

Large Scheme Gated Submission 1 Sittingbourne Industrial Re-use

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from
**Southern
Water** 

Table of Contents

Glossary	4
1. Executive Summary	5
2. Background and Objectives	7
2.1. Introduction	7
2.2. PR24 Business Plan	8
3. Optioneering and Solution Design	9
3.1. The PR24 Solution Design	9
3.2. Understanding Water Quantity and Quality	11
3.3. Risk Based Longlist Development	13
3.4. Pathway to Preferred Solution Selection	17
4. Solution Costs and Benefits	18
4.1. Change Log	18
4.2. Solution Cost Estimates	18
4.3. Benchmarking Methodology	19
4.4. Best Value Appraisal	19
5. Programme and Planning	20
5.1. Submission 2 Draft Delivery Plan	21
5.2. Draft Planning and Consenting Route	22
5.3. Project Delivery Plan	23
5.4. Key risks and mitigation measures	24
6. Customer Protection	27
7. Stakeholder and Customer Engagement	28
7.1. Customer engagement	28
7.2. Regulators and partner organisations	28
7.3. Stakeholder engagement plan	29
7.4. Issues Identified for Further Investigation	29
8. Assurance	29
8.1. Our approach to assurance	29
8.2. Managing Risks and improvements	30

8.3	External Assurance findings ()	30
9.	Efficiency of Expenditure to Date	30
9.1	Expenditure for Submission 1	30
9.2	Forecast of Expenditure to Submission 2	31
9.3	Comparison Against the Development Allowance	32
10.	Conclusions and Recommendations	33
11.	Supporting Documentation	35
	Annex B1: Cost Assurance Narrative	35
	Annex C1: Delivery Plan DPW4	35
	Annex D1: Technical Assurance Report	35
	Annex D2: Commercial Assurance Report	35
	Annex E1: Efficiency of Expenditure – Cost Breakdowns	35

Glossary

Acronym	Full Term
AMP	Asset Management Period
BAU	Business As Usual
CAPEX	Capital Expenditure
EIA	Environmental Impact Assessment
GAC	Granular Activated Carbon
GIS	Geographic Information System
HRA	Habitats Regulations Assessment
IEx	Ion Exchange
kVA	Kilovolt-Amperes
kW	Kilowatt
MBR	Membrane Bioreactor
MBSF	Moving Bed Sand Filter
MI/d	Megalitres per day
PCD	Price Control Deliverable
PR24	Price Review 2024
RAPID	Regulators' Alliance for Progressing Infrastructure Development
RO	Reverse Osmosis
SRN	Southern Region
SWS	Southern Water Services
tCO ₂ e	Tonnes of CO ₂ equivalent
UF	Ultrafiltration
UVAOP	Ultraviolet Advanced Oxidation Process
WAFU	Water Available For Use
WFD	Water Framework Directive
WRMP	Water Resources Management Plan
WRZ	Water Resource Zone
WSW	Water Supply Works
WTW	Water Treatment Works
WwTW	Wastewater Treatment Works

1. Executive Summary

This document provides an overview of the additional optioneering and review undertaken for the Sittingbourne Industrial Re-use solution, as detailed in our Price Review 24 (PR24) Water Resources Supply Options Enhancement Case.

The proposed solution at PR24 involves reallocating a borehole licence, currently used by an industrial facility, to deliver an extra 7.5 mega litres per day (Ml/d) of drinking water to the Kent Medway West Water Resource Zone. This increased supply would be made possible by replacing the facility's existing water source with an alternative supply of recycled water, so the industrial operations can continue without interruption while supporting regional water resilience.

Category	Sittingbourne Industrial Re-use Details
WRZ	Kent Medway West Zone
Population Size	72,486 properties (199,436 people)
Primary Assets	Sittingbourne WwTW
Scope	There are four key components required to enable this scheme: - 1 no. new quaternary, advanced treatment facility at Sittingbourne wastewater treatment works (WwTW); - 1 no. new recycled water transfer main from Sittingbourne WwTW to an Industrial Facility; - 1 no. new water supply works (WSW), and - 1 no. new raw water transfer main from the Industrial Facility's existing borehole field to the new WSW. These components encompass a variety of conventional and advanced treatment processes, with transfer main lengths of approximately 1.5km and 7km.
Excluded Scope	Modifications to existing Southern Water and Industrial Facility assets.
Delivery Partners	TBC – strategy to be defined in Submission 2
Estimated Development costs	~£4.31m incl. Sittingbourne WwTW enhanced treatment, new mains, new water treatment works. However, further development work is required post Submission 2 (see section 9)
Regulatory Drivers	WRMP scheme
Programme Timeline	Additional supply provided by 2030 (benefits realisation) and beyond

Table 1.1: Sittingbourne Industrial Re-use Scheme Summary

Significant work has been completed to improve the understanding around the viability of this option. A long list of scheme component sub options has been developed, alongside a risk-based approach to identify a preferred solution through the Submission 2 delivery phase. Elements explored include:

- Transfer of the excess borehole licence to Southern Water Services Ltd (SWS);
- Development of a bulk supply arrangement between SWS and the industrial facility owner;
- Reverse osmosis treatment to allow re-use of Sittingbourne wastewater treatment works final effluent at the industrial facility;
- Upgrade of the industrial facility owner's existing waste-water treatment process to allow recycling of a greater proportion of the flow that is currently discharged to the environment from the industrial facility;
- Improving the industrial facility owner's water efficiency to reduce losses across their processes, and
- New drinking water treatment processes, pipework and storage for the borehole supply, including a range of sub-options.

At this stage, additional collaborative work with the industrial facility owner is required to understand the optimal configuration. As such, no formal changes have been made from the PR24 option. This means costs and

programmes reflect the original plan. Additional emphasis has been made to engage with the industrial facility owner and ensure they are supportive of any proposal put forwards. This relationship is central to the success of any scheme.

Risk	Description	Mitigation
Delay in delivery	Risk to project benefit delivery dates due to enabling works and assurance for industrial facility security of water supplies.	Enabling studies should build industrial facility confidence. Site surveys will include assessments of key integration assets.
Survey Challenges	Environmental, archaeological, and planning constraints. Environmental Impact Assessments likely needed	Early stakeholder engagement and planning
Industrial Partner Support	The success of the scheme and delivery time frame relies on a mutually beneficial commercial agreement between SWS and the industrial facility.	Continued engagement between SWS and the industrial facility. Enabling studies and scaled trials that build Industrial facility confidence.

Table 1.2: Scheme Summary

The recommendation of this report is to progress this scheme into Submission 2 in order to refine the technical and commercial solution, engage proactively with key stakeholders to secure their support, address regulatory requirements, and improve confidence in the design and delivery programme. This will also enable further risk mitigation and support a robust delivery plan for subsequent project stages.

2. Background and Objectives

2.1. Introduction

Modelling underpinning our Water Resource Management Plan 2024 (WRMP24) has projected a deficit in our Kent Medway West Water Resource Zone (WRZ) of between 20 and 49 megalitres per day (Ml/d) by 2050 under a 1 in 500 drought scenario. This deficit range, which is based on “Low” and “High” distribution output reduction scenarios respectively, is driven primarily by Environmental Destination (ED) abstraction reductions.

Four water supply schemes have been selected to address this deficit:

- 1) Commissioning a new groundwater source at Gravesend;
- 2) Non-potable water recycling to offset industrial demands in Sittingbourne;
- 3) Water recycling to create a new potable resource in the Medway area, and
- 4) Transferring capacity between the Kent Medway West WRZ and Kent Thanet WRZ.

These schemes were selected in most modelled scenarios and are projected to provide additional distribution output of approximately 33Ml/d early in Asset Management Period (AMP) 9. They will be complimented with other demand side water efficiency initiatives, and potentially additional schemes in AMP 10, to significantly improve regional water supply resilience.

This report focusses on non-potable water recycling in Sittingbourne. Taking a systems thinking view of the area and recovering a resource currently lost to sea, Sittingbourne Wastewater Treatment Works (WTW) could be used to create a new, safe and sustainable water supply tailored specifically to the needs of a nearby industrial facility.

This would reduce the amount of borehole water needed by the facility, allowing an amount equivalent to the new recycled water supply to be used for potable water production in a new Water Supply Works (WSW) instead as illustrated in Figure 2-1.

