Drainage and Wastewater Management Plan

Bexhill and Hastings Wastewater System Plan

from Southern Water

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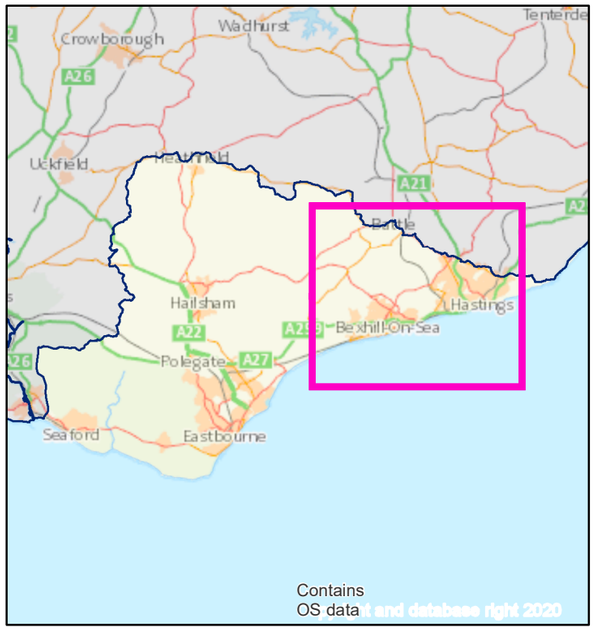
Bexhill And Hastings wastewater system: map and key facts



Population Equivalent (PE)	**141,300**
Discharge Waterbody	**Two long sea outfalls into English Channel**
Number of Pumping Stations	**74**
Number of Overflows	**27**
Length of Sewer (km)	**1225.2**
Catchment Reference	**HABX**

BRAVA Results Table			
	Planning Objective	**2020**	**2050**
1	Internal Sewer Flooding Risk	1	
2	Pollution Risk	1	
3	Sewer Collapse Risk	2	
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	0	0
8	Dry Weather Flow Compliance	0	1
9	Good Ecological Status / Potential	1	
10	Surface Water Management	1	
11	Nutrient Neutrality	2	2
12	Groundwater Pollution	0	
13	Bathing Waters	2	
14	Shellfish Waters	NA	

Drivers of Risks

- Customer
- Hydraulics
- Operational
- Quality
- Unknown

Catchment Strategy: IMPROVE

BEXHILL & HASTINGS WTW

0 0.5 1 2 3 4 Kilometers

Problem Characterisation

Bexhill And Hastings (HABX)

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 Bexhill And Hastings wastewater system

Planning Objectives		2020	Driver	2050
1	Internal Sewer Flooding Risk	1	Customer	
2	Pollution Risk	1	Operational	
3	Sewer Collapse Risk	2	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	0	-	0
8	WTW Dry Weather Flow Compliance	0	-	1
9	Good Ecological Status / Good Ecological Potential	1	Quality	
10	Surface Water Management	1	Hydraulic	
11	Nutrient Neutrality	2	Unknown	2
12	Groundwater Pollution	0	-	
13	Bathing Waters	2	Customer	
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

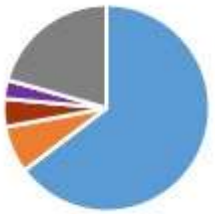
This means that we consider that the current performance of the drainage and wastewater system needs to be improved to reduce the impacts on our customers and/or the environment. We will plan investment to reduce the current risks by actively looking to invest capital funding in the short term to address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

Planning Objective 1: Internal Sewer Flooding Risk

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 between 1.68 and 3.35 incidents per 10,000 connections per year (a threshold set by Ofwat) so the risk is in the 'moderately significant' band.

The primary driver for internal sewer flooding in this wastewater system is 'Customer'. Blockages caused 65% 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 internal flooding incidents per annum and causes



Blockage 65%
Pumping Station/ Treatment Work issue 7%
Sewer / Rising Main issue 4%
Hydraulic Overload 3%
Cause could not be Identified 21%

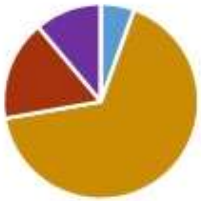
2017/18	2018/19	2019/20
23	9	36

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 between 24.51 and 49.01 incidents per 10,000km per year (a threshold set by Ofwat) so the risk is in the 'moderately 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 67% of all incidents recorded in this wastewater system.

