



Drainage and Wastewater Management Plan

Faversham
Wastewater System Plan



from
**Southern
Water** 

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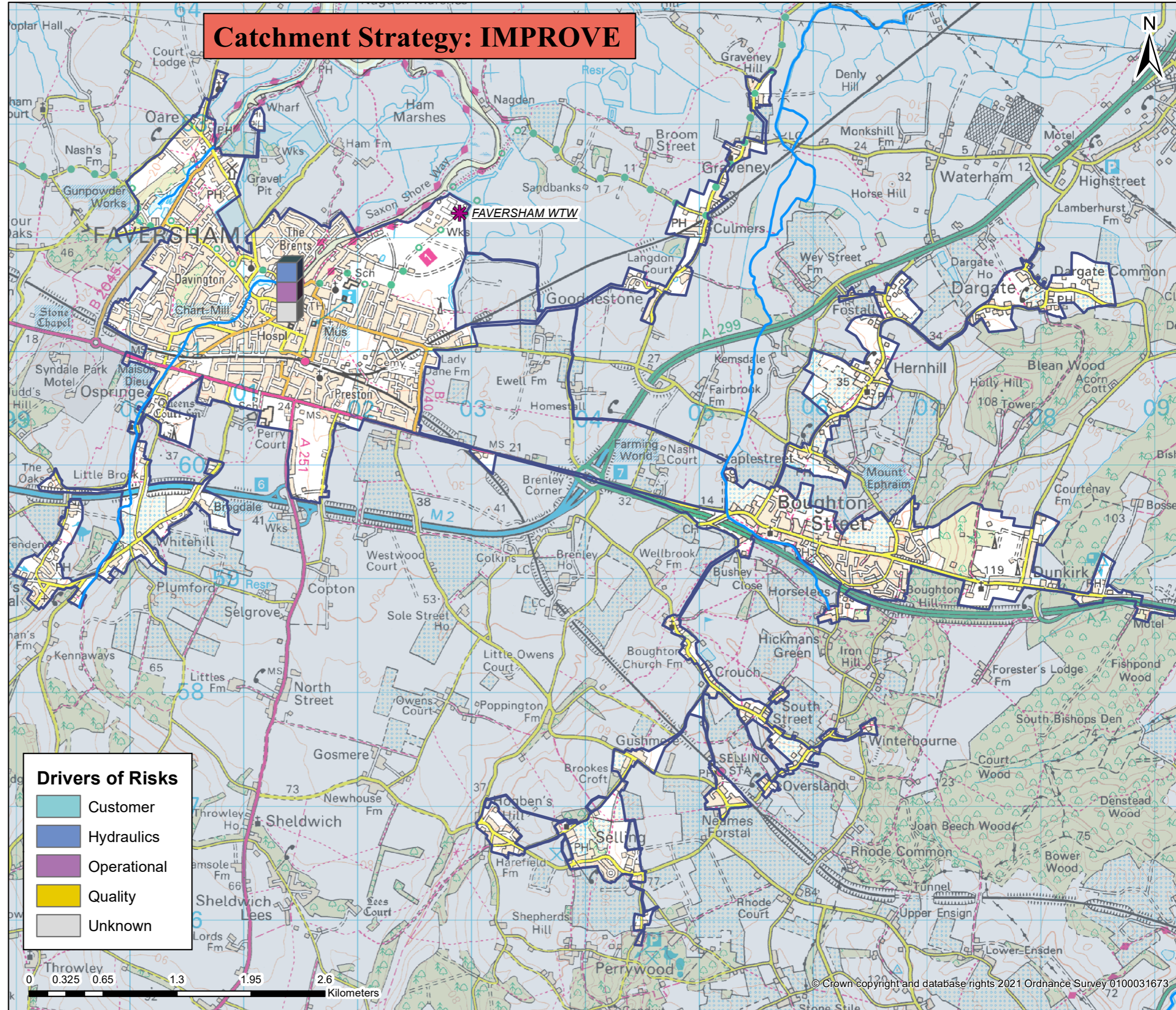
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Faversham wastewater system: map and key facts



Population Equivalent (PE)	26,291
Discharge Waterbody	Faversham Creek
Number of Pumping Stations	39
Number of Overflows	12
Length of Sewer (km)	210.4
Catchment Reference	FAVE

BRAVA Results Table		
Planning Objective	2020	2050
1 Internal Sewer Flooding Risk	2	
2 Pollution Risk	2	
3 Sewer Collapse Risk	1	
4 Risk of Sewer Flooding in a 1 in 50 year storm	1	1
5 Storm Overflow performance	2	2
6 Risk of WTW Compliance Failure	0	0
7 Risk of flooding due to Hydraulic Overload	1	1
8 Dry Weather Flow Compliance	0	2
9 Good Ecological Status / Potential	1	
10 Surface Water Management	1	
11 Nutrient Neutrality	2	2
12 Groundwater Pollution	1	
13 Bathing Waters	NA	
14 Shellfish Waters	1	



Problem Characterisation

Faversham (FAVE)

This document describes the causes of the risks identified by the Baseline Risk and Vulnerability Assessment (BRAVA). The BRAVA results for this wastewater system are summarised in Table 1. The results indicate that flooding, pollution and water quality are the main concerns in this wastewater system. We have completed risk assessments for 2050 where we have the data and tools available to do so. For the other planning objectives, we will explore how we can predict future risks for the next cycle of DWMPs. All the risk assessment methods need to be reviewed after the first DWMPs have been produced with a view to improve the methods and data for future planning cycles.