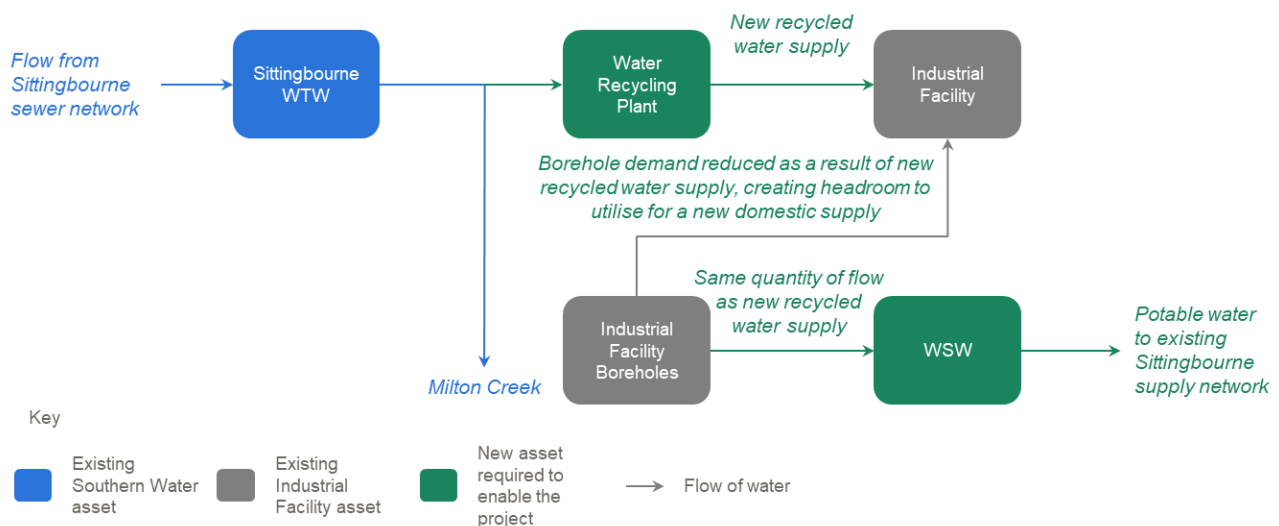


Figure 2-1: Overview of the Sittingbourne non-potable water recycling scheme

To realise this opportunity, and ensure that the project is beneficial to both local communities and industrial facility owner, two key objectives must be met:

1. Create a consistent 7.5MI/d supply of fit-for-purpose non-potable water for the industrial facility, of equivalent or better quality than the borehole water currently used, to offset a portion of the borehole water supply currently used to supply the industrial facility.
2. Use the headroom in the industrial facility's existing borehole abstraction system created by the new recycled water supply to provide a deployable output of 7.5MI/d potable water for distribution in the existing potable supply network.

This scheme is less mature than others in the SWS Large Scheme Gated portfolio; the WRMP24 team have confirmed that there were no alternative options for Sittingbourne. Initial Submission 1 work has, therefore, focused on providing a high level confirmation that these objectives can be met and developing a path to preferred solution identification. This report documents that work, and summarises:

- the assessment undertaken to verify that the deployable output is achievable, considering a shortlist of treatment configurations potentially required in different water quality scenarios, in Section 3;
- estimated Price Review 2024 (PR24) scheme costs, reviewed against the findings discussed in Section 3 and presented alongside potential scheme benefits in Section 4;
- the activities required to better understand the opportunity, and gather the evidence necessary for preferred solution then final design selection, in Section 5;
- the engagement completed to date to assess customer preferences, including discussion with the industrial facility owner to understand their needs and appetite for the scheme, in Section 6 and Section 7;
- the assurance undertaken to provide confidence in the technical work completed at this initial stage in Section 8, and
- the investment made up to the Submission 1 deadline in Section 9.

The main document is complemented by a detailed risk register, which captures both risks and recommended mitigation measures, and highlights the dependence on a third party to realise this opportunity.

This dependence adds complexity, design interfaces and commercial sensitivities which are highly uncommon in UK water resource planning. Significant work remains to understand how best to manage these uncertainties and provide confidence that the scheme can work to the benefit of all involved. This work, including the framework through which we will shortlist then finalise preferred options, is described and mapped out in Section 3 and Section 5 respectively.

However, Submission 1 development has established that the scheme has significant potential and has achieved preliminary support from the industrial facility owner. Initial collaboration with the industrial facility owner has also identified an important opportunity to improve the scheme, which is described in this document and will be explored in Submission 2 development. The Sittingbourne project could set a new benchmark for water positive collaboration between industrial parties and water utilities in the UK and provide a blueprint for managing the future demand anticipated from the digital and hydrogen sectors.

2.2. PR24 Business Plan

SWS' PR24 business plan was submitted in October 2023. Provision of the 7.5MI/d deployable output was included via the Sittingbourne Water Recycling scheme with [REDACTED] of expenditure in AMP8 to construct a new water recycling works at Sittingbourne WwTW, new pipelines, a new borehole and water treatment works.

This scheme was relatively immature and required significant work alongside the industrial facility, with the initial focus on feasibility and partner engagement.

The Sittingbourne Water Recycling Scheme is now being progressed using the Large Scheme Gated Process.

3. Optioneering and Solution Design

Submission 1 development has focused on confirming the PR24 proposal's viability, establishing a risk based treatment technology long list, and defining a pathway to preferred solution design in Submission 2.

The components which make up the PR24 solution are described in Section 3.1, with a cost breakdown provided separately in Section 4. This is followed by review of the flow likely to be available, and a summary of our current understanding of water quality, in Section 3.2. This in turn informs a risk based review of treatment technology options in Section 3.3, before the key next steps required to investigate risk and identify a preferred option are set out in Section 3.4.

A broader view of development activities is provided in Section 5, which maps out the activities necessary to deliver the scheme in line with WRMP timescales.

3.1. The PR24 Solution Design

The Sittingbourne scheme relies on the provision of two new, separate and moderately large treatment systems:

- A new water recycling treatment system, for provision of non-potable water to the industrial facility, and
- A new water supply works, for provision of potable water to the Sittingbourne area.

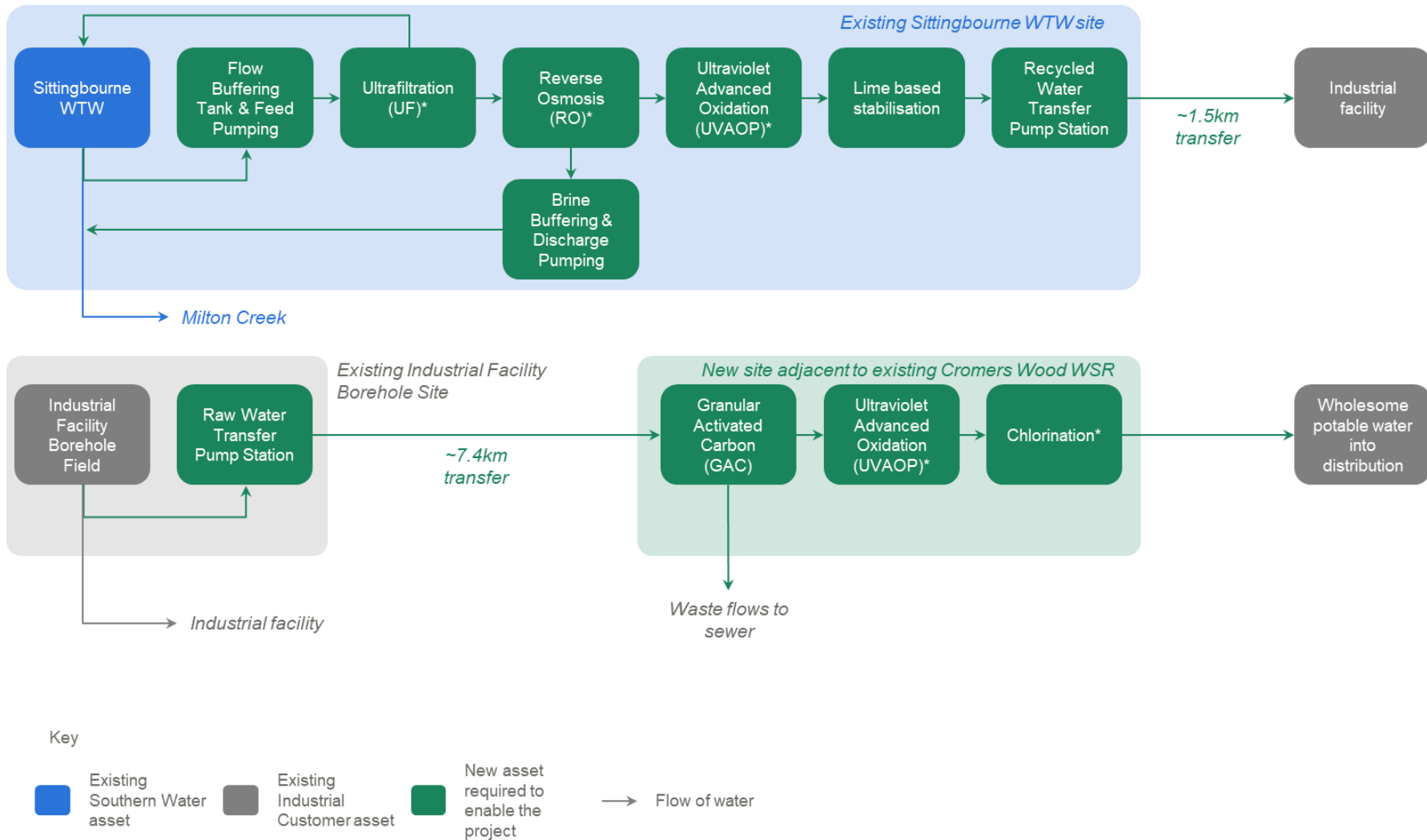
New conveyance systems are also required to transfer treated flows to the points of demand. These systems are illustrated schematically in **Error! Reference source not found.**, which aligns with the PR24 cost breakdown provided in Section 4. Initial feasibility took place for WRMP which was an important first step and can be seen discussed in the WRMP annex 12.

