Drainage and Wastewater Management Plan

Fairlight
Wastewater System Plan

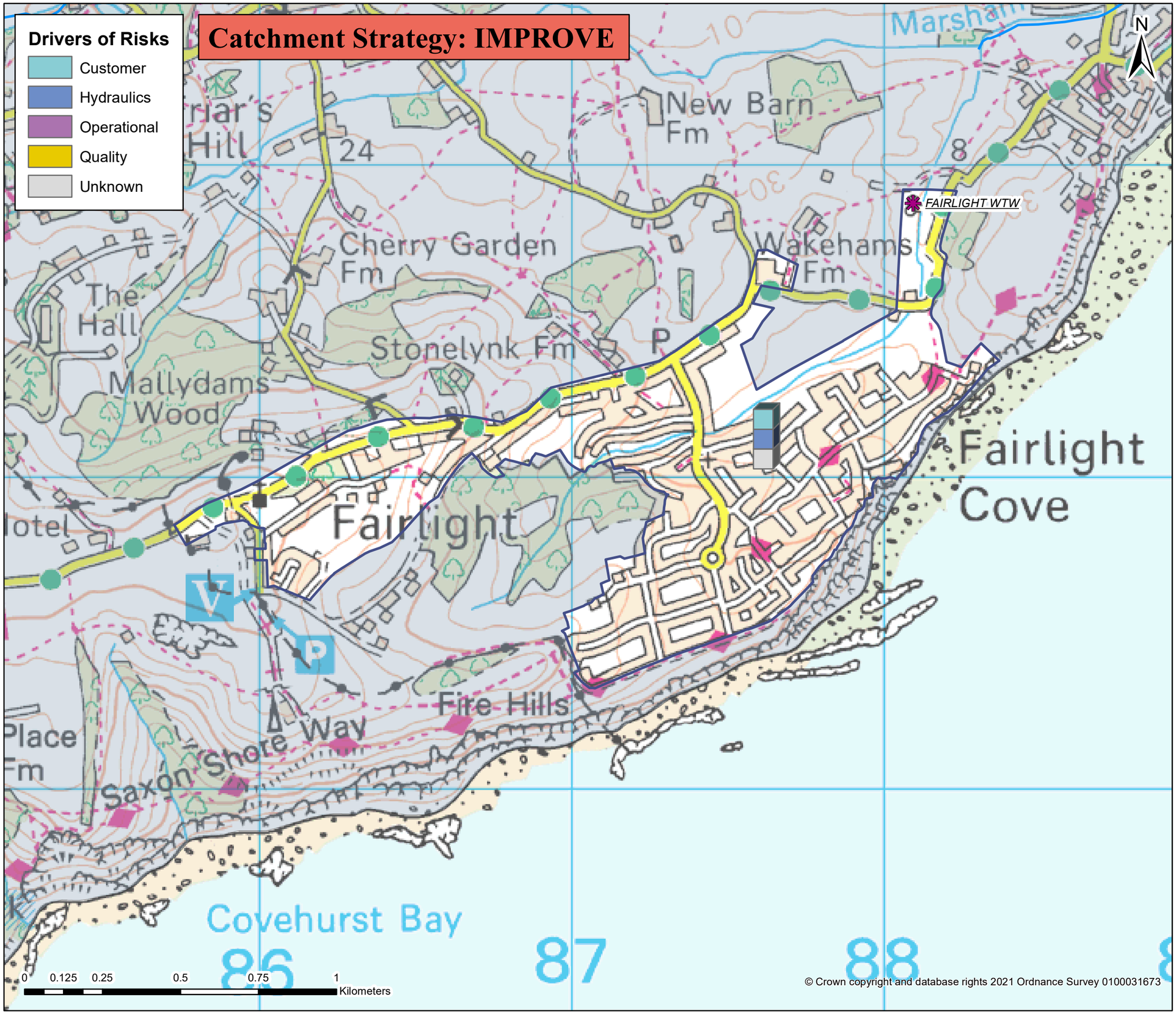
from Southern Water

Contents

Fairlight wastewater system: map and key facts

Population Equivalent (PE)	1,595
Discharge Waterbody	Marsham and Pannel Sewers
Number of Pumping Stations	1
Number of Overflows	4
Length of Sewer (km)	25.8
Catchment Reference	FAIR