Table 1: Results of the BRAVA for Faversham wastewater system

Planning Objectives		2020	Driver	2050
1	Internal Sewer Flooding Risk	2	Hydraulic	
2	Pollution Risk	2	Operational	
3	Sewer Collapse Risk	1	Operational	
4	Sewer Flooding in a 1 in 50-year storm	1	Hydraulic	1
5	Storm Overflow Performance	2	Hydraulic	2
6	WTW Water Quality Compliance	0	-	0
7	Flooding due to Hydraulic Overload	1	Hydraulic	1
8	WTW Dry Weather Flow Compliance	0	-	2
9	Good Ecological Status / Good Ecological Potential	1	Hydraulic	
10	Surface Water Management	1	Hydraulic	
11	Nutrient Neutrality	2	Unknown	2
12	Groundwater Pollution	1	Operational	
13	Bathing Waters	NA	-	
14	Shellfish Waters	1	Unknown	

Key

BRAVA Risk Band	
NA	Not Applicable*
0	Not Significant
1	Moderately Significant
2	Very Significant

*No issues relevant to planning objective within Wastewater System

Investment Strategy

The risks identified in this wastewater system mean that we have assigned the following investment strategy:

Improve

This means that we consider that the current performance of the drainage and wastewater system needs to be improved to reduce the impacts on our customers and/or the environment. We will plan investment to reduce the current risks by actively looking to invest capital funding in the short term to address current performance issues (and consider future risks when implementing improvements).

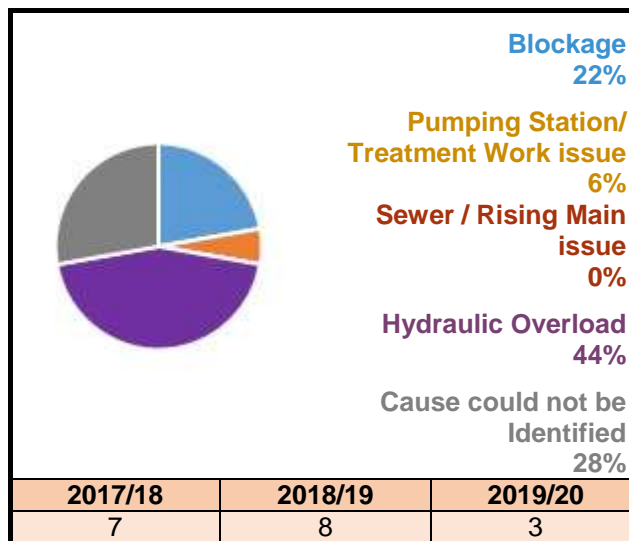


Planning Objective 1: Internal Sewer Flooding Risk

The number of internal sewer flooding incidents reported during the three years considered by the risk assessment are shown in Figure 1. The total number of connections in this wastewater system means there have been more than 3.35 incidents per 10,000 connections per year (a threshold set by Ofwat) so the risk is in the 'very significant' band.²

The primary driver for internal sewer flooding in this wastewater system is 'Hydraulic'. The lack of capacity of the sewer network to convey rainfall is the main cause of internal flooding, contributing to 44% of all incidents recorded in this wastewater system. This is known as Hydraulic Overload.

Figure 1: Number of internal flooding incidents per annum and causes

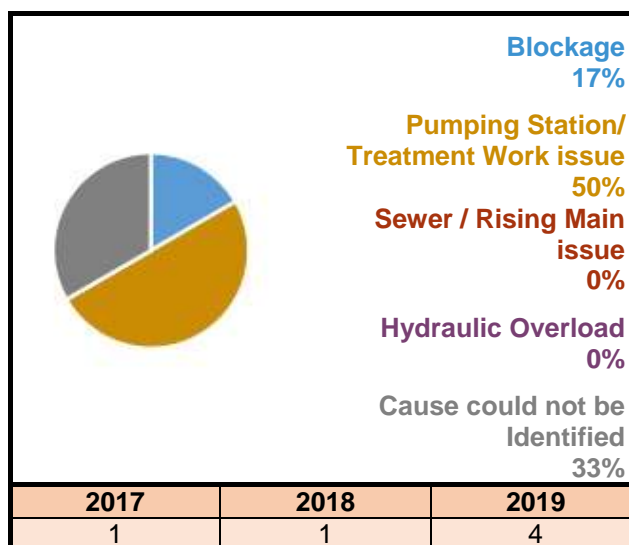


Planning Objective 2: Pollution Risk

The number of pollution incidents reported during the three years considered by the risk assessment are shown in Figure 2. The length of sewer in this wastewater system means there have been more than 49.01 incidents per 10,000km per year (a threshold set by Ofwat) so the risk is in the 'very significant' band.