The treatment technologies included at PR24 stage were selected on a precautionary basis. With minimal water quality characterisation data, intensive treatment technologies were included based on engineering judgement and experience on similar schemes:

- Reverse Osmosis (RO) was deemed as being potentially necessary for water recycling based on saline intrusion at other SWS sites with relatively coastal sewer networks (e.g. Sandown, Ford and Aylesford).
- SWS already operate several water supply works in the region which draw from the same aquifer (e.g. Keycol, Highsted and Danaway). Sampling and water safety planning have established that feed water quality to these sites is good, with disinfection being the only treatment-based risk mitigation measure required. However, Advanced oxidation (UVAOP) and Granular Activated Carbon (GAC) were included for groundwater treatment as part of this scheme as a broad mitigation for unknown micropollutant risks in the absence of any relevant water quality characterisation.

Perhaps most importantly for provisional water recycling technology selection, technical discussions with the industrial facility owner had not yet taken place, meaning treated water quality requirements were not yet understood. This too supported the selection of RO as a conservative first step (i.e. providing the most intensive treatment considered likely, which is also often the most expensive solution for a given solution, meaning the associated budget is also likely to be sufficient for the final treatment selection once scheme specific data is available).

Figure 3-1: PR24 solution components for the new water recycling system at the existing Sittingbourne WTW site (top), and new potable water supply works at a new location (bottom)



3.2 Understanding Water Quantity and Quality

3.2.1 Water Quantity

Historic data has been gathered and assessed to better understand flow availability at both Sittingbourne WTW (for waste recycling) and the industrial facility's borehole field (for potable water provision). Data describing water consumption at the industrial facility has also been evaluated, and findings of the initial analysis are summarised below:

Table 3-1: Latest understanding of water availability

Parameter	Units	Industrial Facility Borehole Field Abstraction	Industrial Facility Water Consumption	Sittingbourne WTW
Average flow	MI/d	19.4	19.6	N/A
Maximum flow	MI/d	37.9	25.1	N/A
Dry weather flow (Q80)	MI/d	N/A	N/A	9.8*

*** Note: Based on 15-minute interval instantaneous flow measurement data from 2022**

The data shows that the borehole field can provide a reliable supply of water in excess of the target deployable output. It also highlights that the industrial facility utilises a quantity of water that exceeds the proposed recycled water supply, so would still require groundwater flow from the borehole field.

Instantaneous flow to full treatment data from Sittingbourne WTW between 2019 and the project start date (July 2024) has been analysed. Taking the driest year in this period as a worst case – 2022 – the data demonstrated an actual dry weather flow of approximately 9.8 MI/d, alongside the diurnal variation in flow that would be expected of a wastewater treatment works (i.e. low to no flows overnight, peak flows around morning and evening).

This has verified the need for the buffer tank included in the PR24 cost, which will be used to attenuate flows across the day and ensure that a reliable supply of recycled water can be guaranteed. However, it is important to note that the size of this tank will depend on final treatment technology selection, and losses across this process. The considerations that drive technology selection are summarised below. A longer-term data set will be explored in the next phase to gain greater confidence in flow availability.

3.2.2 Water Quality

Data describing quality characteristics has also been gathered and assessed.

This included a small selection of parameters for the industrial facility's borehole field, which relate to areas of concern for product quality control. However, these do not span the full range of parameters requiring consideration to confirm the new source's suitability for potable water supply i.e. those required to comply with Regulation 15 and Regulation 27 of the Water Supply (Water Quality) Regulations 2018.

Additional data was sought to better understand the borehole field's potential water quality envelope. This included data from other local SWS boreholes, which draw from the same aquifer, and publicly available historical data (limited to a small number of samples taken in the 1950s).

These data sets were reviewed from a water safety planning perspective, and used to develop the qualitative, preliminary water quality risk profile summarised in Table 3-2 below:

Table 3-2: Preliminary borehole water quality risk profile

Risk Area	Preliminary Risk Assessment	Justification	Sampling required to improve understanding
Salinity	Low	Historic references to salinity in the Cockleshell Walk boreholes and conductivity sample data	Conductivity, sodium, chloride
Nitrates	Medium	Historic data from Cockleshell Walk borehole and data from Keycol and Highsted WSW	Nitrate, nitrate/nitrite formula
Viral, bacterial & protozoan pathogens	High	Limited available data and information, but assumptions based on age, construction and location of boreholes	E. coli, coliforms, Clostridium, Enterococci, Cryptosporidium, Giardia
Organic micropollutants	High	Limited available data and information, but assumptions based on age, construction and location of boreholes	Trace organics scans, pesticides, PFAS, fuel hydrocarbons, industrial hydrocarbons, etc
Metals	Low	Limited available data and information, but assumptions based on age, construction and location of boreholes	Iron, aluminium, manganese
Turbidity	Medium	Limited knowledge of aquifer and industrial facility sample data	Turbidity
Colour	Low	Limited knowledge of aquifer and industrial facility sample data	Colour, UVT
Hardness	Low	The industrial customer sample data	Calcium, alkalinity
Heavy metals & selenium	Low	Limited available data and information, but assumptions based on age, construction and location of boreholes	Arsenic, mercury, cadmium, lead, antimony, nickel, selenium

A similar approach was undertaken to understand the risk profile associated with the flow from Sittingbourne WTW, which is the proposed feed for the new water recycling system.

In this case, groups of substances were reviewed considering their potential impact on the industrial facility's outputs (e.g. product quality control), existing systems (e.g. propensity to cause or exacerbate fouling), and employee safety (e.g. levels of exposure to recycled water in line with the team's wider international experience).

The findings of this review are summarised in Table 3-3 below:

Table 3-3: Preliminary Sittingbourne WTW water quality risk profile

Risk Area	Preliminary Risk Assessment	Justification	Sampling required to improve understanding
Colour	Medium	Historical transmissivity data, alongside engineering judgement of industrial facility water uses	Colour, transmissivity, total and dissolved organic carbon
Salinity	Medium	Historical chloride and conductivity data, teams experience on other coastal recycling projects	Online conductivity monitoring, chloride and sodium
Nutrients	Medium	Selection of routine and regulatory nitrogen and phosphorus samples (with varying fractionation)	Nitrate, nitrite, TKN, orthophosphate, total phosphorus
Viral, bacterial & protozoan pathogens	High	Team's experience on other recycling projects (supported by sampling at other sites and peer reviewed published data)	Suite of virus, pathogen and bacteria indicators (TBC)
Organic micropollutants	High	Negligible data, but present in secondary treated wastewater in teams other recycling projects and peer reviewed published data	rUWWTD indicators, surface water discharge EQS, DWI PFAS list and others (TBC)
Metals	Medium	Total and soluble iron, manganese. Others hypothesised to potentially be present to due to catchment trade activity	Broad suite, pending review based on WTW trade discharge licenses (TBC)
Turbidity	Medium	Historical turbidity sampling, teams' engineering judgement	Not applicable - well understood
Hardness	Medium	Historical hardness and alkalinity data	Full suite of particulate and soluble anions and cations
Heavy metals & selenium	Medium	No data available, but hypothesised to potentially be present due to catchment trade activity	Broad suite, pending review based on WTW trade discharge licenses (TBC)

3.3. Risk Based Longlist Development

3.3.1 Treatment Technology

The risk profiles presented in Section 3.3 were used to review the PR24 solution and develop alternative technology option longlists for consideration if those risks are confirmed. These long lists are presented in Table 3-4 and Table 3-6 for the potable water and water recycling treatment respectively, and have been layered to provide varying levels of risk mitigation.

These tables also highlight the importance of treatment losses, which have a significant influence on deployable output. For example, if further analysis indicated that there is a need to reduce borehole water salinity, Reverse Osmosis (RO) may be required. RO is a treatment with relatively high process losses (which will depend on water quality characterisation). If recovery is 75%, meaning 25% of the feed is "lost" to a waste stream, a feed of 10Ml/d may be necessary to provide a deployable output of 7.5Ml/d.

This would then mean that a 10MI/d supply of recycled water is required to offset borehole water consumption at the industrial facility, and a 2.5MI/d waste management stream must also be provided at the water treatment works.

At present, there is insufficient water quality data available to refine these treatment long lists, hence understanding the implications of treatment losses and ultimately the quantities of flow required to enable the scheme. Instead, an adaptive pathway to preferred option selection has been developed and is presented in Section 3.4.

3.3.2 New Water Supply Works Location

The PR24 solution is predicated upon water recycling plant construction at the existing Sittingbourne WTW site, and integration of the new potable water supply (from the boreholes) close to the existing Cromers Wood Water Supply Reservoir.

