Drainage and Wastewater Management Plan

May Street Herne Bay Wastewater System Plan

from Southern Water

Contents

May Street Herne Bay wastewater system: map and key facts

Population Equivalent (PE)	**43,011**
Discharge Waterbody	**North Sea**
Number of Pumping Stations	**28**
Number of Overflows	**4**
Length of Sewer (km)	**432.6**
Catchment Reference	**HERN**

BRAVA Results Table

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

Drivers of Risks

- Customer
- Hydraulics
- Operational
- Quality
- Unknown

Catchment Strategy: IMPROVE

MAY STREET HERNE BAY WTW

Problem Characterisation

May Street Herne Bay (HERN)

This document describes the causes of the risks identified by the Baseline Risk and Vulnerability Assessment (BRAVA). The BRAVA results for this catchment are summarised in Table 1. The results indicate that flooding, pollution and water quality are the main concerns in this wastewater catchment. 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 May Street Herne Bay wastewater system

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

Catchment Investment Strategy

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

Improve

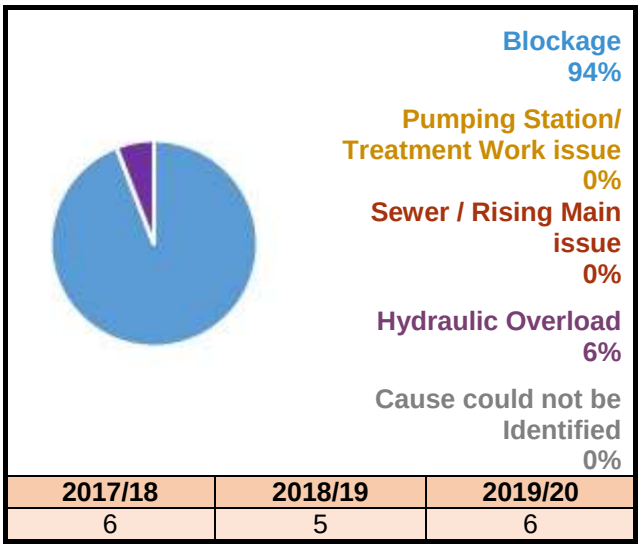
This means that we consider that the current performance of the drainage and wastewater system needs to be improved to reduce the impacts on our customers and/or the environment. We will plan investment to reduce the current risks by actively looking to invest capital funding in the short term to address 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 94% 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



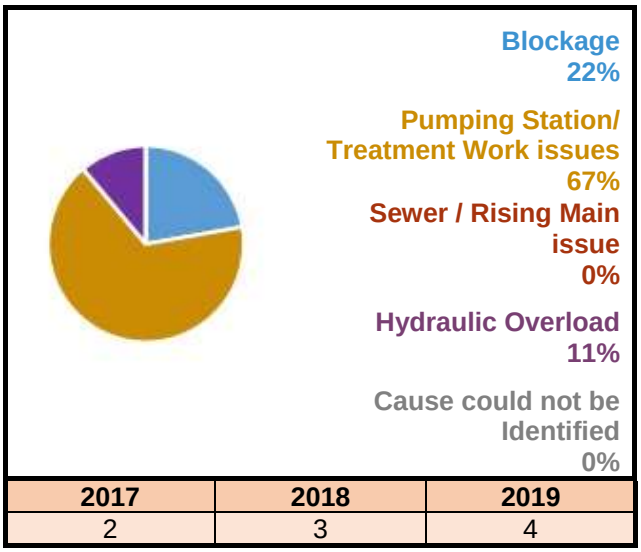
2017/18	2018/19	2019/20
6	5	6

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 67% of all incidents recorded in this wastewater system.

Figure 2: Number of pollution incidents per annum and causes



2017	2018	2019
2	3	4

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 less than 5.72 incidents per 1,000km per year (a threshold set by Ofwat) so the risk is in the 'not significant' band.