The primary driver for pollution is 'Operational' due to asset operational issues. Asset operational issues at our pumping stations and treatments works are the main cause of incidents, contributing to 50% of all incidents recorded in this wastewater system.

Figure 2: Number of pollution incidents per annum and causes



Planning Objective 3: Sewer Collapse Risk

The number of sewer collapses reported during the three years considered by the risk assessment are shown in Table 2. The length of sewer in this wastewater system means there have been between 5.72 and 9.44 incidents per 1,000km per year (a threshold set by Ofwat), the risk is in the 'moderately significant' band.

The primary driver is 'Operational' as the cause of these collapses and bursts is due to the age and condition of the sewers.

Table 2: Sewer collapses and rising main bursts

Sewer Collapse	2017/18	4
	2018/19	0
	2019/20	1
Rising Main Bursts	2017/18	0
	2018/19	0
	2019/20	0

Planning Objective 4: Sewer Flooding in a 1 in 50 Year Storm

The risk of flooding in a 1 in 50 year storm is moderately significant in 2020 and 2050. This is because our computer model of the sewer network indicate for 2020 that approximately 400 - 500 properties within this wastewater system are in areas that could flood by water escaping from sewers. This model prediction increases the number of properties in areas at risk from flooding to approximately 600 - 700 by 2050.

Our wastewater networks are generally designed with capacity for up to a 1 in 30 year storm, hence flooding is expected to occur during more severe storms such as a 1 in 50 year event. Flooding will occur due to insufficient capacity of the drainage system either on the surface before it enters the drainage system, and/or from manholes, in people's homes or at a low point elsewhere in the system.

Planning Objective 5: Storm Overflow Performance

The storm overflow performance risk has been assessed as very significant for both 2020 and 2050. Table 3 shows the overflows that discharge above the low threshold set for storm overflow discharges to Shellfish Water, Bathing Water and inland rivers.

The primary driver for the Storm Overflow Performance is 'Hydraulic.'

Table 3: Overflows exceeding discharge frequency threshold per annum

	Number of overflows		Threshold for number of discharges per annum		
	2020	2050	Low	Medium	High
Shellfish Waters	1 High	2 High	Less than 8	Between 8-10	10 or more
Bathing Waters	0 Medium	0 High	Less than 3	Between 3-10	10 or more
Freshwater	1 Medium	1 Medium	Less than 20	Between 20-40	40 or more

Planning Objective 6: Wastewater Treatment Works Water Quality Compliance

The risk of non-compliance with our wastewater quality permit has been assessed as not significant for both 2020 and 2050. This is because the wastewater treatment works has no record of compliance failure during the last three years (2018-2020).

Planning Objective 7: Flooding due to Hydraulic Overload

This is an assessment of the risk of flooding from sewers during a 1 in 30 year storm, and more frequent rainfall, to understand where flooding could occur. The risk of sewer flooding due to hydraulic overload is moderately significant in 2020 and 2050. The annualised number of properties in areas at risk of flooding is shown in Table 4.

Table 4: Annualised number of properties at risk per 10,000 connections.

Rainfall Return Period (yr)	Number of Properties at Risk		Annualised per 10,000 connections	
	2020	2050	2020	2050
1 in 1	10	28	6	18
1 in 2	21	47	8	18
1 in 5	84	214	15	39
1 in 10	209	360	20	34
1 in 20	328	447	16	22
1 in 30	387	548	13	18
Total Annualised			78	149

This indicates that the capacity of the wastewater network can be exceeded during 1 in 30 year storms (or more frequent events). Future growth, creep and/or climate change are not anticipated to significantly increase the risk by 2050.

Planning Objective 8: Wastewater Treatment Works Dry Weather Flow Compliance

The risk of Wastewater Treatment Works Dry Weather Flow Compliance is not significant for 2020 but is predicted to increase to very significant in 2050, shown in Figure 3. This is because the predicted DWF in 2050 is expected to exceed the current permit.

Figure 3: Recorded and predicted dry weather flow with existing permit



Planning Objective 9: Good Ecological Status / Good Ecological Potential

Table 5 shows the waterbodies connected to this wastewater system are not achieving Good Ecological Status or Potential (GES/GEP).

Table 5: Waterbodies not achieving GES/GEP

Waterbody	Classification	EA-Status	Activity
Sarre Penn and River Wantsum	Phosphate	Moderate	Sewage discharge (intermittent)

The Environment Agency has attributed the 'reasons for not achieving good status' to water company operations. Our risk assessment has been assessed based on the worst assigned status (Moderate) and is moderately significant. This is due to intermittent discharges from overflows.

The primary driver is 'Hydraulic'.