A shortlist of three other potential integration points, in addition to that included in the PR24 solution, have also been identified by SWS. Indicative pipe routes have been developed based on desktop review of publicly available data sets, are presented in

Table 3-5, and are currently subject to initial planning and environmental screening.

The optimal connection location will be selected as part of Submission 2 development, utilising the selection logic set out in Section 3.4. This will happen in parallel with technology selection, with appropriate metrics used to gauge blending risks and opportunities which differentiate between shortlisted locations.

Table 3-4: Potable water treatment technology longlist

Ref.	Technology Option	Salinity treatment efficacy	Nitrate treatment efficacy	Pathogen treatment efficacy	Micro-pollutant treatment efficacy	Metal treatment efficacy	Turbidity treatment efficacy	Harness treatment efficacy	Heavy metal & selenium treatment efficacy	Estimated input required to provide 7.5MI/d deployable output
WSW1	Baseline PR24 (Filtration, O ₃ , GAC, UV & super-chlorination)	A	A	H	M	M	M	L	L	8.1 MI/d
WSW2	Benign Water Quality (low risk) (filtration, IEx, super-chlorination)	A	A	M	L	M	M	L	L	8.0 MI/d
WSW3	Option WSW1 + nitrate removal (filtration, IEx, O ₃ , GAC, UV & super-chlorination)	A	H	H	M	M	M	L	L	8.5 MI/d
WSW4	Option WSW3 + enhanced particle removal (filtration, IEx, SiC UF, GAC & chlorination)	A	H	H	H	H	H	M	M	9.0 MI/d
WSW5	Adverse Water Quality (high risk) (UF, RO, chlorination & remineralisation)	H	H	H	H	H	H	H	H	10.7 MI/d

*Note: Efficacy rated absent (A), low (L), medium (M) or high (H) based on design team experience and engineering judgement

Table 3-5: Raw or potable water transfer system shortlist

Ref	Connection Point Option	Indicative Pipe Length Required		Indicative Diameter (mm)	Indicative Transfer Pump Station Summary	
		Total (km)	Trenchless (km)		Total Installed power (kW)	Max design power (kVA)
P2	Cromers Wood WSR	~7.4	~1.1	311.6	330	187
P1	Keycol WSW	~3.2	~1.1	311.6	225	128
P3	Highsted WSW	~6.7	~1.1	311.6	270	153
P4	New Iwade site*	~4.8*	~1.3*	311.6	210*	80*

*Note: Includes additional pumping to a SWS distribution main downstream of the proposed new site

Table 3-6: Water recycling technology longlist

Ref.	Technology Option	Colour treatment efficacy	Salinity treatment efficacy	Nutrient treatment efficacy	Pathogen treatment efficacy	Micro-pollutant treatment efficacy	Metal treatment efficacy	Turbidity treatment efficacy	Harness treatment efficacy	Heavy metal & selenium treatment efficacy	Estimated input required to provide 7.5MI/d recycled water output
WTW1	PR24 Baseline (Balancing, UF, RO, UVAOP & remineralisation)	H	H	M	H	H	H	H	H	H	10.7
WTW2	Side stream for improved nutrient removal (Balancing tank, screen, MBR, RO, UVAOP & Remineralisation)	H	H	H	H	H	H	H	H	H	10.8
WTW3	Option WTW2 + waste stream improvement (Balancing tank, screen, MBR, RO, UVAOP, GAC & Remineralisation)	H	H	H	H	VH	H	H	H	H	10.8
WTW4	Tertiary alternative for improved nutrient removal (Balancing, screen, MBSF, ceramic membrane, UVAOP & Remineralisation)	H	H	H	H	H	H	H	H	H	11.3
WTW5	Option WTW4 + waste stream improvement (Balancing, screen, MBSF, ceramic membrane, UVAOP, GAC & Remineralisation)	H	H	H	H	VH	H	H	H	H	11.3

***Note: Efficacy rated as low (L), medium (M), high (H) or very high (VH) based on design team experience and engineering judgement**

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3.4. Pathway to Preferred Solution Selection

The key activities required to better understand water quality risks, hence select and advance the design of a preferred solution, have been identified and incorporated into the project delivery plan presented in Section 5.

The activities, which are presented in Figure 3-2 below, form a risk-based pathway to ensure that both environmental and human health are protected whilst optimal value for customer is delivered. They will be completed in Submission 2 timescales, informed by additional data collection and analysis (where possible), and ensure that the guidance requirement for a robust cost benefit analysis is met.

The best value appraisal metrics required to determine the optimal solution for each scheme component will be established collaboratively to reflect the scheme's unique complexities and aligned with WRMP best practice.

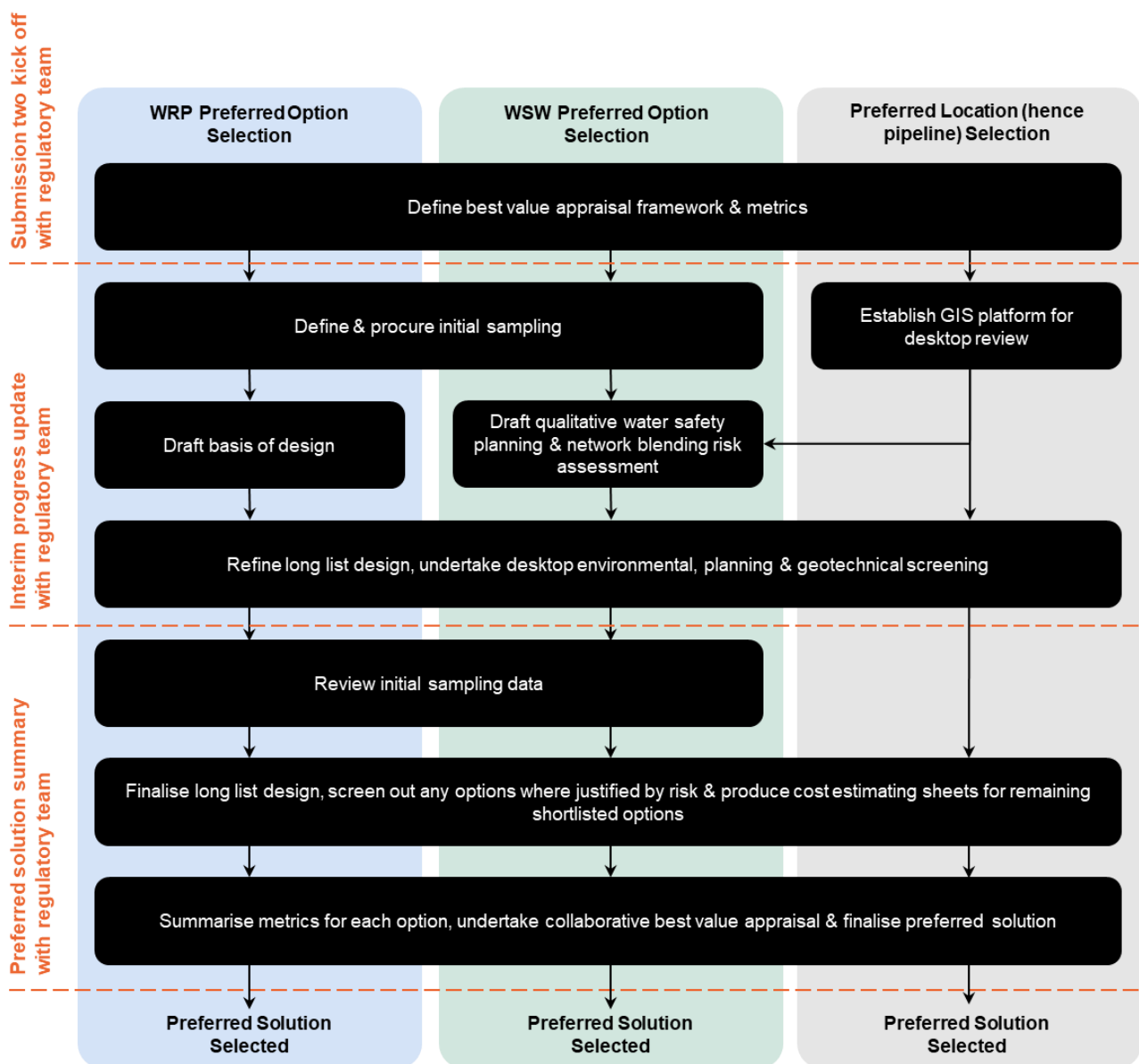


Figure 3-2: Submission 2 pathway from option longlist to preferred solution

4. Solution Costs and Benefits

As the scheme is still in the early stages of conceptual longlist design and evaluation, and data is still being gathered to support a risk based preferred solution selection process, PR24 costs have been retained for Submission 1.

Section 3 describes the long list evaluation methodology (summarised in Figure 3-2), with design and cost estimation for some options currently being accelerated where the risk of rework is considered to be low. Section 4.4, below, sets out the provisional best value appraisal framework that will be used to finalise preferred option selection. Metrics will be finalised collaboratively with regulators, and the industrial facility owner where appropriate, early in the Submission 2 delivery phase to ensure buy in and minimise the risk of abortive work or delays.