Figure 2: Number of pollution incidents per annum and causes



Blockage 6%
Pumping Station/ Treatment Work issue 67%
Sewer / Rising Main issue 17%
Hydraulic Overload 11%
Cause could not be Identified 0%

2017	2018	2019
3	2	13

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 more then 9.44 incidents per 1,000km per year (a threshold set by Ofwat) so the risk is in the 'very significant' band.

Table 2: Sewer collapses and rising main bursts

Sewer Collapse	**2017/18**	9
	2018/19	10
	2019/20	14
Rising Main Bursts	**2017/18**	2
	2018/19	0
	2019/20	1

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

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 4400 - 4500 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 7100 - 7200 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	0 Medium	0 Medium	Less than 8	Between 8-10	10 or more
Bathing Waters	2 Medium	4 Medium	Less than 3	Between 3-10	10 or more
Freshwater	2 High	2 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).

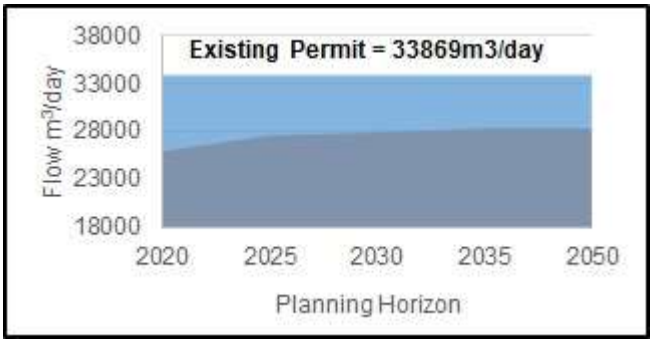
Planning Objective 7: Flooding due to Hydraulic Overload

Our initial assessment is that flooding from hydraulic overload is not significant in this wastewater catchment for both 2020 and 2050. We will use a hydraulic model of the wastewater system to determine if this catchment is at risk for Hydraulic Overload across the various storm events, and update this risk assessment accordingly for the next cycle of DWMPs.

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 moderately significant in 2050, shown in Figure 3. This is because the predicted DWF in 2050 is expected to be between 80% and 100% of the current permit.

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



Planning Objective 9: Good Ecological Status / Good Ecological Potential

Table 4: Waterbodies not achieving GES/GEP

Waterbody	Classification	EA-Status	Activity
Doleham Ditch	Phosphate	Moderate	Sewage discharge (continuous)
East Stream	Macrophytes and Phytobenthos Combined	Moderate	Sewage discharge (continuous)

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 is moderately signficiant. This is because we are might not be complying with our permit from the Environment Agency, or the permits need to be tightened to reduce the risk.

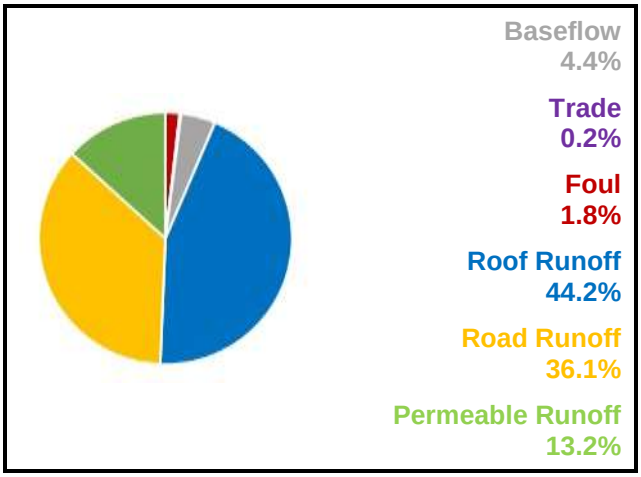
The primary driver is 'Quality'.

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 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 93.5% of the flow in the sewers. The total contribution of foul water from homes is 1.8% with business contributing 0.2%. The baseflow is infiltration from water in the ground and makes up 4.4% of the flow in the system.

Figure 4: 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	
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

The designated bathing waters that could be affected by discharges from this wastewater system are shown in Table 6, along with the current classification from the Environment Agency.

The risks from this wastewater system on Hastings Pelham Beach, Norman`s Bay, Bexhill, Pevensey Bay and St Leonards bathing waters has led to an assessment of is very significant.