Planning Objective 10: Surface Water Management

Our initial high level assessment indicated that there is moderately significant interaction between surface water flooding and flooding from sewers in this wastewater system. The cause of this localised flooding is the capacity of the drainage network in these areas to convey both wastewater and surface water run-off.

Figure 4: Sources of water flowing in sewers during a 1 in 20 year storm

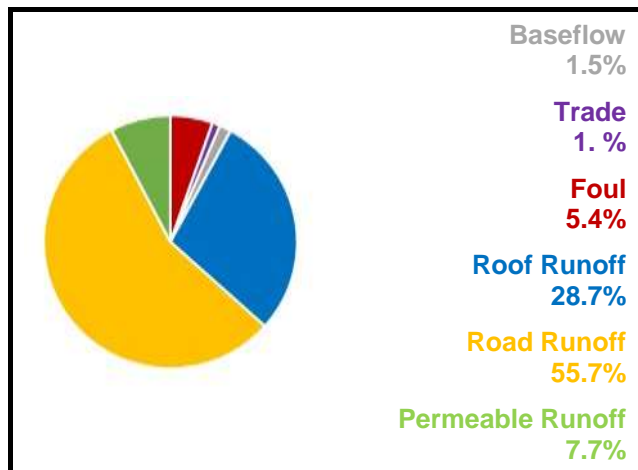


Figure 4 illustrates the sources of water flowing in the wastewater system during a 1 in 20 year storm. It shows that surface water runoff from roofs, road and permeable surfaces constitutes more than 92.1% of the flow in the sewers. The total contribution of foul water from homes is 5.4% with business contributing 1.0%. The baseflow is infiltration from water in the ground and makes up 1.5% of the flow in the system.

Planning Objective 11: Nutrient Neutrality

The risk to internationally designated habitat sites from this wastewater system is very significant in 2020 and 2050. This is because Natural England have advised that there is a risk to condition for the habitat sites that are hydraulically linked to our wastewater system, listed in Table 6.

Table 6: Habitat Sites hydraulically linked to wastewater system

Habitat Sites	
The Swale	Phosphate and Nitrate permit review required Overflow Spills

Planning Objective 12: Groundwater Pollution

The risk of Groundwater Pollution is moderately significant. The wastewater system network of sewers extends across geographical areas that are designated as a Source Protection Zone (SPZ) for water supply. An estimated 16% of the sewer network crosses SPZ 1 or SPZ 2 and infiltration in the wastewater system is estimated to be of concern, based on infiltration equation used in the Wastewater Treatment Works Dry Weather Flow Compliance planning objective.

The primary driver is 'Operational' due to condition of our assets.

Planning Objective 13: Bathing Waters

This wastewater system does not discharge into a designated bathing water.

Planning Objective 14: Shellfish Waters

The discharges from this wastewater system can affect the designated shellfish waters shown in Table 7. The risk of not achieving the faecal standards for shellfish in these designated waters from this wastewater system is moderately significant. This is because the CEFAS classification for the shellfish waters is Long Term Class B.

Table 7: Shellfish Waters linked to wastewater system

Shellfish Waters
Swale East

Generic Options Assessment for: Faversham (FAVE)



Planning Objectives		2020	Driver	2050	Type of Measures	Generic Option Categories	Icon	Take Forward?	Reasons	Examples of Generic Options
PO1	Internal Flooding	2	Hydraulic	-	Source (Demand) Measures (to reduce likelihood)	Control / Reduce surface water run-off		Y	-	Natural Flood Management; rural land management and catchment management; SuDS including blue and green infrastructure; storm management
PO2	Pollution Risk	2	Operational	-		Reduce groundwater levels		N	None of the significant risks in this catchment are caused by high groundwater levels. Hence reducing groundwater levels will not impact any of the risks in this catchment.	Reduce leakage from water supply pipes; pump away schemes to locally lower groundwater near sewer network
PO3	Sewer Collapse	1	Operational	-		Improve quality of wastewater		Y	-	Domestic and business customer education; incentives and behaviour change (reduce Fats, Oils & Grease, wet wipes etc.); monitoring trade waste at source; on-site black water and/or greywater pre-treatment
PO4	Risk of Sewer Flooding in 1 in 50 yr	1	Hydraulic	1		Reduce the quantity / demand		Y	-	Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
PO5	Storm Overflow Performance	2	Hydraulic	2	Pathway (Supply) Measures (to reduce likelihood)	Network Improvements		Y	-	Asset optimisation; additional network capacity; storage; separate flows; structural repairs; re-line sewer pipe and manholes; smart networks.
PO6	Risk of WTW Compliance Failure	0	-	0		Improve Treatment Quality		Y	-	Increase treatment capacity; rationalisation of treatment works (centralisation / de-centralisation); install tertiary plant; UV plant or disinfection facilities; innovation; improve Technical Achievable Limits; new WTWs
PO7	Annualised Flood Risk/Hydraulic Overload	1	Hydraulic	1		Wastewater Transfer to treatment elsewhere		Y	-	Transfer flow to other network or treatment sites; transport sewage by tanker to other sites
PO8	DWF Compliance	0	-	2	Receptor Measures (to reduce consequences)	Mitigate impacts on Air Quality		N/A	Not included in first round of DWMPs	Carbon offsetting; noise suppression /filtering; odour control and treatments
PO9	Achieve Good Ecological Status	1	Hydraulic	-		Improve Land and Soils		N/A	Not included in first round of DWMPs	Sludge soil enhancement
PO10	Improve Surface Water Management	1	Hydraulic	-		Mitigate impacts on receiving waters		Y	-	River enhancement, aeration
PO11	Secure Nutrient Neutrality	2	Unknown	2		Reduce impact on properties		Y	-	Property flood resilience; non-return valves; flood guards / doors; air brick covers
PO12	Reduce Groundwater Pollution	1	Operational	-	Other	Study / Investigation		N	No further studies required at this stage	Additional data required; hydraulic model development; WQ monitoring and modelling
PO13	Improve Bathing Water Quality	NA	-	-						
PO14	Improve Shellfish Water Quality	1	Unknown	-						

