct communication**, real-time updates, and visible leadership during incidents.

7.2.2. Investment and Acceptability

- Southern Water invested **£7.5 million** in a new pipeline, improving resilience and reducing single points of failure.
- **76% of customers** expressed positive sentiment toward the pipeline.
- Customers appreciated the **minimal disruption** and **quick action** post-incident.
- **Community grants and compensation** (including £300,000 in vouchers) were well received and helped rebuild trust.

7.2.3. Environmental and Resilience Preferences

Insights from the **Infiltration and Resilience research** show:

- Customers view resilience as essential, particularly considering climate change and coastal erosion.
- Power resilience is seen as tangible and solvable; coastal erosion requires multi-agency collaboration.

7.3 Regulators and Partner Organisations

Southern Water has engaged with:

- Environment Agency: Through quarterly reviews and incident response coordination.
- Drinking Water Inspectorate: Via formal reporting and assurance processes.
- Local Authorities: Including Kent County Council and Swale Borough Council, particularly during the 2022 incident and subsequent investment planning.
- Kent Resilience Team: Collaborated during emergency response and planning exercises.

These stakeholders have provided feedback on:

- Support for infrastructure upgrades, with emphasis on avoiding repeat incidents.
- The need for greater transparency and direct updates.
- Importance of scenario planning and community-specific response strategies.

In addition to this submission, SWS will continue to engage with Ofwat through quarterly meetings and reporting.

7.4 Issues Identified for Further Investigation

- Residual network vulnerabilities beyond the new pipeline remain a concern.
- Limited awareness of Southern Water's community engagement efforts suggests a need for better promotion and direct communication.
- Digital exclusion on Sheppey present barriers to engagement, requiring tailored approaches.

7.5 Stakeholder engagement plan

Based on the engagement to date, feedback received and existing processes, SWS will continue quarterly engagement with Ofwat to update on progress and emerging risks. The team propose to

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continue more extensive stakeholder engagement after Submission 2 (with the assumptions of funding & delivery certainty). The preliminary plan for stakeholder engagement would include:

Objectives:

- Build trust and transparency with stakeholders and regulators.
- Ensure alignment with resilience priorities and regulatory expectations.
- Identify and address concerns early in the development phase.
- Secure support for scheme progression to construction.

7.5.1. Stakeholder Identification

Stakeholder Group	Role/Interest	Engagement Method
Environment Agency (EA)	Environmental impact, permitting	Quarterly reviews, formal consultations
Drinking Water Inspectorate (DWI)	Water quality and safety	Technical briefings, assurance reviews
Natural England (NE)	Environmental oversight (where applicable)	Information sharing, joint planning
Kent County Council & Swale Borough Council	Local infrastructure, emergency planning	Workshops, incident debriefs, planning forums
Kent Resilience Team	Emergency response coordination	Scenario planning, joint exercises
Local MPs and Councillors	Community representation	Briefings, site visits
Community Organisations (e.g. Sheppey Matters, Salvation Army)	Vulnerable groups, local delivery	Grant programmes, co-design sessions
Customers (local and regional)	Service users, bill payers	Surveys, interviews, deliberative panels

Table 12 Stakeholder groups

7.5.2. Potential Engagement Channels

- **Direct communication:** Email, SMS, letters (especially for PSR customers)
- **Digital platforms:** Website updates, social media, interactive maps
- **In-person:** Town hall meetings, water station feedback, site visits
- **Media:** Local press, radio, community bulletins

7.5.3. Key Issues Identified

- **Trust deficit** post-2022 incident
- **Need for direct updates** and real-time information
- **Limited awareness** of community investment
- **Digital exclusion** and low engagement in deprived areas

7.5.4. Mitigation Actions

- Improve **incident communication protocols** (SMS, real-time updates)
- Enhance **visibility of investment** through local media and councils
- Tailor engagement for **digitally excluded groups**
- Continue **community grants and school programmes**
- Provide **technical transparency** to regulators

7.5.5. Monitoring and Evaluation

- Track engagement via **feedback scores**, **survey results**, and **stakeholder meeting minutes**
- Report progress in **quarterly updates to Ofwat, EA and other key stakeholders**

Where relevant and appropriate SWS will aim to align engagement for Hastings & Isle of Sheppey schemes with relevant stakeholders

8. Assurance

8.1 Approach to assurance

As described in the statement Data Assurance Summary, SWS take full responsibility performance information and seek to take a transparent approach to data assurance. SWS follow the 'three lines of defence' framework for reporting governance and assurance activity. This framework helps to assure performance information by applying multiple levels of control.