Table 6: Bathing Water annual results

Bathing Waters	Annual Results		
	2017	2018	2019
Hastings Pelham Beach	Good	Poor	Good
Norman`s Bay	Good	Poor	Good
Bexhill	Good	Poor	Sufficient
Pevensey Bay	Good	Good	Good
St Leonards	Excellent	Good	Excellent
Camber	Excellent	Excellent	Excellent

The primary driver is ‘Customer’ due to suspected foul to surface water misconnections as well as suspected agriculture affecting the bathing waters in this wastewater system.

Planning Objective 14: Shellfish Waters

The discharges from this wastewater system do not impact on any designated shellfish waters.

Generic Options Assessment for: Bexhill And Hastings (HABX)

Planning Objectives		2020	Driver	2050
PO1	Internal Flooding	1	Customer	-
PO2	Pollution Risk	1	Operational	-
PO3	Sewer Collapse	2	Operational	-
PO4	Risk of Sewer Flooding in 1 in 50 yr	1	Hydraulic	1
PO5	Storm Overflow Performance	2	Hydraulic	2
PO6	Risk of WTW Compliance Failure	0	-	0
PO7	Annualised Flood Risk/Hydraulic Overload	0	-	0
PO8	DWF Compliance	0	-	1
PO9	Achieve Good Ecological Status	1	Quality	-
PO10	Improve Surface Water Management	1	Hydraulic	-
PO11	Secure Nutrient Neutrality	2	Unknown	2
PO12	Reduce Groundwater Pollution	0	-	-
PO13	Improve Bathing Water Quality	2	Customer	-
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	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
	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		Y	-	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		Y	-	Additional data required; hydraulic model development; WQ monitoring and modelling