Faversham Wastewater System - Outline Options Appraisal

Generic Option	Location of Risk	Planning Objective and Description of Risk	Option Reference	Description	Further Description	Unconstrained Option?	Constrained Option?	Feasible Option?	Net Benefits	Estimated Cost	Preferred Option	Best value / Least cost or Reasons for Rejection
Control/ Reduce surface water entering the sewers	Flooding Cluster FAVE FC01 - Davington Hill / West Street / Lower Road	PO4 and PO7 Flooding	FAVE.SC01.1	Surface Water Separation	DAP Option.	No						
Control/ Reduce surface water entering the sewers	Flooding Cluster FAVE FC03 - Market Street / Roman Road	PO1, PO4 and PO7 Flooding	FAVE.SC01.2	Surface Water Separation	DAP Option.	No						
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Cross Lane, Whitstable Road, Church Hill, Forbes Road	PO1- Internal Flooding	FAVE.SC03.1	Customer Education Programme	Target both domestic and business customers in the catchment with a campaign to reduce FOG.	Yes	Yes	Yes	Minor Positive +	£115K	Yes	Best Value
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	ABBEYFIELDS FAVERSHAM WPS	PO2- Pollution Risk	FAVE.SC03.2	Customer Education Programme	Target both domestic and business customers in the catchment with a campaign to reduce FOG.	Yes	Yes	Yes	Minor Positive +	£115K	Yes	Best Value
Control / Reduce the quantity / flow of wastewater entering sewer system	FAVERSHAM WTW	PO8 (2050)- Dry Weather Flow	FAVE.SC04.1	Water Efficient Appliance / Measures	South East Water aims to reduce water consumption to under 100 l/h/d by 2040 as part of an existing campaign.	No						Deliver the required outcome
Network Improvements (eg increase capacity, storage, conveyance)	QUAY LANE FAVERSHAM WPS	PO1- Internal Flooding	FAVE.PW01.1	Maintenance Programme WPS	A WPS rehabilitation (capital maintenance) programme.	Yes	Yes	Yes	Minor Positive +	£235K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Roman Road, Market Street, Preston Street, St. Marys Road	PO1- Internal Flooding	FAVE.PW01.2	Storage Tank	Conventional storage tank.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Cross Lane, Whitstable Road, Church Hill, Forbes Road	PO1- Internal Flooding	FAVE.PW01.3	Jetting Programme	Improved targeting and frequency of sewer jetting.	Yes	Yes	Yes	Minor Positive +	£45K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	ABBEYFIELDS FAVERSHAM WPS, HAZEBROUK ROAD FAVERSHAM WPS	PO2- Pollution Risk	FAVE.PW01.4	Maintenance Programme WPS	A WPS rehabilitation (capital maintenance) programme.	Yes	Yes	Yes	Minor Positive +	£930K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	ABBEYFIELDS FAVERSHAM WPS	PO2- Pollution Risk	FAVE.PW01.5	Jetting Programme	Improved targeting and frequency of sewer jetting.	Yes	Yes	Yes	Minor Positive +	£10K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Preston Street, Bank Street, Whitstable Road, Caslocke Street, Westwood Place, Canterbury Road	PO3- Sewer Collapse	FAVE.PW01.6	Pipe Rehabilitation Programme	Targeted CCTV / electroscan surveys.	No						Deliver the required outcome and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	FAVE FC06 -COURT STREET FAVERSHAM CSO	PO5, PO9, PO14 - Spill Assessments	FAVE.PW01.7	Storage Tank	The model has a Low risk DAP.	Yes	Yes	Yes	Major Positive +++	£685K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	FAVE FC05 - ABBEY ROAD FAVERSHAM CSO	PO5, PO9, PO14 - Spill Assessments	FAVE.PW01.8	Storage Tank	The model has a Low risk DAP.	Yes	Yes	Yes	Major Positive +++	£780K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	FAVE FC01 Lakeside Avenue, The Street and Oare Road WPS	PO4 & PO7 - Growth	FAVE.PW01.9	Upsize and WSP pump rate increase	DAP Option.	Yes	Yes	Yes	Major Positive +++	TBC	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	FAVE FC02 Ospringe Street	PO4 & PO7 - Growth	FAVE.PW01.10	Upsizing	DAP Option.	Yes	Yes	Yes	Major Positive +++	TBC	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	FAVE FC03 Athelstan Road and The Mall	PO4 & PO7 - Growth	FAVE.PW01.11	Upsizing/online storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	TBC	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	FAVE FC04 Brent Road and Quay Lane WPS	PO4 & PO7 - Growth	FAVE.PW01.12	Upsizing/Relaying new sewer/ Increase Quay Lane WPS pump rate	DAP Option.	Yes	yes	yes	Major Positive +++	TBC	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO8 (2050)- Dry Weather Flow	FAVE.PW01.13	Infiltration Reduction	Relining/improving structural grades of sewers across the catchment.	No						Cost Effective