4.1. Change Log

There have been no formal 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 such, no change log is included in this submission.

4.2. Solution Cost Estimates

An updated solution whole life cost estimate will be provided at the Submission 2 stage, reflecting risk-based project development and the outcome of ongoing engagement with the industrial facility owner. This will be accompanied by costs associated with any shortlisted options, and a rationale for exclusion of any long list options prior to cost estimation. It is anticipated that a Change Log may be required at that stage. Any need for a carbon cost equivalent, similar to that provided in Strategic Resource Option schemes, will be discussed with regulators.

As such, for Submission 1 the PR24 solution remains that which is presented. It has been re-costed by SWS' Cost Intelligence Team however, resulting in a small alteration to £117,962,293 (2022/23 base price). See Annex B1 for the costing methodology.

Table 4.1 Summary Cost Breakdown PR24 Preferred Option (Option 4) - Class 4 Estimate

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

4.3. Benchmarking Methodology

Given the relative immaturity of the scheme, and need for additional data to inform a robust best value assessment as discussed in Section 3, the PR24 solution has been retained for Submission 1. This solution has not changed from PR24, but it has been re-costed. Shortlisted option costs will be costed and benchmarked as part of the Submission 2 delivery programme.

4.4. Best Value Appraisal

A bespoke best value appraisal framework has been drafted and will be finalised early in the Submission 2 delivery phase, as highlighted in Section 3.4. This reflects the unique complexity of the scheme, and the need to ensure that the proposed solution is beneficial to all involved parties (i.e. including the industrial facility owners, whose support and buy in is crucial for scheme success).

The provisional framework is summarised in Table 4-21 below. Metrics have been selected based on alignment with Ofwat's Public Value Principles, SWS corporate value framework for Cost Benefit Appraisal¹, WRMP and RAPID process best practice.

Feasibility of estimation within Submission 2 timeframes has also been an important consideration in metric selection. A Geographic Information System (GIS) portal containing key data sets will be established early in the Submission 2 period and used to facilitate rapid geospatial metric assessment where possible. Other metrics will be evaluated on a qualitative basis, with supporting justification provided by subject matter experts.

Table 4-21: Provisional & indicative best value appraisal framework

Metric Ref.	Metric Group	Metric	Units	Metric Applicability to preferred option selection		
				WRP	WSW	Location
1	Industrial Facility Assurance	Projected recycled water flow availability	H to L*	✓	-	-
2		Projected recycled water flow quality	H to L*	✓	-	-
3		WRP technology maturity	H to L*	✓	-	-
4	Supply Safety & Resilience	Water blending risks	H to L*	-	✓	✓
5		Projected maximum deployable output	MI/d	✓	✓	✓
6	SWS' corporate value framework, WRMP best practice, RAPID best practice &	WRP waste WFD implications	H to L*	✓	-	-
7		Terrestrial designated area impacted	Hectares	✓	✓	✓
8		Negative land use change	Hectares	✓	-	-
9		Projected HRA implications	H to L*	✓	-	-

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

10	Ofwat's Public Value Principles	Projected flood risk	H to L*	✓	✓	✓
11		Projected coastal erosion risk	H to L*	✓	✓	✓
12		Estimated land purchase area	Hectares	✓	✓	✓
13		Estimated CAPEX cost	£M	✓	✓	✓
14		Estimated whole life cost	£M	✓	✓	✓
15		Estimated embodied carbon	tCO ₂ e	✓	✓	✓
16		Estimated whole life carbon	tCO ₂ e	✓	✓	✓
17		EIA likelihood	H to L*	✓	✓	✓

***Note: Qualitative High (H) to Low (L) assessment supported by a justification summary sentence highlighting key evidence, references and or assumptions**

The costs and benefits 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 currently feasible options. The final best value appraisal will then be applied.

The weighting and scoring of these metrics will also be agreed early in Submission 2 development, and the finalised best value appraisal framework shared with Ofwat once available.

A decision will also be made on how best to account for OPEX as part of the whole life cost metric. The procurement model (confirming day to day site operational responsibilities and concessions), might not have been finalised by Submission 2. If that is the case, operational costs will be calculated in line with normal SWS practice and used to understand relative energy and chemical intensity. This will be sufficient to differentiate options, and any residual risks associated with procurement and delivery strategy highlighted for resolution post Submission 2.

5. Programme and Planning

In light of the work required to better understand risk and resolve uncertainty, and cognisant of the need to deliver the scheme by 31 March 2029, Submission 2 activities have been developed with the goal of arriving at a preferred solution by May 2026.

These activities are summarised in Section 5 below, which is followed by a summary of the planning and consenting activities anticipated based on the PR24 solution. The data collection activities that will underpin longer term delivery after Submission 2 are then summarised alongside indicative costs in Section 9.

All Submission 2 delivery activities are ultimately towards securing a commercial agreement from the industrial facility ownership. Given the maturity of the scheme, and anticipated need to verify recycled water acceptability during a pilot phase which will follow Submission 2, this is likely to take the form of an agreement in principle which reflects a shared understanding of the scheme and next steps. It will aim to confirm mutually acceptable criteria for recycled water provision (e.g. a numerical quality envelope), provide initial financial arrangements and establish a preferred operation and procurement strategy (e.g. who will be responsible for operation of new water recycling assets), reflecting any additional activities (e.g. pilot trials and outcomes).

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.

Key risks are summarised in Section 0 below.

5.1. Submission 2 Draft Delivery Plan

The delivery plan for Submission 2, illustrated in Figure 5, will focus on finalising the key components of the solution – WRP location, WSW location and interconnecting pipelines – whilst also working to secure the Industrial Facility owner buy in which is crucial for scheme success.

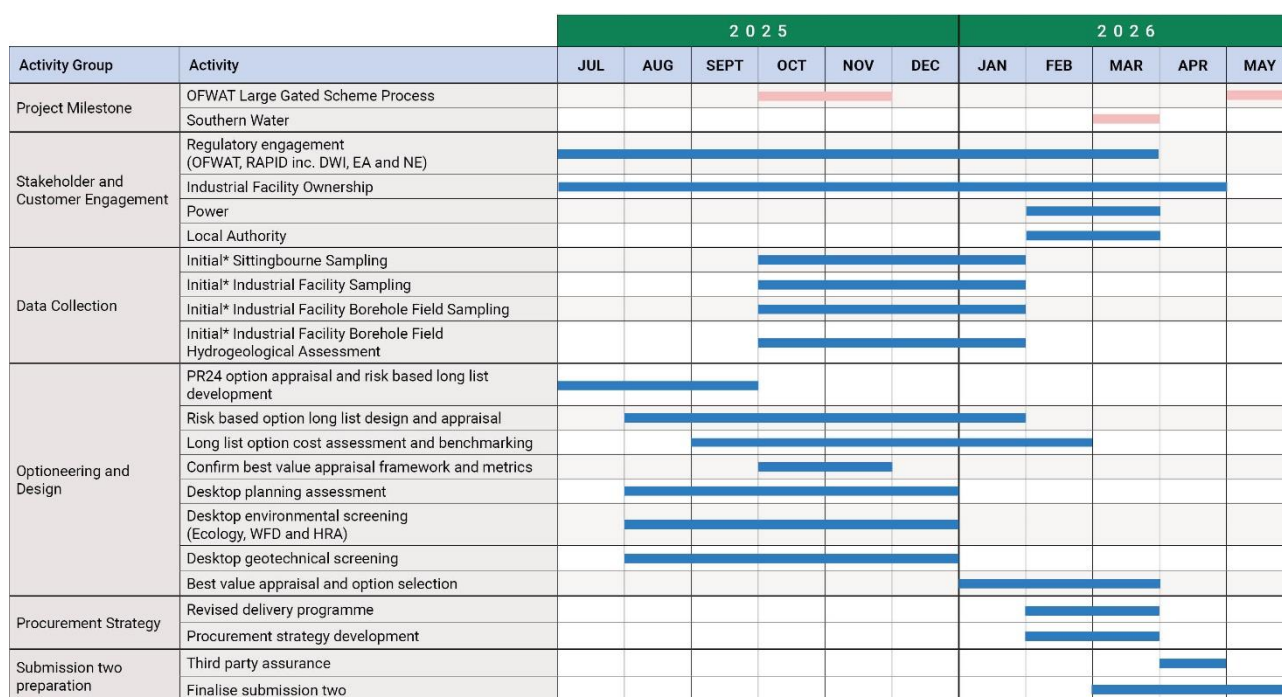


Figure 5-1: Submission 2 development plan

Key activities are summarised below:

- **Continued Engagement:** Initial Submission 2 activities will focus on developing the positive relationship established with the Industrial Facility owner, whilst providing more technical detail in ongoing regulatory updates. Given that locations have not yet been finalised, formal pre-application liaison with the local authority will not commence before Submission 2. Initial informal discussions may take place, alongside contact with the power supply district network operator, dependent on design progress.
- **Data Collection:** The majority of key surveying activities (i.e. terrestrial and aquatic ecology surveys, utility surveys, GPR, sampling in support of DWI and EA consents) will be commenced after Submission 2 (i.e. once locations of a preferable solution have been finalised to avoid unnecessary expenditure), which will also coincide with the appropriate window for surveys to take place. However, an initial water quality analysis exercise will be expedited to help better understand risk and provide greater confidence in technology selection. Other surveying activities may be accelerated at risk dependent on design evolution.
- **Optioneering Design:** Initial design, environmental assessment and planning assessment has been undertaken on technology and location options. This will be finalised and used to inform the best value appraisal (which will be structured as discussed in Section 4.4). Cost estimation and benchmarking will be

performed by SWS' cost intelligence team, while all environmental, planning and geotechnical assessment will be completed on a desktop analysis basis.