August 2021
Version 1

Bexhill and Hastings 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	HABX FC02_1 - Terminus Road	PO4 Flooding	HABX.SC01.1	Surface Water Separation	DAP Option.	No						
Control/ Reduce surface water entering the sewers	HABX FC03_1 - Ninfield Road	PO4 Flooding	HABX.SC01.2	Surface Water Separation	DAP Option.	No						
Control/ Reduce surface water entering the sewers	HABX FC04_1 - Harold Road	PO4 Flooding	HABX.SC01.3	Surface Water Separation	DAP Option.	No						
Control/ Reduce surface water entering the sewers	HABX FC05_1 - Old London Road	PO4 Flooding	HABX.SC01.4	Surface Water Separation	DAP Option.	No						
Control/ Reduce surface water entering the sewers	HABX FC06_1 - Elphininstone Road	PO4 Flooding	HABX.SC01.5	Surface Water Separation	DAP Option.	No						
Control/ Reduce surface water entering the sewers	HABX FC07_1 - St. Helens Wood	PO4 Flooding	HABX.SC01.6	Surface Water Separation	DAP Option.	No						
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Hotpot 1 - Saint Leonards-on-sea Hotpot 2 - Hastings Hotpot 3 - Bexill-on-Sea Hotpot 4 - Battle Hotpot 5 - Silverhill Hotpot 6 - Belmont	PO1- Internal Flooding	HABX.SC03.1	Customer Education Programme	Customer education programme to reduce the risk.	Yes	Yes	Yes	Minor Positive +	£115K	Yes	Best Value
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Catchment Wide	PO2- Pollution Risk	HABX.SC03.2	Customer Education Programme	Customer education programme.	No						Deliver the required outcome
Control / Reduce the quantity / flow of wastewater entering sewer system	BEXHILL & HASTINGS WTW	PO8 (2050)- Dry Weather Flow	HABX.SC04.1	Water Efficient Appliance / Measures	Southern Water aims to reduce water consumption to 100 l/h/d by 2040.	No						Deliver the required outcome
Network Improvements (eg increase capacity, storage, conveyance)	COOMBS HASTINGS WPS, GALLEY HILL BEXHILL WPS	PO1- Internal Flooding	HABX.PW01.1	Maintenance Programme	An efficient maintenance programme for pumping stations and/Treatment works to elimate the risk of a pollution incident due to an operational failure.	Yes	Yes	Yes	Minor Positive +	£465K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Woodland Vale Road	PO1- Internal Flooding	HABX.PW01.2	Additional Storage	Additional Storage.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO1- Internal Flooding	HABX.PW01.3	Pipe Rehabilitation Programme	Pipe Rehabilitation Programme.	Yes	Yes	Yes	Minor Positive +	£190K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Galley Hill Bexhill Wps, Rock A Nore Hastings Wps, Chestnut Walk Bexhill Wps,	PO2- Pollution Risk	HABX.PW01.4	Maintenance Programme WPS	An efficient maintenance programme for pumping stations to elimate the risk of a pollution incident due to an operational failure.	Yes	Yes	Yes	Minor Positive +	£700K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	HABX.PW01.5	Additional Storage	Additional Storage.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO3- Sewer Collapse	HABX.PW01.6	Pipe Rehabilitation Programme	Targeted CCTV / electroscan surveys and proactive sewer rehabilitation to reduce risk of sewer collapse.	Yes	Yes	Yes	Minor Positive +	£2,395K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO8 (2050)- Dry Weather Flow	HABX.PW01.7	Pipe Rehabilitation Programme	Relining/improving structural grades of sewers across the catchment.	No						Cost Effective and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	HABX.PW01.8	Pipe Rehabilitation Programme	Pipe Rehabilitation Programme.	No						Cost Effective
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO1- Internal Flooding	HABX.PW01.9	Jetting Programme	Jetting Programme.	Yes	Yes	Yes	Minor Positive +	£505K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	HABX.PW01.10	Jetting Programme	Jetting Programme.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	HABX FC02_1 - Terminus Road	PO4 Flooding	HABX.PW01.11	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£1,990K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HABX FC03_1 - Ninfield Road	PO4 Flooding	HABX.PW01.12	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£2,700K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HABX FC04_1 - Harold Road	PO4 Flooding	HABX.PW01.13	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£6,760K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HABX FC05_1 - Old London Road	PO4 Flooding	HABX.PW01.14	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£1,995K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HABX FC06_1 - Elphininstone Road	PO4 Flooding	HABX.PW01.15	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£1,475K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HABX FC07_1 - St. Helens Wood	PO4 Flooding	HABX.PW01.16	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£1,280K	No	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	BEXHILL & HASTINGS WTW	PO2- Pollution Risk	HABX.PW02.1	Maintenance Programme WTW	An efficient maintenance programme for the treatment works to elimate the risk of a pollution incident due to an operational failure.	Yes	Yes	Yes	Minor Positive +	£6,970K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	BEXHILL & HASTINGS WTW	PO8 (2050)- Dry Weather Flow	HABX.PW02.2	Permit Review	Proposed permit-36378m3.	Yes	Yes	Yes	Minor Positive +	£2,215K	Yes	Best Value
Wastewater Transfer	BEXHILL & HASTINGS WTW	PO8 (2050)- Dry Weather Flow	HABX.PW03.1	Construct New WPS & Rising Main	No other WTWs are within a 20km radius of BEXHILL & HASTINGS WTW with spare capacity to take DWF.	No						Technically feasible, Cost Effective and Deliver the required outcome
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)	Woodland Vale Road	PO1- Internal Flooding	HABX.RC04.1	Property Flood Mitigation / Resistance	Short-term property level protection ahead of flood alleviation scheme - Non-return valves and flood mitigation doors / gates.	No						Risk and uncertainty - future resilience