Table 2: Sewer collapses and rising main bursts

Sewer Collapse	**2017/18**	3
	2018/19	1
	2019/20	2
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 1000 - 1100 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 1600 - 1700 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	1 High	Less than 8	Between 8-10	10 or more
Bathing Waters	1 Medium	1 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. The risk 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	22	71	14	45
1 in 2	53	152	21	60
1 in 5	212	523	38	95
1 in 10	432	788	41	75
1 in 20	658	1192	32	58
1 in 30	798	1342	26	44
Total Annualised			**173**	**377**

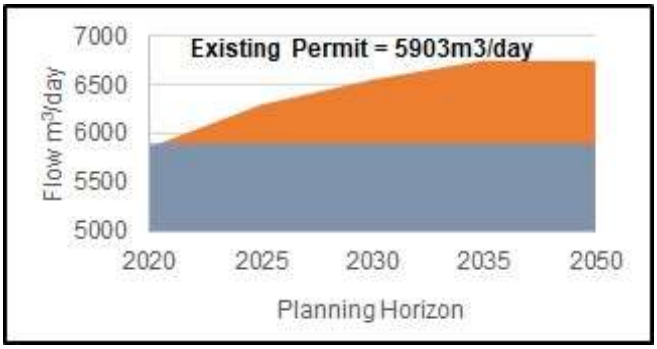
This indicates that the existing capacity of the wastewater network can be exceeded during 1 in 30 year storms (or more frequent events), and that the risk will increase due to future growth, creep and/or climate change by 2050.

Planning Objective 8: Wastewater Treatment Works Dry Weather Flow Compliance

The risk of Wastewater Treatment Works Dry Weather Flow Compliance is moderately significant for 2020 but is predicted to increase to very significant in 2050. This is because the average annual dry weather flow for 2017, 2018 and 2019 has been between 80% and 100% of the current permit, shown in Figure 3. This is because the predicted DWF in 2050 is expected to exceed the current permit.

The primary driver is 'Quality' due to the permit and capacity at the treatment work.

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



Planning Objective 9: Good Ecological Status / Good Ecological Potential

Table 5 shows the waterbody connected to this wastewater catchment is 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 (Bad) and is very significant. 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'.

Table 5: Waterbody not achieving GES/GEP

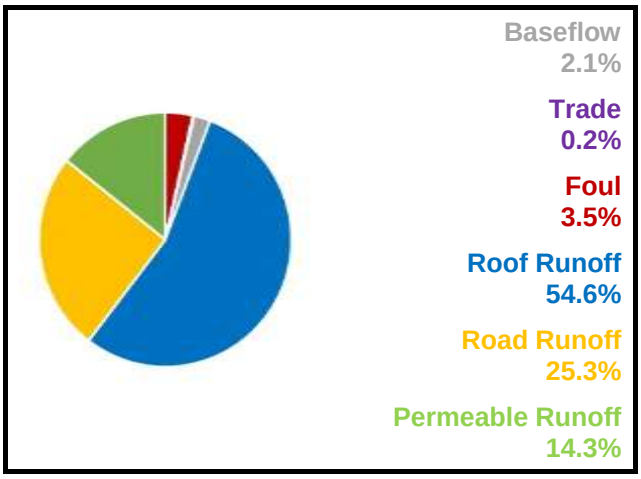
Waterbody	Classification	EA-Status	Activity
Hogwell Sewer and Chislet North Stream	Invertebrates	Moderate	Sewage discharge (continuous)
Hogwell Sewer and Chislet North Stream	Fish	Moderate	Sewage discharge (continuous)
Hogwell Sewer and Chislet North Stream	Fish	Moderate	Sewage discharge (continuous)
Hogwell Sewer and Chislet North Stream	Phosphate	Bad	Sewage discharge (continuous)

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 94.2% of the flow in the sewers. The total contribution of foul water from homes is 3.5% with business contributing 0.2%. The baseflow is infiltration from water in the ground and makes up 2.1% 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 moderately significant in 2020 but rises to very significant in 2050. This is because Natural England have advised that there is a risk to condition for the habitat sites (hydraulically linked to our wastewater catchment) shown in Table 6.

Table 6: Habitat Sites hydraulically linked to wastewater system

Habitat Sites	
Stodmarsh	Phosphate and Nitrate permit review required Overflow Spills

Our growth forecast suggest that more than 2,000 new homes could occur in this wastewater system by 2050 which means the risk to habitat sites increases to very significant by 2050.