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



Problem Characterisation
Fairlight (FAIR)

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 Fairlight wastewater system

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

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

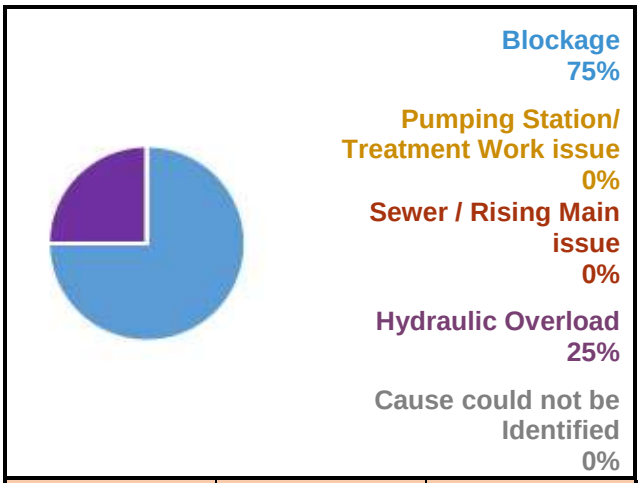
There have been zero (or less than 3) internal flooding incidents reported during the three year period considered by the risk assessment, so the risk is in the 'not significant' band.

Planning Objective 2: Pollution Risk

The number of pollution incidents reported during the three years considered by the risk assessment are shown in Figure 1. 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 'Customer'. Blockages caused 75% of all incidents recorded in this wastewater system. Blockages are often caused by fats, oils, grease, nappies, wet wipes and sanitary products within the system. These items are non-flushable and should not be disposed of into wastewater systems.

Figure 1: Number of pollution incidents per annum and causes



2017	2018	2019
1	0	3

Planning Objective 3: Sewer Collapse Risk

There have been no sewer collapses or rising main bursts in the three years considered by this risk assessment so the risk is in the 'not significant' band.

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

The risk of flooding in a 1 in 50 year storm is very significant in 2020 and 2050. This is because our computer model of the sewer network indicate for 2020 that approximately 100 - 200 properties within this wastewater system are in areas that could flood by water escaping from sewers. The model prediction for 2050 does not identify a notable increase.

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 2 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	0 Medium	0 Medium	Less than 8	Between 8-10	10 or more
Bathing Waters	0 Medium	0 Medium	Less than 3	Between 3-10	10 or more
Freshwater	1 High	1 High	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 very significant in 2020 and 2050. The annualised number of properties in areas at risk of flooding is shown in Table 3.

Table 3: Annualised number of properties at risk per 10,000 connections.

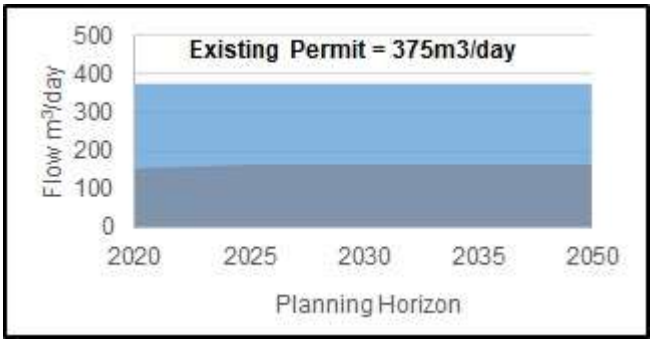
Rainfall Return Period (yr)	Number of Properties at Risk		Annualised per 10,000 connections	
	2020	2050	2020	2050
1 in 1	25	52	16	33
1 in 2	33	72	13	28
1 in 5	67	88	12	16
1 in 10	81	111	8	11
1 in 20	112	123	5	6
1 in 30	111	148	4	5
Total Annualised			**58**	**99**

This indicates that the existing capacity of the wastewater network can already be exceeded during 1 in 30 year storms (or more frequent events).