Bexhill and Hastings 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	Hotpot 1 - Saint Leonards-on-sea Hotpot 2 - Hastings	PO1- Internal Flooding	HABX.OT01.1	Investigation into causes	Further investigation to identify the cause of the internal flooding incident.	No						Cost Effective
Study/ investigation to gather more data	Catchment Wide	PO3- Sewer Collapse	HABX.OT01.2	CCTV Investigation	CCTV Investigation.	No						Deliver the required outcome and Risk and uncertainty - future resilience
Study/ investigation to gather more data	Catchment Wide	PO8 (2050)- Dry Weather Flow	HABX.OT01.3	Infiltration Reduction Plan	Relining/improving structural grades of sewers across the catchment.	No						Deliver the required outcome and Risk and uncertainty - future resilience
Study/ investigation to gather more data	Doleham Ditch East Stream	PO9- GE Status / Potential Sewage discharge (continuous)	HABX.OT01.4	Study and Investigation-Phosphate Macrophytes and Phytobenthos Combined	Catchment was banded 1 in because; Doleham Ditch-Phosphate (Moderate Sewage discharge (continuous)) East Stream-Macrophytes and Phytobenthos Combined (Moderate Sewage discharge (continuous)).	Yes	Yes	Yes	Minor Positive +	£75K	No	Best Value
Study/ investigation to gather more data	Hastings Cliffs	PO11 - Nutrient Neutrality	HABX.OT01.5	Nutrient Budget	Catchment is Hydraulically linked to; Hastings Cliffs (NO Threat/Remedy Identified or Anticipated).	Yes	Yes	Yes	Minor Positive +	£75K	Yes	Best Value
Study/ investigation to gather more data	Catchment Wide	PO4- 1 in 50 year PO5- Storm Overflow PO10- Surface Water Management	HABX.OT01.6	Improve Hydraulic Model	Improve Hydraulic Model.	Yes	Yes	Yes	Minor Positive +	£325K	Yes	Best Value
Study/ investigation to gather more data	CHESTNUT WALK BEXHILL WPS	PO5 Storm Overflow	HABX.OT01.7	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	Best Value
Study/ investigation to gather more data	PEARTREE LANE BEXHILL WPS	PO5 Storm Overflow	HABX.OT01.8	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	Best Value
Study/ investigation to gather more data	BEXHILL & HASTINGS WTW	PO5 Storm Overflow	HABX.OT01.9	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	Best Value
Study/ investigation to gather more data	BEXHILL DOWN CSO	PO5 Storm Overflow	HABX.OT01.10	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	Best Value
Study/ investigation to gather more data	BROCKLEY ROAD BEXHILL CSO	PO5 Storm Overflow	HABX.OT01.11	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	Best Value
Study/ investigation to gather more data	GALLEY HILL BEXHILL WPS	PO5 Storm Overflow	HABX.OT01.12	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	Best Value
Study/ investigation to gather more data	HARTFIELD ROAD BEXHILL CSO	PO5 Storm Overflow	HABX.OT01.13	Storage	Storage.	Yes	Yes	Yes	Minor Positive +	£1,000K	Yes	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
Cuckmere and Pevensey Levels								
Bexhil And Hastings								
HABX.SC03.1	Cuckmere and Pevensey Levels	Bexhill And Hastings	Warrior Square, St Leonards Marina, Old Town	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 Council Hastings Borough Council	PO1
HABX.PW01.1	Cuckmere and Pevensey Levels	Bexhill And Hastings	Coombs Hastings WPS, Galley Hill Bexhill WPS	Improve the operational resilience of wastewater pumping station (WPS) to reduce flooding incidents	£465K	AMP8 onwards	-	PO1
HABX.PW01.3	Cuckmere and Pevensey Levels	Bexhill And Hastings	Warrior Square	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£190K	AMP8 onwards	-	PO1
HABX.PW01.4	Cuckmere and Pevensey Levels	Bexhill And Hastings	Galley Hill Bexhill WPS Rock A Nore Hastings WPS Chestnut Walk Bexhill WPS	Improve the operational resilience of wastewater pumping station (WPS) to reduce pollution incidents	£700K	AMP8 onwards	-	PO2
HABX.PW01.6	Cuckmere and Pevensey Levels	Bexhill And Hastings	Old Town, West Hill, Warrior Square	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£2,395K	AMP8 onwards	-	PO3
HABX.PW01.9	Cuckmere and Pevensey Levels	Bexhill And Hastings	Warrior Square, St Leonards Marina, Old Town	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£505K	AMP8 onwards	-	PO1
HABX.PW01.11	Cuckmere and Pevensey Levels	Bexhill And Hastings	Terminus 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)	£1,990K	AMP9	Rother District Council East Sussex County Council Hastings Borough Council	PO4
HABX.PW01.12	Cuckmere and Pevensey Levels	Bexhill And Hastings	Ninfield 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)	£2,700K	AMP9	Rother District Council East Sussex County Council Hastings Borough Council	PO4
HABX.PW01.13	Cuckmere and Pevensey Levels	Bexhill And Hastings	Harold 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)	£6,760K	AMP9	Rother District Council East Sussex County Council Hastings Borough Council	PO4
HABX.PW01.14	Cuckmere and Pevensey Levels	Bexhill And Hastings	Old London 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)	£1,995K	AMP9	Rother District Council East Sussex County Council Hastings Borough Council	PO4
HABX.PW01.15	Cuckmere and Pevensey Levels	Bexhill And Hastings	Elphinstone 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)	£1,475K	AMP9	Rother District Council East Sussex County Council Hastings Borough Council	PO4
HABX.PW02.1	Cuckmere and Pevensey Levels	Bexhill And Hastings	Bexhill & Hastings WTW	Improve the operational resilience of wastewater pumping station (WPS) to reduce pollution incidents	£6,970K	AMP8 onwards	-	PO2
HABX.PW02.2	Cuckmere and Pevensey Levels	Bexhill And Hastings	Bexhill & Hastings WTW	Increase capacity to allow for planned new development	£2,215K	AMP9	Environment Agency	PO8
HABX.OT01.4	Cuckmere and Pevensey Levels	Bexhill And Hastings	Doleham Ditch East Stream	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	£75K	AMP8	Environment Agency	PO9