Ultimately, all assurance activity has oversight from the Board and Audit Committee; the Board maintains oversight of material risks and issues and timelines for improvement, while the Audit Committee monitors the assurance over the integrity of information reported by us in fulfilment of the regulatory, legal and environmental obligations as well as overseeing and challenging the effectiveness of the approach.

The Risk, Audit and Assurance team ensures compliant reporting to regulators by ensuring all reporting is subject to internal review and appropriate external assurance.

SWS engaged [REDACTED] to undertake limited assurance (under ISAE (UK) 3000) over the Large Schemes Gated Submission 1, focusing on completeness, accuracy and validity of the data in the areas detailed by Ofwat in their Final Determination and subsequent guidance. [REDACTED] reports for each scheme are appended to this submission and describe their scope, approach and findings in greater detail.

8.2 Managing Risks and Improvements

Through an extensive execution planning process, Southern Water has developed the PR24 Business Plan into AMP8 delivery and investment Plans. SWS continue to refine the plans for the AMP and are collaborating with internal and supply chain stakeholders to improve maturity. During the development of the plans SWS are identifying, mitigating and managing deliverability risks.

SWS have established a Strategic Programme Operating Model, with each Strategic Programme Leadership Team responsible for mitigating and managing identified risks. This is an active and ongoing process and will be used to support future reporting submissions.

8.3 External Assurance Findings ([REDACTED])

Annexes E1 and E2 contain the external assurance findings from independent advisors (both technical and commercial). These findings have been reviewed by the Assurance teams, the respective MDs and the CFO as part of the signoff governance process.

All findings will be incorporated into preparations for Submission 2 and reviewed as part of Submission 2 assurance.

9. Efficiency of Expenditure to Date

This section presents a high-level overview of the expenditure to date and anticipated future costs for the IoS to get it to Submission 2, in line with Ofwat's guidance for Large Scheme Gated Submission 1.

9.1 Overview of Expenditure

SW is progressing the development allowance to advance the programme through targeted activities that directly support cost and delivery confidence. This includes refining scope through optioneering, validating technical feasibility, and engaging stakeholders to ensure alignment with resilience priorities.

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These activities are designed to reduce uncertainty ahead of Submission 2 and to ensure that future investment is based on robust evidence and efficient planning.

9.2 Expenditure for Submission 1 (April 2025 – 1 Oct 2025)

Submission 1 has been largely developed by SWS in house engineering team. Due to the financial systems SWS use, there are delays between recording spend (or time), and that data appearing on financial reports. Therefore, the costs set out in this section are a mixture of actual (Apr – Aug '25) and forecast cost (Sept '25 – May '25).

For this stage of the project, costs are reported from the following sources:

Internal Staff (including staff obtained via Resource Augmentation)

- Costs for internal SWS staff to the end of Aug comes from records of hours spent on project activity
- Costs for staff in September are calculated by hours spent on the project projected hours to be spent on project activity
- Costs for October-May are estimated based on work planned (no reports will exist)

No early Submission 2 costs have been incurred at this stage of the project.

Isle of Sheppey Resilience scheme	Submission 1 costs			
	Actual costs Apr - Aug '25 (25/26 base)	Actual costs Apr - Aug '25 (deflated to 22/23 base)	Sept '25 forecast (25/26 cost)	Sept '25 forecast (deflated to 22/23 base)
Project + Programme Management				
Design (internal & external)				
Environmental Assessment				
Data Collection, Sampling, and Pilot Trials				
Commercial and Procurement				
Planning and Land				
Stakeholder Engagement				
Legal				
Others				
TOTAL (excluding SWS overheads)				
SWS Overheads (11.2%)				
Risk (10%)				
Total Costs				
Sub 1 total costs (25/26)				
Sub 1 total costs (22/23)				

Table 13 – Costs to Submission 1

9.3 Forecast of Expenditure for Submission 2 (Oct to May 2026)

The costs detailed below in Table 14 are the estimated costs to progress the scheme to Submission 2, between November 2025 and May 2026. Whilst the costs are built up based on best estimates, there is the possibility that further works is required in certain areas, or that plans adjust to meet stakeholder aims, which may change the required activities, and therefore cost. In addition, SWS are currently

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resource constrained across Capital Delivery and ETS teams, which may pose delays to the programme of work and consequently spend profile.

Isle of Sheppey Resilience	Submission 1 costs (£m)		Submission 2 costs (£m)	
	2025/26 price base	2022/23 price base	2025/26 price base	2022/23 price base
Project + Programme Management				
Design (internal & external)				
Environmental Assessment				
Data Collection, Sampling, and Pilot Trials				
Commercial and Procurement				
Planning and Land				
Stakeholder Engagement				
Legal				
Others				
TOTAL (excluding SWS overheads)				
SWS Overheads (11.2%)				
Risk (10%)				
Total Costs				

Table 14 – Projected Costs to Submission 2

For more details, pls refer to Annex F1.