Planning Objective 8: Wastewater Treatment Works Dry Weather Flow Compliance

The risk of Wastewater Treatment Works Dry Weather Flow (DWF) Compliance is not significant for both 2020 and 2050. This is because the average annual DWF for 2017, 2018 and 2019 has been below 80% of the current permit. The predicted DWF in 2050 is also expected to remain below 80% of the current permit, shown in Figure 2.

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



Planning Objective 9: Good Ecological Status / Good Ecological Potential

Table 4 shows the waterbodies connected to this wastewater system are not achieving Good Ecological Status or Potential (GES/GEP). 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 has been moderated from moderately significant to not significant because of the presence of Tertiary Treatment at the wastewater system Treatment Works.

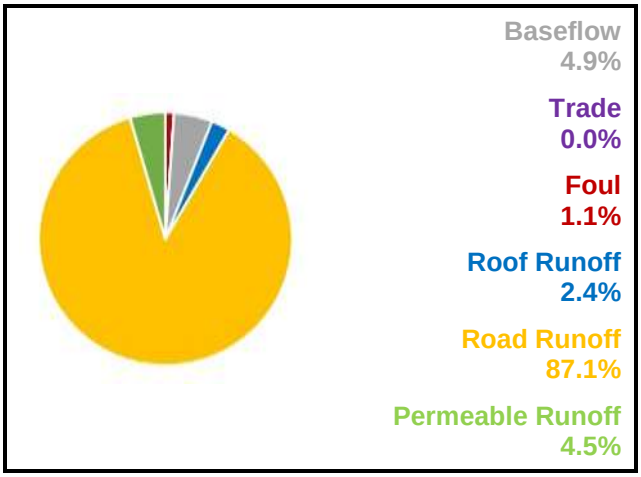
Table 4: Waterbodies not achieving GES/GEP

Waterbody	Classification	EA-Status	Activity
Marsham and Pannel Sewers	Phosphate	Moderate	Sewage discharge (continuous)
Marsham and Pannel Sewers	Macrophytes and Phytobenthos Combined	Moderate	Sewage discharge (continuous)

Planning Objective 10: Surface Water Management

Figure 3 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 94. % of the flow in the sewers. The total contribution of foul water from homes is 1.1%. The baseflow is infiltration from water in the ground and makes up 4.9% of the flow in the system.

Figure 3: Sources of water flowing in sewers during a 1 in 20 year storm



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 5.

Table 5: Habitat Sites hydraulically linked to wastewater system

Habitat Sites	
Dungeness	Nitrate permit review required Overflow Spills
Dungeness, Romney Marsh and Rye Bay	Nitrate permit review required Overflow Spills
Hastings Cliffs	No Threat/Remedy Identified or Anticipated

Planning Objective 12: Groundwater Pollution

The risk of Groundwater Pollution is not significant. This is because the wastewater network in this wastewater system does not overlap with any groundwater Source Protection Zones (SPZ) used for water supply.

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 do not impact on any designated shellfish waters.

Generic Options Assessment for: Fairlight (FAIR)

Planning Objectives		2020	Driver	2050
PO1	Internal Flooding	0	-	-
PO2	Pollution Risk	2	Customer	-
PO3	Sewer Collapse	0	-	-
PO4	Risk of Sewer Flooding in 1 in 50 yr	2	Hydraulic	2
PO5	Storm Overflow Performance	2	Hydraulic	2
PO6	Risk of WTW Compliance Failure	0	-	0
PO7	Annualised Flood Risk/Hydraulic Overload	2	Hydraulic	2
PO8	DWF Compliance	0	-	0
PO9	Achieve Good Ecological Status	0	-	-
PO10	Improve Surface Water Management	0	-	-
PO11	Secure Nutrient Neutrality	2	Unknown	2
PO12	Reduce Groundwater Pollution	0	-	-
PO13	Improve Bathing Water Quality	NA	-	-
PO14	Improve Shellfish Water Quality	NA	-	-