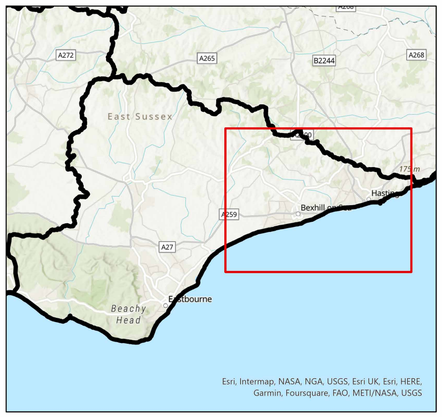
Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
HABX.OT01.6	Cuckmere and Pevensey Levels	Bexhill And Hastings	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£325K	AMP8	-	PO4 PO5 PO10
HABX.CONS01.1	Cuckmere and Pevensey Levels	Bexhill And Hastings	Galley Hill to Bulverhythe	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£TBC	AMP8 onwards	Hastings Borough Council East Sussex County Council	PO2 PO3
HABX.CONS01.2	Cuckmere and Pevensey Levels	Bexhill And Hastings	TN34 3 Castle Hill area	Customer Education Programme: Targeted campaign to reduce the amount of FOG (fats, oils and grease) and unflushables discharged into the sewer network	£TBC	AMP8 onwards	Rother District Council East Sussex County Council Hastings Borough Council	PO2
HABX.WINEP01.1	Cuckmere and Pevensey Levels	Bexhill And Hastings	BEXHILL & HASTINGS CSO	Reduce the number of storm discharges from BEXHILL & HASTINGS CSO by a combination of SuDS and storage options	£41,395K	AMP10	-	PO4 PO5
HABX.WINEP01.2	Cuckmere and Pevensey Levels	Bexhill And Hastings	GALLEY HILL BEXHILL CSO	Reduce the number of storm discharges from GALLEY HILL BEXHILL CSO by creating below-ground storage	£3,100K	AMP11	-	PO5
HABX.WINEP01.3	Cuckmere and Pevensey Levels	Bexhill And Hastings	EBDENS HILL HASTINGS CEO	Reduce the number of storm discharges from EBDENS HILL HASTINGS CEO by a combination of SuDS and storage options	£5,905K	AMP10	-	PO4 PO5
HABX.WINEP01.4	Cuckmere and Pevensey Levels	Bexhill And Hastings	CHESTNUT WALK BEXHILL CEO	Reduce the number of storm discharges from CHESTNUT WALK BEXHILL CEO by a combination of SuDS and storage options	£4,280K	AMP11	-	PO4 PO5
HABX.WINEP01.5	Cuckmere and Pevensey Levels	Bexhill And Hastings	BROCKLEY ROAD BEXHILL CSO	Reduce the number of storm discharges from BROCKLEY ROAD BEXHILL CSO by a combination of SuDS and storage options	£3,695K	AMP9	-	PO4 PO5 PO13
HABX.WINEP01.6	Cuckmere and Pevensey Levels	Bexhill And Hastings	BEXHILL DOWN CSO	New or improved screen to reduce aesthetics impacts from storm discharges at BEXHILL DOWN CSO	£130K	AMP12	-	PO5
HABX.WINEP01.7	Cuckmere and Pevensey Levels	Bexhill And Hastings	HARTFIELD ROAD BEXHILL CSO	Reduce the number of storm discharges from HARTFIELD ROAD BEXHILL CSO by a combination of SuDS and storage options	£3,900K	AMP11	-	PO4 PO5
HABX.WINEP01.8	Cuckmere and Pevensey Levels	Bexhill And Hastings	ROCK A NORE HASTINGS CEO	New or improved screen to reduce aesthetics impacts from storm discharges at ROCK A NORE HASTINGS CEO	£130K	AMP11	-	PO5
HABX.WINEP01.9	Cuckmere and Pevensey Levels	Bexhill And Hastings	COOMBS HASTINGS CEO	New or improved screen to reduce aesthetics impacts from storm discharges at COOMBS HASTINGS CEO	£130K	AMP11	-	PO5
HABX.WINEP01.10	Cuckmere and Pevensey Levels	Bexhill And Hastings	LONDON ROAD BEXHILL CSO	Reduce the number of storm discharges from LONDON ROAD BEXHILL CSO by a combination of SuDS and storage options	£2,820K	AMP8	-	PO4 PO5
HABX.WINEP01.11	Cuckmere and Pevensey Levels	Bexhill And Hastings	BURGESS ROAD HASTINGS CEO	New or improved screen to reduce aesthetics impacts from storm discharges at BURGESS ROAD HASTINGS CEO	£130K	AMP12	-	PO5
HABX.WINEP01.12	Cuckmere and Pevensey Levels	Bexhill And Hastings	YORK ROAD BEXHILL CSO	Reduce the number of storm discharges from YORK ROAD BEXHILL CSO by a combination of SuDS and storage options	£2,280K	AMP12	-	PO4 PO5