9.4 Comparison Against the Development Allowance

Hastings and IoS joint development allowance was allocated at £3m for both schemes. SWS have assumed a proportional allocation of 30% for IoS (based on ~£15m total scheme costs) aligned to 6% of development allowance stands at £0.9m.

Company	Area	Category	Name of scheme	Development funding allowance (AMP8)	Contingent allowance	Total scheme cost
Southern Water	Water	Network resilience	Hastings & Isle of Sheppey			

Table 15 – Hastings and Isle of Sheppey schemes Development Allowance (22/23 prices)

Table 16 Variance to Development Allowance (22/23 prices)

Name of Scheme	AMP8 development funding allowance (£M)	AMP8 development spend to Submission 2 (£M)	AMP 8 development funding variance (£M)
Isle of Sheppey Resilience			

This variance figure may increase further if all five components are progressed in parallel, as the current estimate does not yet include development costs for Components 1 and 4. This is primarily driven by Keycol scope, yet this adds significant benefit to resilience in the Isle of Sheppey, as shown in Section

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3.3. In addition, resourcing constraints in Capital Delivery & ETS functions may impact the programme to Submission 2 with potential delays to development activity.

There are several large unknowns which may significantly impact the spend profile for Submission 2:

- Legal costs – there may be substantial costs in getting required legal support for project documentation development, including planning, environmental and commercial reports in place in place
- Design costs – as the preferred option evolves, there is a significant risk that design or investigation that was not previously planned becomes required. This may include more extensive and intrusive surveys than previously planned
- Additional resourcing needs due to current internal resourcing constraints

10. Conclusions and Recommendations

The feasibility assessment confirms that the Isle of Sheppey remains highly vulnerable due to aging infrastructure, limited connectivity, and single points of failure in its water supply network. The AMP7-funded twin-pipe crossing has mitigated the most immediate risk, but further interventions are required to ensure long-term resilience.

A structured optioneering process has been undertaken, resulting in a shortlist of five viable components. These components have been assessed for resilience impact, deliverability, and cost efficiency. While the design maturity is currently low, the development phase has provided sufficient evidence to justify continued progression. The components to date address critical vulnerabilities and align with PR24 resilience objectives. Continued development will improve confidence in delivery and value for money.

Stakeholder and customer engagement has validated the need for investment, with strong support for resilience improvements and infrastructure upgrades. However, key risks remain, including permitting challenges, community disruption, and the need for robust evidence of long-term benefits.

Our project plan in Section 5 confirms a full scheme completion (based on PR24 scope) is possible, provided currently identified risks and issues can be mitigated with continued key stakeholder support. Our activities to Submission 2 will confirm our preferred solution and updated forward plan for completion. Any significant changes will be notified to Ofwat.

SWS proposed to progress IoS through to Submission 2 where greater confidence in cost estimates and programme will be provided based on confirmed preferred solution and design. SWS plans to provide ongoing quarterly updates to Ofwat leading to Submission 2 in May '26.

11. Supporting Documentation

Annex C1: Delivery Plan Table (DPW4)

(See attached)

Annex E1: Technical Assurance Report

(See attached)

Annex E2: Commercial Assurance Report

(See attached)

Annex F1: Expenditure Breakdown. Projected Costs to Submission 1 and Submission 2 (2022/23 prices)

(See attached)

Annex F2: Optioneering RV3 Scoring

(See attached)

Annex H: AMP7 Resilience Improvements (previous activity - not part of this scheme)

Table 18 – Isle of Sheppey Resilience Improvements

Site	AMP7 risk mitigation	4R's
Isle of Sheppey The Swale crossing	Installation of 2 x 400mm water mains directional under The Swale, to improve overall system resilience.	Reliability Resistance Response & Recovery Redundancy
Isle of Sheppey Reservoir Cleans	DEANS HILL Break Pressure Tank	Reliability Resistance Response & Recovery Redundancy
Isle of Sheppey Reservoir Cleans	KINGSBOROUGH MINSTER IOS TOWER WSR	Reliability Resistance Response & Recovery Redundancy
Isle of Sheppey Reservoir Cleans	KINGSBOROUGH MINSTER IOS WSR	Reliability Resistance Response & Recovery Redundancy
Isle of Sheppey Reservoir Cleans	SOUTHDOWN HALFWAY HOUSES WSR	Reliability Resistance Response & Recovery Redundancy
Isle of Sheppey Reservoir Cleans	WIGMORE WSR	Reliability Resistance Response & Recovery Redundancy