Type of Measures	Generic Option Categories	Icon	Take Forward?	Reasons	Examples of Generic Options
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
	Reduce groundwater levels		N	Reducing groundwater levels would reduce the risks from infiltration into the network. However, in practice, reducing groundwater levels will be detrimental to the environment, ground conditions and is prohibitively too costly to implement. For these reasons, this generic option has been discounted.	Reduce leakage from water supply pipes; pump away schemes to locally lower groundwater near sewer network
	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
	Reduce the **quantity** / demand		N	None of the significant risks are caused by too much foul wastewater entering our systems from homes and businesses.	Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
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.
	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
	Wastewater Transfer to treatment elsewhere		N	The causes of risk are not due to where our systems discharge to the environment or our ability to increase the capacity to connect more homes. Transferring wastewater for treatment elsewhere will not reduce any of the significant risks in this catchment.	Transfer flow to other network or treatment sites; transport sewage by tanker to other sites
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
	Improve Land and Soils		N/A	Not included in first round of DWMPs	Sludge soil enhancement
	Mitigate impacts on receiving waters		Y	-	River enhancement, aeration
	Reduce impact on properties		Y	-	Property flood resilience; non-return valves; flood guards / doors; air brick covers
Other	Study / Investigation		N	No further studies are required at this stage	Additional data required; hydraulic model development; WQ monitoring and modelling

August 2021
Version 1

Fairlight 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	Catchment Wide	PO2 - Pollution Risk Blockages	FAIR.SC01.1	Enhanced Maintenance: Customer Education.	Enhanced Maintenance: Customer Education.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	Yes	Best Value
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Catchment Wide	PO2- Pollution Risk	FAIR.SC03.1	Customer Education Programme	Customer education programme.	Yes	No					Performance and Sustainability
Control / Reduce the quantity / flow of wastewater entering sewer system	FAIRLIGHT WTW	PO8 (2050)- Dry Weather Flow	FAIR.SC04.1	Water Efficient Appliance / Measures	Southern Water aims to reduce water consumption to 100 l/h/d by 2040.	Yes	Yes	Yes	Minor Positive +	£7,410K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	FAIR.PW01.1	Additional Storage	Additional Storage.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	FAIR.PW01.2	Jetting Programme	Jetting Programme.	Yes	Yes	Yes	Minor Positive +	£35K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	FAIR FC01 - FAIRLIGHT WTW	PO5 - Spill Assessments	FAIR.PW01.3	Storage (FC01 - FAIRLIGHT WTW)	The DAP model has a confidence score of 2 and was last verified in 2017.	Yes	Yes	Yes	Major Positive +++	£1,565K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)												
Wastewater Transfer	Lower Waites Lane	Asset Integrity	FAIR.PW03.1	Sewer CCTV surveys, integrity checks and re-lining. (No collapses in assessment period, sewer conditions were noted to be poor around the risk location)	Sewer CCTV surveys, integrity checks and re-lining.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
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)												
Study/ investigation to gather more data	Dungeness Dungeness, Romney Marsh and Rye Bay Hastings Cliffs	PO11 - Nutrient Neutrality	FAIR.OT01.1	Nutrient Budget	Catchment is Hydraulically linked to; Dungeness (Threat/Remedy Identified or Anticipated) Dungeness, Romney Marsh and Rye Bay (Threat/Remedy Identified or Anticipated) Hastings Cliffs (NO Threat/Remedy Identified or Anticipated).	Yes	Yes	Yes	Major Positive +++	£75K	No	Best Value
Study/ investigation to gather more data	Catchment Wide	PO4- 1 in 50 year PO5- Storm Overflow PO7- Hydraulic Overload	FAIR.OT01.2	Improve Hydraulic Model	Improve Hydraulic Model.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
Study/ investigation to gather more data	Lower Waites Lane	PO3 Asset Integrity	FAIR.OT01.3	Asset Integrity	Sewer CCTV surveys, integrity checks and re-lining.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
Study/ investigation to gather more data	Channel Way, Fairlight	PO7 Coastal Stabililty / Erosion	FAIR.OT01.4	Coastal Stabililty / Erosion	Improve surface water management in this area through a catchment wide scheme to collect and remove surface water from the cliff face and divert it from the sewer to north of Lower Waites Lane (i.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value

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.