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
HABX.WINEP01.13	Cuckmere and Pevensey Levels	Bexhill And Hastings	MAPLE WALK BEXHILL CSO	New or improved screen to reduce aesthetics impacts from storm discharges at MAPLE WALK BEXHILL CSO	£130K	AMP11	-	PO5
HABX.WINEP01.14	Cuckmere and Pevensey Levels	Bexhill And Hastings	MILL LANE HASTINGS CSO	New or improved screen to reduce aesthetics impacts from storm discharges at MILL LANE HASTINGS CSO	£130K	AMP12	-	PO5
HABX.WINEP01.15	Cuckmere and Pevensey Levels	Bexhill And Hastings	RICHMOND ROAD BEXHILL CSO	New or improved screen to reduce aesthetics impacts from storm discharges at RICHMOND ROAD BEXHILL CSO	£130K	AMP11	-	PO5
HABX.WINEP01.16	Cuckmere and Pevensey Levels	Bexhill And Hastings	WATERMILL LANE BEXHILL CSO	New or improved screen to reduce aesthetics impacts from storm discharges at WATERMILL LANE BEXHILL CSO	£130K	AMP12	-	PO5
HABX.WINEP01.17	Cuckmere and Pevensey Levels	Bexhill And Hastings	PEARTREE LANE BEXHILL CEO	Reduce the number of storm discharges from PEARTREE LANE BEXHILL CEO by a combination of SuDS and storage options	£3,860K	AMP11	-	PO4 PO5
HABX.WINEP01.18	Cuckmere and Pevensey Levels	Bexhill And Hastings	CROWHURST CEO	Reduce the number of storm discharges from CROWHURST CEO by creating below-ground storage	£1,470K	AMP11	-	PO5
HABX.WINEP01.19	Cuckmere and Pevensey Levels	Bexhill And Hastings	COODEN BEACH BEXHILL CSO	New or improved screen to reduce aesthetics impacts from storm discharges at COODEN BEACH BEXHILL CSO	£130K	AMP11	-	PO5
HABX.WINEP01.20	Cuckmere and Pevensey Levels	Bexhill And Hastings	ROEDEAN CLOSE BEXHILL CSO	Reduce the number of storm discharges from ROEDEAN CLOSE BEXHILL CSO by a combination of SuDS and storage options	£2,875K	AMP12	-	PO4 PO5
HABX.WINEP01.21	Cuckmere and Pevensey Levels	Bexhill And Hastings	SEASIDE ROAD HASTINGS NO 1 SSO	Reduce the number of storm discharges from SEASIDE ROAD HASTINGS NO 1 SSO by a combination of SuDS and storage options	£3,735K	AMP11	-	PO4 PO5
HABX.WINEP01.22	Cuckmere and Pevensey Levels	Bexhill And Hastings	SEASIDE ROAD HASTINGS NO 1 SSO	Reduce the number of storm discharges from SEASIDE ROAD HASTINGS NO 1 SSO by a combination of SuDS and storage options	£3,735K	AMP11	-	PO4 PO5
HABX.WINEP.PO2.1	Cuckmere and Pevensey Levels	Bexhill And Hastings	Bexhill And Hastings 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	£95,725K	AMP10	-	PO9 PO11

Drainage and Wastewater Management Plan: Location of Potential Options BEXHILL AND HASTINGS Wastewater system in Cuckmere and Pevensey Levels River Basin Catchment

from Southern Water

(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.



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