Network Improvements (eg increase capacity, storage, conveyance)	Selling- Inner Zone (Source Protection Zone 2) / Total Capture Zone and Shepherd Neame (within Nitrate Vulnerability zone)	PO12- Ground Water Pollution	FAVE.PW01.14	Pipe Rehabilitation Programme	Total length of sewer within protection zones- 29.	Yes	Yes	Yes	Minor Positive +	£980K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Flooding Cluster FAVE FC01 - Davington Hill / West Street / Lower Road	PO4 and PO7 Flooding	FAVE.PW01.15	Storage Tank	STORAGE SOLUTION.	Yes	Yes	Yes	Minor Positive +	£3,890K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Flooding Cluster FAVE FC03 - Market Street / Roman Road	PO4 and PO7 Flooding	FAVE.PW01.16	Storage Tank	STORAGE SOLUTION.	Yes	Yes	Yes	Minor Positive +	£1,530K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	FAVERSHAM WTW	PO2- Pollution Risk	FAVE.PW02.1	Maintenance Programme WTW	An efficient maintenance programme for the treatment works.	Yes	Yes	Yes	Minor Positive +	£6,970K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	FAVERSHAM WTW	PO2 - Pollution Risk	FAVE.PW02.2	Final Effluent Outfall	New 1km long final effluent outfall to discharge into The Swale below tide level.	No						Do customer support it and Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	FAVERSHAM WTW	PO2 - Pollution Risk	FAVE.PW02.3	Final Effluent Balance Tanks	New 5000 m3 capacity final effluent balance tank.	No						Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	FAVERSHAM WTW	PO8 (2050)- Dry Weather Flow	FAVE.PW02.4	DWF Permit Increase	Increase Capacity at WTW for New DWF Permit of 9800m3 / day.	Yes	Yes	Yes	Minor Positive +	£2,090K	Yes	Best Value
Wastewater Transfer	FAVERSHAM WTW	PO8 (2050)- Dry Weather Flow	FAVE.PW03.1	Construct New WPS & Rising Main	New WPS and rising main to discharge 2803m3.	No						Do customer support it
Mitigate impacts on Air Quality (e.g. Carbon neutrality, noise, odour)												Not included in the first round of DWMPs
Improve Land and Soils												Not included in the first round of DWMPs
Mitigate impacts on Water Quality												
Reduce consequences Properties (e.g. Property Flood Resilience)	Roman Road, Market Street, Preston Street, St. Marys Road	PO1- Internal Flooding	FAVE.RC04.1	Property Flood Mitigation / Resistance	Short-term property level protection.	No						Do customer support it and Risk and uncertainty - future resilience
Reduce consequences Properties (e.g. Property Flood Resilience)	Flooding Cluster FAVE FC01 - Davington Hill / West Street / Lower Road	PO4, PO7 & PO10 - Sewer Flooding	FAVE.RC04.2	Property Flood Mitigation / Resistance	Short-term property level protection.	No						Do customer support it and Risk and uncertainty - future resilience
Reduce consequences Properties (e.g. Property Flood Resilience)	Flooding Cluster FAVE FC03 - Market Street / Roman Road	PO4, PO7 & PO10 - Sewer Flooding	FAVE.RC04.3	Property Flood Mitigation / Resistance	Short-term property level protection.	No						Do customer support it and Risk and uncertainty - future resilience
Study/ investigation to gather more data	Preston Street, The Street & St. Johns Road	PO1- Internal Flooding	FAVE.OT01.1	Flooding Investigation	Further investigation to identify the cause of the internal flooding.	Yes	Yes	Yes	Minor Positive +	£230K	Yes	Best Value
Study/ investigation to gather more data	HAZEBROUK ROAD FAVERSHAM WPS	PO2- Pollution Risk	FAVE.OT01.2	Pollution Investigation	Further investigation to identify the cause of the pollution incident.	No						Do customer support it
Study/ investigation to gather more data	FAVERSHAM WTW	PO9- GE Status / Potential Sewage discharge (intermittent) into the Sarre Penn and River Wantsum	FAVE.OT01.3	Study and Investigations to Achieve Good Ecological Status	Catchment was banded 1 in because; Sarre Penn and River Wantsum-Phosphate.	Yes	Yes	Yes	Minor Positive +	£695K	No	Best Value
Study/ investigation to gather more data	The Swale	PO11 - Nutrient Neutrality	FAVE.OT01.4	Nutrient Budget	Catchment is Hydraulically linked to; The Swale.	Yes	Yes	Yes	Minor Positive +	£75K	Yes	Best Value