- **Procurement Strategy:** Procurement and delivery strategy will be refined based on preferred option design and Industrial Facility engagement. The third-party interface opens several options for delivery, which can be viewed as both risks and opportunities and have implications on planning route.
- **Submission 2:** Submission 2 will be issued in May 2026. Some project delivery activities may continue at risk; survey specifications may be accelerated to facilitate procurement and mobilisation as early in 2026 as possible. This decision will be taken by SWS dependent on project progress early in 2026.

5.2. Draft Planning and Consenting Route

Long term delivery will depend on the final site and pipeline locations, and a plan will be developed as part of Submission 2 delivery. An initial planning and consenting review has however, been undertaken based on the PR24 solution, and is summarised below:

- **Planning - General:** The local planning authority is Swale District Council; however, for waste planning purposes, the deciding authority is Kent County Council. A full review of the local authority's planning policy has not been undertaken at this stage but would be undertaken at future stages of long list site assessment and selection.
- **Planning - WRP:** It is understood that the new WRP would be constructed on unused land not owned by SWS. Therefore, the proposed sites may constitute an extension to the existing WTW and may require planning permission. Any works on the existing operational site (e.g. works to make the necessary connections to the new infrastructure or to provide access) may be possible under Schedule 2, Part 13, Class B (f) of the Town and Country Planning (General Permitted Development) Order (GDPO) 2015 which provides permitted development rights for certain development for sewerage undertakers on their operational land.
- **Planning - WRP to Industrial Facility Pipeline:** It may be possible to construct the pipeline that would transfer recycled flows to the industrial facility via permitted development rights under Schedule 2, Part 13, Class A (a) of the (GDPO) 2015 - '*development not above ground level required in connection with the supply of water or for conserving, redistributing or augmenting water resources, or for the conveyance of water treatment sludge*'. Otherwise, planning permission will be required.
- **Planning - WSW and Industrial Facility Borehole Field to WSW location pipeline:** The proposed WSW site is not currently owned by SWS and is not operational land. The proposed works would therefore require planning permission. It may be possible to construct the pipeline under permitted development rights under Schedule 2, Part 13, Class A(a) of GDPO 2015 - '*development not above ground level required in connection with the supply of water or for conserving, redistributing or augmenting water resources, or for the conveyance of water treatment sludge*'.
- **Consenting - Modifications to existing WTW discharge permit:** Waste from the WRP is intended to be released via the existing Sittingbourne WTW outfall. In principle, change to pollutant loads for substances listed on the existing permit should be negligible (or potentially positive). However, the reduction in flows may increase substance concentrations, and a H1 Risk Assessment is considered likely to be required by the Environment Agency based on the team's experience of other water recycling schemes, as well as a potential need to vary the existing discharge permit.
- **Consenting - meeting Drinking Water Inspectorate requirements:** As the industrial users borehole supply has never been used for potable water, regulatory submissions to DWI under the Water Supply (Water Quality) Regulations 2018 and associated guidance are required. The most significant impact of

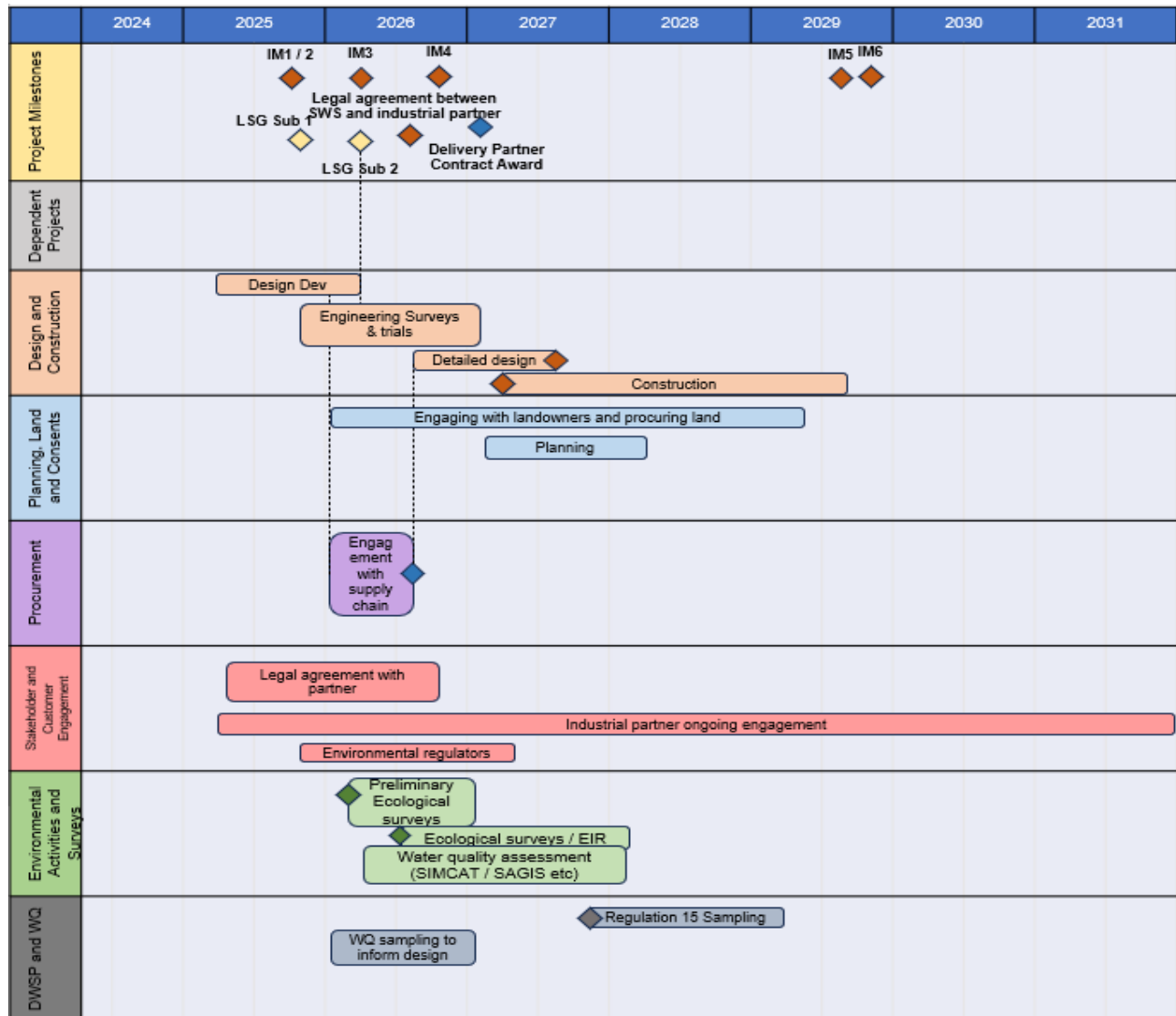
this is that a risk assessment must be completed in accordance with Regulation 27, without which a Regulation 15 submission would be inadequate according to the guidance. This requires a range of sampling to cover the regulated parameters and any other substance that could cause the water to be unwholesome, with the aim of ensuring that necessary treatment is in place. Given the lack of data, this will require sampling over an extended period to identify any pollutants that could be mobilised under different hydrological and operational conditions.

Several of the PR24 project components summarised could trigger the requirement for an Environmental Impact Assessment (EIA) Screening Opinion. Experience and desk-based review suggest that requirement for an EIA and statutory consultation are possible, based on the evidence available at this stage. However, further optioneering and assessment work on site and route selection will be required to support a planning and consenting strategy. This assessment will be undertaken in support of the best value appraisal in Submission 2 development.

5.3. Project Delivery Plan

Given the early stage maturity of the scheme, with locations, procurement strategy and planning routes yet to be confirmed, the long-term delivery plan will be finalised in Submission 2. Best value appraisal will be weighted to reflect the importance of delivery within the required timescales, and pipe routes may be further optimised to minimise delivery risks. An indicative programme is shown in Figure 5-2, which builds off the plan to Submission 2.