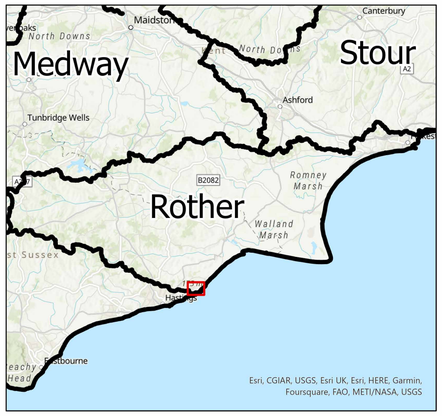
7. The options listed are prioritised by the method stated in the Programme Appraisal Technical Summary.

Date : May 2023
Version : 1.0

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
Rother								
Fairlight								
FAIR.SC03.1	Rother	Fairlight	System Wide	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	Rother District Council East Sussex County Coucil	PO2
FAIR.PW01.2	Rother	Fairlight	System Wide	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£35K	AMP8 onwards	-	PO2
FAIR.OT01.2	Rother	Fairlight	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£125K	AMP8	-	PO4 PO5 PO7
FAIR.OT01.3	Rother	Fairlight	Lower Waites Lane	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£TBC	AMP8 onwards	-	PO3
FAIR.OT01.4	Rother	Fairlight	Channel Way, Fairlight	Improve surface water management in this area through a catchment wide scheme to collect and remove surface water from the cliff face and divert it from the sewer to north of Lower Waites Lane (i.e. away from the cliff face	£TBC	AMP10	Rother District Council East Sussec County Council	PO10
FAIR.WINEP01.1	Rother	Fairlight	FAIRLIGHT SSO	Reduce the number of storm discharges from FAIRLIGHT SSO by a combination of SuDS and storage options	£3,880K	AMP8	-	PO4 PO5 PO7
FAIR.WINEP01.2	Rother	Fairlight	LOWER WAITES LANE FAIRLIGHT NO 1 CSO	Reduce the number of storm discharges from LOWER WAITES LANE FAIRLIGHT NO 1 CSO by creating below-ground storage	£1,200K	AMP12	-	PO5
FAIR.WINEP01.3	Rother	Fairlight	WAITES LANE FAIRLIGHT CSO	Reduce the number of storm discharges from WAITES LANE FAIRLIGHT CSO by a combination of SuDS and storage options	£1,800K	AMP12	-	PO4 PO5 PO7
FAIR.WINEP.PO2.1	Rother	Fairlight	Fairlight WTW	Provision of chemical dosing and additional biological treatment capacity to meet new ammonia limit of 5mg/l (WINEP OAR 08SO104120)	£2,636K	AMP8	-	PO9

Drainage and Wastewater Management Plan: Location of Potential Options FAIRLIGHT Wastewater system in Rother River Basin Catchment

(i) This map should be read in conjunction with the list of Investment Needs for this wastewater system
(ii) The areas shown on this map are the potential locations for the options. The location of the risk may be elsewhere in the system.
(iii) Labels for each location are the option references in the list of Investment Needs
(iv) Drainage Area Plan (DAP) options on flooding and growth are not shown.



- Customer Education
- Pipe Rehabilitation
- Asset Resilience
- Wastewater Treatment
- WINEP Nutient Neutrality
- WINEP Storm Overflows

FAIR.WINEP.PO2.1
FAIR.WINEP01.1
FAIR.SC03.1
FAIR.PW01.2
FAIR.SC03.1
FAIR.PW01.2
FAIR.WINEP01.3
FAIR.WINEP01.2

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