Faversham Wastewater System - Outline Options Appraisal

Generic Option	Location of Risk	Planning Objective and Description of Risk	Option Reference	Description	Further Description	Unconstrained Option?	Constrained Option?	Feasible Option?	Net Benefits	Estimated Cost	Preferred Option	Best value / Least cost or Reasons for Rejection
Study/ investigation to gather more data	Swale Central & Swale East	PO14 - Shellfish Waters	FAVE.OT01.5	Study and Investigations to Improve Shellfish Waters	Investigations continuing under the Shellfish Water Programme.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
Study/ investigation to gather more data	Flooding Cluster FAVE FC02.1 Abbey Rd Faversham,	PO4 and PO7 Flooding	FAVE.OT01.6	Study and Investigation	DAP Option.	No						
Study/ investigation to gather more data	Location TBC	PO12- Ground Water Pollution	FAVE.OT01.7	Investigate Infiltration	Investigate if there is infiltration from stormwater culverts and whether they need relining.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	Yes	Best Value
Study/ investigation to gather more data	Catchment Wide	PO1, PO4, PO7, PO10 - Sewer Flooding PO5 - Storm Overflow Performance	FAVE.OT01.8	Improve Hydraulic Model	Hydraulic surveys and reverification to improve model confidence and accuracy of simulations.	Yes	Yes	Yes	Minor Positive +	£300K	Yes	Best Value

Drainage and Wastewater Management Plan (DWMP)

DWMP Investment Needs

1. The options listed in the DWMP Investment Needs below are the preferred options in our DWMP. They will need further refinement as we implement the DWMP to confirm the exact location and scope of action needed, and the cost.
2. The costs are indicative costs for planning purposes only. The basis for the cost estimates, including assumptions and uncertainties, are explained in our DWMP Investment Plans.
3. The table of Investment Need provides an indicative cost so we know what level of funding is needed to reduce the risks. It is not a commitment to fund or deliver any option.
4. The Indicative Timescale is when the investment is needed. Some options may take several investment periods to achieve the desired outcomes.
5. Potential Partners have been identified in the table of Investment Needs. This is to indicate where there may be opportunities for us to work with these partners when developing and delivering these options. It is not a commitment by any of the partners to work with us.
6. These options will inform our future business plans as part of the Ofwat periodic review process to secure the finance to implement these options.
7. The options listed are prioritised by the method stated in the [Programme Appraisal Technical Summary](#).

Date : May 2023

Version : 1.0

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
North Kent								
Faversham								
FAVE.SC03.1	North Kent	Faversham	Cross Lane, Whitstable Road, Church Hill & Forbes Road	Customer Education Programme: Targeted campaign to reduce the amount of FOG (fats, oils and grease) and unflushables discharged into the sewer network	£115K	AMP8 onwards	Kent County Council, Swale Borough Council	PO1
FAVE.SC03.2	North Kent	Faversham	Area upstream of Abbeyfields WPS	Customer Education Programme: Targeted campaign to reduce the amount of FOG (fats, oils and grease) and unflushables discharged into the sewer network	£115K	AMP8 onwards	Kent County Council, Swale Borough Council	PO2
FAVE.PW01.1	North Kent	Faversham	Quay Lane Wastewater Pumping Station (WPS)	Improve the operational resilience of wastewater pumping station (WPS) to reduce flooding incidents	£235K	AMP8 onwards	-	PO1
FAVE.PW01.3	North Kent	Faversham	Cross Lane, Whitstable Road, Church Hill & Forbes Road	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£45K	AMP8 onwards	-	PO1
FAVE.PW01.4	North Kent	Faversham	Abbeyfields WPS & Hazebrouk Road WPS	Improve the operational resilience of wastewater pumping station (WPS) to reduce pollution incidents	£930K	AMP8 onwards	-	PO2
FAVE.PW01.5	North Kent	Faversham	Area upstream of Abbeyfields WPS	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£10K	AMP8 onwards	-	PO2
FAVE.PW01.6	North Kent	Faversham	Preston Street, Bank Street, Whitstable Road, Caslocke Street, Westwood Place, Canterbury Road	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£315K	AMP8 onwards	-	PO3
FAVE.PW01.14	North Kent	Faversham	Selling- Inner Zone (Source Protection Zone 2) / Total Capture Zone and Shepherd Neame (within Nitrate Vulnerability zone)	Sewer Rehabilitation: Targeted CCTV or electroscan surveys to check the integrity of sewers and reline or renew them to reduce the risk of groundwater pollution	£980K	AMP9	Environment Agency	PO12
FAVE.PW01.15	North Kent	Faversham	Davington Hill, West Street & Lower Road	Flood Alleviation: Separate or attenuate excess rainwater in sewer network using Sustainable Drainage Systems (SuDS) to reduce risk of flooding (Costs based on storage solution but surface water separation is our preferred approach)	£3,890K	AMP9	Kent County Council	PO4 PO7
FAVE.PW01.16	North Kent	Faversham	Market Street & Roman Road	Flood Alleviation: Separate or attenuate excess rainwater in sewer network using Sustainable Drainage Systems (SuDS) to reduce risk of flooding (Costs based on storage solution but surface water separation is our preferred approach)	£1,530K	AMP9	Kent County Council	PO4 PO7
FAVE.PW02.1	North Kent	Faversham	Faversham Wastewater Treatment Works (WTW)	Improve the operational resilience of wastewater treatment works (WTW) to reduce pollution incidents	£6,970K	AMP8 onwards	-	PO2
FAVE.PW02.4	North Kent	Faversham	Faversham WTW	Increase capacity to allow for planned new development	£4,000K	AMP8	Environment Agency	PO8
FAVE.OT01.1	North Kent	Faversham	Preston Street, The Street & St. Johns Road	Study and Investigation: Investigation to identify the root cause of internal flooding and measures to reduce the number of incidents	£230K	AMP8	-	PO1
FAVE.OT01.3	North Kent	Faversham	System Wide	Study and Investigation to understand the impact of wastewater discharges on the local environment and identify measures required to achieve good ecological status in the receiving waterbody	£695K	AMP8	Environment Agency	PO9