Figure 5-2: Indicative project delivery plan



5.4. Key risks and mitigation measures

Risk identification and evaluation activities were completed in line with SWS' risk management framework. 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 to achieving the project objectives have been identified, scored, and mitigation measures developed.

Key delivery risks are set out in Table 5-1.

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 5-1: Key Scheme Risks

Risk Category (and ID)	Risk Description	Current Score	Mitigation Action	Residual Score
TBC –when transferred to Programme Insight Manager (PIM)	The expected level of customer growth is based on information contained in the Dover Local Plan, a review of existing planning permissions and a forecast of build-out rates for the development. There is a risk that actual build out numbers and timings differ, as housing developers bring forward individual planning applications.	Red	Planning applications and completions will continue to be monitored. Engagement with Dover District Council and developers.	Red
TBC –when transferred to PIM	Remaining uncertainties on the capacity of the existing network and what the network can receive, due to lack of existing information / outputs from hydraulic modelling and understanding of the technical complexities of potential upgrades.	Red	Ongoing surveys and hydraulic network modelling and verification to increase confidence in understanding the available capacity and constraints in the existing network. Scheme to include consideration of phased approach, if necessary, with an early phase providing additional capacity prior to completion of the full scheme.	Amber
TBC –when transferred to PIM	Planning EIA Transfer pipelines may require EIA Development on Sittingbourne WTW may require EIA. Required surveys and submissions may constrain delivery timescales.	Red	Timeline for environmental surveys impacted by required enabling studies. Requires assessments to build industrial company confidence.	Red
TBC –when transferred to PIM	DWI Engagement A core part of the project is non potable water recycling to a commercial non potable system to release the commercial borehole supply for transfer and potable water use. This will require further in-depth studies and sampling to be conducted to meet regulations 4, 15, 27, 28 and 31 of the Water Supply (Water Quality) Regulations 2016 (as amended).	Red	Mitigation will include, but is not limited to, raw water sampling, new source applications, Reg 15 sampling, Reg 31 assessment, borehole yield and water quality assessments, catchment risk assessments and modelling, Regulation 27 risk assessments and associated Regulation 28 submissions. This must be progressed through Submission 2 and the Design Phase.	Green
TBC –when transferred to PIM	Financial Potential for costs higher than the business plan allowance.	Green	Submission 1 remains aligned with the PR24 submission. Options are being revised as a function of engagement with the Industrial facility owner.	Green

Large Scheme Gated Submission 1

Sittingbourne Industrial Re-use

Risk Category (and ID)	Risk Description	Current Score	Mitigation Action	Residual Score
TBC –when transferred to PIM	Delay in delivery Risk to project benefit delivery dates due to planning timelines or resource availability		Options appraisal includes period of analysis and studies. These should enhance certainty in most cost beneficial and best environmental option. This may lead to a lower complexity solution overall. Studies need to be integrated with planning surveys to ensure planning and delivery timelines are achieved.	
TBC –when transferred to PIM	Delay in delivery Risk to project benefit delivery dates due to enabling works and assurance for industrial company security of water supplies.		Enabling studies should build industrial company confidence. Site surveys will include assessments of key integration assets.	
TBC –when transferred to PIM	Delay in delivery Integration of new assets with industrial company's assets.		Industrial company operation 24/7 aside from annual shutdown. Programme needs to be managed to ensure company objectives can be achieved.	
TBC –when transferred to PIM	Industrial company water supply risk Potential upgrade to borehole headworks. Potential new borehole.		Initial surveys will provide updated requirements and support integration of programme with detailed design and delivery programme. Initial outline discussions have taken place. New borehole if required to support programme delivery has risks on yield and water quality	
TBC –when transferred to PIM	Licence risks Expiry date of existing industrial user abstraction licence is currently 2041. Any material change in licence conditions like new abstraction boreholes may require a Section 32 (Water resources act) drill and test consent from the EA to include water features survey.		Planned reviews of yield and water quality for the boreholes to support licence renewal. Recent licence review by EA. Kent groundwater review did not flag material risks.	
TBC –when transferred to PIM	Industrial user cooperation The success of the scheme and delivery time frame relies on a mutually beneficial commercial agreement between SWS and the industrial user.		Continued engagement between SWS and the industrial user. Enabling studies and scaled trials that build Industrial user confidence.	
TBC –when transferred to PIM	Deployable output risk Limitations of Sittingbourne WTW dry weather flow, impact of waste recycling plant and new WSW process losses.		Design included raw water storage to mitigate low flow events. Greater opportunities for water efficiency on industrial user site. Potential to compensate for most complex WSW treatment process losses.	

6. Customer Protection

As part of this scheme, we recognise the importance of ensuring our customers are protected and so we have proposed a price control deliverable (PCD), this is in addition to our current PCDW11a on the supply of water.

Therefore, we have proposed the same non-delivery payment rates for the most complex schemes given this is for new water treatment. In the event we need to substitute this scheme with another solution, we would expect the same amount of MI/d to be delivered. The supply and demand benefits are needed to meet the requirements of the WRMP. The dates benefits will be realised and put into supply are consistent with this submission. This PCD includes both the MI/d benefit for Sandown and Sittingbourne schemes.

The common requirements set out in section 6.1 of the [PR24-final-determinations-Price-control-deliverables-appendix-REDACTED.pdf](#) will apply to this new PCD.

Sittingbourne reuse is to provide 7.5 MI/d in supply by March 2029.

Table 6-1: PCD Details

Company	Southern Water
Enhancement area	Supply
PCD No.	PCDW11c
Common requirements	See Section 6.1 of Price control deliverable appendix
Additional company specific requirements	
Description	Sittingbourne will provide 7.5 MI/d to meet the requirements of the WRMP by the 31/03/2029
Output measurement and reporting	MI/d
Assurance	No additional assurance as per PCDW11a
Conditions on scheme	No specific conditions on top of the conditions set out in PCDW11a

Non-delivery PCD payment	Unit	Underperformance rate
High complexity schemes	£m per MI/d	4.386

Cumulative PCD outputs	Unit	23-24	24-25	25-26	26-27	27-28	28-29	29-30		30-31	31-32	32-33	33-34	34-35
WAFU Benefit [High complexity]	MI/d	0	0	0	0	0	0	0		16	16	16	16	16

7. Stakeholder and Customer Engagement

7.1 Customer engagement

SWS carried out general engagement as part of the PR24 and WRMP24 processes and will continue to do so as part of statutory requirements.

Due to the nature of this scheme and the fundamental requirement for a bulk supply agreement, the main customer to engage with is the industrial facility owner, with whom a Non-Disclosure Agreement (NDA) is in place. The project team met the customer on site, and reviewed proposals about how SWS could support provision of recycled water and options for how to meet the industrial user's needs, while meeting SWS' requirement to obtain 7.5Ml/d abstraction from the borehole. This was also an opportunity to commence data sharing with the industrial partner, as well as obtain water quality and yield data regarding their abstraction borehole.

This data has been utilised in the further development of the options, and the industrial facility owner's preferences have been considered throughout in order to maintain their support. This is fundamental to the success of this scheme, as failure to obtain a mutually beneficial agreement will result in the scheme having to discontinue.

Since this original engagement, SWS has commenced weekly meetings with the industrial facility owner to continue the dialog and ensure their embedment into the conceptual design process. This activity will continue throughout the project and forms a cornerstone of the plan.

7.2 Regulators and partner organisations

7.2.1 Ofwat

SWS continue to engage with Ofwat and RAPID (as this is a RAPID Oversight project in addition to an Ofwat Large Scheme Gated project) through quarterly meetings and reporting. The scheme has been introduced with the aims and objectives as well as key challenges.

7.2.2 Environmental Regulators

SWS provided a written update on the Sittingbourne scheme.

In addition to this, in order to progress the scheme, SWS will be engaging extensively with the EA and Natural England due to possible changes to the abstraction, and changes to discharges to the environment. To date, the EA have been approached and key contacts agreed to support in the forward planning with the industrial facility owner.

SWS have agreed with Natural England that engagement will commence once SWS have narrowed down options for this scheme.

Engagement will increase during the lead up to Submission 2 as options are matured and our final solution is confirmed.

7.2.3 DWI

DWI have been engaged as part of the RAPID Oversight process to date, as the options mature towards a single solution and our understanding of the proposed treatment process, proposed change of water sources etc.

The proposed treatment strategy for Sittingbourne is currently being developed as part of the option development work required for Submission 2. Any selected treatment technology, including materials in contact with water, will adhere to the regulatory requirements under the Water Supply (Water Quality)

Regulations 2018 and in the case of water recycling, SWS will follow the guidance provided in the 2024 Information letter to proposed new water recycling or desalination schemes issued by the DWI.

7.3. Stakeholder engagement plan

During the work required for Submission 2, there will be ongoing engagement with stakeholders already mentioned, as well as wider engagement with local stakeholder groups. The purpose of the ongoing engagement is:

- To build upon the current engagement and ensure support for the project, especially with our industrial facility owner
- Ensure the proposals meet all key stakeholders needs where possible
- To ensure local customers have visibility of the plans, and understand the needs and positive impacts it has on the local area

Although the plan is to be developed in conjunction with our stakeholders, it is envisaged that the level of engagement will vary depending on the individuals aims and role. For example, we will continue weekly engagement with our industrial facility owner, but we will engage with our environmental regulators to meet in line with our forward plan and their requirements.