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
FAVE.OT01.7	North Kent	Faversham	Unknown	Study and Investigation: Investigate the risk of groundwater pollution from trade effluent conveyed within the sewer system	£TBC	AMP8	Kent County Council, Swale Borough Council	PO12
FAVE.OT01.8	North Kent	Faversham	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£300K	AMP8	-	PO1 PO4 PO5 PO7 PO10
FAVE.WINEP01.1	North Kent	Faversham	STOCKERS HILL BOUGHTON STREET CEO	Reduce the number of storm discharges from STOCKERS HILL BOUGHTON STREET CEO by a combination of SuDS and storage options	£3,050K	AMP8	-	PO4 PO5 PO7 PO9
FAVE.WINEP01.2	North Kent	Faversham	ABBEY ROAD FAVERSHAM CEO	Reduce the number of storm discharges from ABBEY ROAD FAVERSHAM CEO by a combination of SuDS and storage options	£5,335K	AMP8	-	PO4 PO5 PO7 PO9 PO14
FAVE.WINEP01.3	North Kent	Faversham	FAVERSHAM SSO	New or improved screen to reduce aesthetics impacts from storm discharges at FAVERSHAM SSO	£130K	AMP11	-	PO5 PO9
FAVE.WINEP01.4	North Kent	Faversham	COURT STREET FAVERSHAM CSO	Reduce the number of storm discharges from COURT STREET FAVERSHAM CSO by creating below-ground storage	£825K	AMP8	-	PO5 PO9 PO14
FAVE.WINEP01.5	North Kent	Faversham	CYPRUS ROAD FAVERSHAM NO 3 CSO	New or improved screen to reduce aesthetics impacts from storm discharges at CYPRUS ROAD FAVERSHAM NO 3 CSO	£130K	AMP11	-	PO5 PO9
FAVE.WINEP01.7	North Kent	Faversham	ABBEYFIELDS FAVERSHAM CSO	New or improved screen to reduce aesthetics impacts from storm discharges at ABBEYFIELDS FAVERSHAM CSO	£130K	AMP11	-	PO5 PO9
FAVE.WINEP01.8	North Kent	Faversham	HAZEBROUCK ROAD FAVERSHAM CEO	New or improved screen to reduce aesthetics impacts from storm discharges at HAZEBROUCK ROAD FAVERSHAM CEO	£130K	AMP12	-	PO5 PO9
FAVE.WINEP01.9	North Kent	Faversham	CYPRUS ROAD FAVERSHAM SWP	New or improved screen to reduce aesthetics impacts from storm discharges at CYPRUS ROAD FAVERSHAM SWP	£130K	AMP12	-	PO5 PO9
FAVE.WINEP.PO2.1	North Kent	Faversham	Faversham WTW	Action to reduce total phosphorus and/or total nitrogen levels from discharges which drain to internationally designated sites where there is a risk from nutrients	£17,810K	AMP10	-	PO9 PO11
FAVE.WINEP01.6	North Kent	Faversham	NORTH LANE FAVERSHAM CSO	Reduce the number of storm discharges from NORTH LANE FAVERSHAM CSO by a combination of SuDS and storage options	£1,315K	AMP12	-	PO4 PO5 PO7 PO9