We will also draw up lists of local stakeholders and develop a plan to bring these proposals to local residents and councils. This will allow us to demonstrate the need and the aims of the project.

7.4. Issues Identified for Further Investigation

- **Commercial & Contractual Arrangements:** Shaping the contractual basis for the bulk transfer agreement, ensuring flexibility and that it works for all involved.
- **Water Quality Data Gaps:** Establishing a numerical definition for acceptable recycled water quality, which can then feed into the future contract arrangement
- **Proof of Concept:** Establishing what governance and assurance the Industrial Facility owner would like to see to ensure scheme acceptance (e.g. pilot plant)

8. Assurance

8.1 Our approach to assurance

As described in our statement Data Assurance Summary, we take full responsibility for our performance information and seek to take a transparent approach to data assurance. We follow the 'three lines of defence' framework for our 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 our timelines for improvement, while the Audit Committee monitors the assurance over the integrity of information reported by us in fulfilment of our regulatory, legal and environmental obligations as well as overseeing and challenging the effectiveness of our approach.

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

We engaged [REDACTED] to undertake limited assurance (under ISAE (UK) 3000) over our Large Scheme 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, SWS has developed our PR24 Business Plan into AMP8 delivery and investment Plans. We continue to refine our plans for the AMP and are collaborating with our internal and supply chain stakeholders to improve maturity. During the development of our plans we are identifying, mitigating and managing deliverability risks.

We 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 D1 and D2 contain the external assurance findings from our independent advisors (both technical and commercial). These findings have been reviewed by our Assurance teams, the respective MDs and our CFO as part of our signoff governance process.

All findings will be incorporated into our 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 Sittingbourne Water Recycling Project to get it to Submission 2, in line with Ofwat's guidance for Large Scheme Gated Submission 1.

9.1 Expenditure for Submission 1

Breakdown of costs have been provided against the RAPID financial categories as Sittingbourne is also a RAPID project and cover the period up to 1st October 2025.

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

Internal Staff (including staff obtained via Resource Augmentation)

- Costs to the end of August comes from financial reports
- Costs for September are forecasted by hours

Supply Chain

- A framework supplier has been utilised for this project, who have been engaged via an NEC4 Option E contract. Costs to complete the work come from the invoices and released payments against the Purchase Order
- Any additional work is reported based on the Purchase Order costs for their services

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

Table 9-1 – Expenditure for Submission 1

Activities	9.1 Costs to Submission 1 (1 April 2025 - 1 Oct 2025)			
	AMP8 Apr-Aug 2025 Actuals	AMP8 Sept 2025 Forecast	Totals	2022-23 Price Base
Project and Programme Management				
Developed Design				
Environmental Assessment				
Data Collection, Sampling, and Pilot Trials				
Commercial and Procurement				
Planning and Land				
Stakeholder Engagement				
Legal				
Others				
Threats -SWS				
Threats - DP				
SWS overheads (11.2%)				
Total (£)				

SWS have ensured efficiency on this submission through the following means and mechanisms:

- Use of pre-existing Frameworks
- Utilisation of suppliers who are familiar with RAPID and the LSG process
- Provision of available data, and engagement with the industrial facility owner throughout to data share

9.2 Forecast of Expenditure to Submission 2

The below costs are the estimated costs to progress the scheme to Submission 2, between October 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. The cost of any legal agreements with the Industrial Partner are unknown at this stage so an estimated amount has been allowed for in the Submission 2 breakdown, to highlight that some detailed work will be required for this submission.

Table 9-2: Forecast of Expenditure to Submission 2

Activities	9.2 Forecast Expenditure to Submission 2 (Oct to March/May 2026)		
	AMP8 Oct - May 2026	Early Submission 2 activities	2022-23 Price Base
Project and Programme Management			
Developed Design			
Environmental Assessment			
Data Collection, Sampling, and Pilot Trials			
Commercial and Procurement			

Planning and Land			
Stakeholder Engagement			
Legal			
Others			
Threats -SWS (20% Risk)			
Threats - DP			
SWS overheads (11.2%)			
Total (£)			

The inflation factor to deflate from 2025/26 to 2022/23 is 0.901257. This was taken directly from the agreed SWS inflation matrix. See Annex E1.

The PR24 Methodology of risk allocation is based on 9.80% of the project total; however, to reflect the current level of uncertainty we have opted for a 20% risk allocation for the estimated project costs to Submission 2. At this stage we have insufficient information to define and detail all the risks associated with each activity planned for Submission 2. We anticipate there to be greater uncertainty for activities such as Data collection, sampling and subsequent design and less uncertainty on project and stakeholder management costs.

By utilising an overarching risk allowance the project can flex its allocation of risk funds to the relevant activity as required.

SWS have planned for efficiency on this submission through the following means and mechanisms:

- Use of pre-existing Frameworks
- Utilisation of suppliers who are familiar with Ofwat Gated process and where possible, secure resources who have worked on Submission 1
- Delivery through Business as Usual (BAU) processes
- Development of a clear plan of activities through Submissions 1 and 2 (although the plan may change depending on the outcome of ongoing engagement)

9.3 Comparison Against the Development Allowance

Table 9-3 sets out the development allowance for Sittingbourne.

Table 9--3: Development Allowance (22/23 prices)

Company	Area	Category	Name of Scheme	AMP8 development funding allowance (£M)	AMP8 contingent allowance (£M)	Total scheme cost (£M)
Southern	Water	Water recycling	Sittingbourne			

Table 9-4 sets out the underspend on development allowance for Sittingbourne.

The spend to get the project through to completion of Submission 2 is forecast to be lower than the allowance. The current forecast underspend is £10.29m in 2022/23 prices.

Table 9-4: 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 variation (£M)
Sittingbourne	██████████	██████████	██████████

However, there are several large unknowns which may result in significant increase in spend. These focus on several areas:

- Legal costs – there may be substantial costs in getting required agreements 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 will include surveys
- Delivery route – depending on the preferred delivery route, there will be variance to the costs of many stages of the project

Furthermore, there are many elements of this project that will need to be completed post Submission 2 as part of development activity, after the Submission 2 deadline, but before April 2027. These include (but are not limited to):

- Ecological surveys / Environmental Impact Assessments (which cannot be done until locations of work are refined, and the right seasons occur such that surveys can be completed) ██████████
- Intrusive surveys such as boreholes and trial pits (which require a refined location of work to avoid unnecessary environmentally impactful surveys) ██████████
- Trials of the recycling technologies to ensure support from stakeholders (this can only be done when stakeholders agree to the works in principle, which may be post Submission 2) ██████████
- Finalisation of legal agreements (these may take time to develop and reach an agreement on, and this will attract cost throughout this process) ██████████
- Finalised detailed design – due to the nature of the solution and agreements required to proceed, it will not be possible to get a detailed design complete by Submission 2. The concept and outline may be completed, but the detail will occur post Submission 2.

10. Conclusions and Recommendations

Submission 1 activity has verified the potential of the Sittingbourne PR24 solution, which was relatively immature in comparison to the wider Large Scheme Gated portfolio, and strengthened the relationship with the industrial facility owner, key to realising the opportunity.

In so doing, a long list range of sub options has been developed; these are documented in the supporting information package, and a plan to determine a preferred solution in Submission 2 delivery using a best value appraisal approach presented in this report. Engagement with the industrial facility owner has established that one particular alternative located at their premises may be preferable; due to the complex nature of this option, further work must be completed before it can be deemed viable. This alternative has the potential to yield substantial environmental and mutual benefits to SWS and the industrial facility owner when compared to the

WRMP proposal and may act as a test case for similar types of schemes not only in SWS, but in the industry as a whole.

There are significant uncertainties to this project which will need to be addressed and managed through the work for Submission 2. The key risks relate to continued engagement and support of the industrial facility (with obtaining associated legal and commercial agreements) and developing the understanding of environmental challenges with ongoing support from the environmental regulators. These risks are being mitigated by ongoing engagement and collaboration with our industrial facility owner and continued data collection and design. At this stage, since there is no formal agreement to deviate from the PR24 scheme, costs and programmes reflect the PR24 proposal.

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 at or before Submission 2 will confirm our preferred solution and updated forward plan for completion. Any significant changes will be notified to Ofwat.

The recommendation is to proceed into Submission 2 and continue to refine options to develop a preferred solution. While the design maturity is currently low, the development phase has provided sufficient evidence to justify continued progression.

11. Supporting Documentation

Annex B1: Cost Assurance Narrative

(See attached)

Annex C1: Delivery Plan DPW4

(See attached)

Annex D1: Technical Assurance Report

(See attached)

Annex D2: Commercial Assurance Report

(See attached)

Annex E1: Efficiency of Expenditure – Cost Breakdowns

(See attached)