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 7, along with the current classification from the Environment Agency.

Table 7: Bathing Water annual results

Bathing Waters	Annual Results		
	2017	2018	2019
Herne Bay Central	Poor	Good	Good
Herne Bay	Sufficient	Good	Excellent

The risks from this wastewater system on Herne Bay Central, Herne Bay bathing waters has led to an assessment of is very significant.

The primary driver is ‘Customer’ due to evidence of agriculture affecting the bathing waters in this wastewater system.

Planning Objective 14: Shellfish Waters

Table 8: Shellfish Waters linked to wastewater system

Shellfish Waters
Swalecliffe

The discharges from this wastewater system can affect the designated shellfish waters shown in Table 8. The risk of not achieving the faecal standards for shellfish in these designated waters from this wastewater system is very significant. This is because the CEFAS classification for the shellfish waters is in class C, prohibited or seasonal class B or C.

Southern Water
August 2021
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Generic Options Assessment for: May Street Herne Bay (HERN)

Planning Objectives		2020	Driver	2050
PO1	Internal Flooding	1	Customer	-
PO2	Pollution Risk	2	Operational	-
PO3	Sewer Collapse	0	-	-
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	1	Hydraulic	2
PO8	DWF Compliance	1	Quality	2
PO9	Achieve Good Ecological Status	2	Quality	-
PO10	Improve Surface Water Management	1	Hydraulic	-
PO11	Secure Nutrient Neutrality	1	Unknown	2
PO12	Reduce Groundwater Pollution	0	-	-
PO13	Improve Bathing Water Quality	2	Customer	-
PO14	Improve Shellfish Water Quality	2	Unknown	-

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		Y	-	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

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May Street Herne Bay 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	West Brook estuary	PO7 and PO10 Tidal influence in network performance	HERN.SC01.1	SuDS	West Brook joins the sea as a large surface water sewer west of Hampton.	Yes	Yes	Yes	Moderate Positive ++	TBC	Yes	Best Value
Control/ Reduce surface water entering the sewers	Large housing developments in the Greenhill and Herne Bay Golf Course area	PO10 - Surface water flooding	HERN.SC01.2	SuDS	Mitigating surface water flooding in regards to the large housing developments in this area.	No						Cost Effective
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Clarendon Street, William Street, Mortimer Street, Central Parade, High Street, Bank Street, St. Georges Avenue, Hogarth Close	PO1 - Internal Flooding	HERN.SC03.1	Customer Education Programme	Customer education programme in the following areas: Clarendon Street, William Street, Mortimer Street, Central Parade, High Street, Bank Street, St.	Yes	Yes	Yes	Minor Positive +	£115K	Yes	Best Value
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Park Place and Sea Street	PO2 - Pollution Risk	HERN.SC03.2	Customer Education Programme	Customer education programme at Park Place / Sea Street to reduce pollution risk.	Yes	Yes	Yes	Minor Positive +	£115K	Yes	Best Value
Control / Reduce the quantity / flow of wastewater entering sewer system												
Network Improvements (eg increase capacity, storage, conveyance)	Parsonage Road	PO4 and PO7 - Growth	HERN.PW01.1	Sewer upsizing	DAP Option.	Yes	Yes	Yes	Major Positive +++	£2,605K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HERN FC02 - Eddington Lane	PO4 and PO7 - Growth	HERN.PW01.2	New sewer	DAP Option.	Yes	Yes	Yes	Major Positive +++	£7,815K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HERN FC03 - Sweechbridge Road	PO4 and PO7 - Growth	HERN.PW01.3	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£2,605K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HERN FC04 - Lower Herne Road	PO4 and PO7 - Growth	HERN.PW01.4	New sewer	DAP Option.	Yes	Yes	Yes	Major Positive +++	£7,815K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	HERN FC05 - Land at Bullockstone Road, Herne Bay development	PO4 and PO7 - Growth	HERN.PW01.5	New sewer	DAP Option.	Yes	Yes	Yes	Major Positive +++	£7,815K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Herne Bay	PO1 - Internal Flooding	HERN.PW01.6	Additional Storage	Detailed modelling assessment and storage solution development in next cycle of DWMP.	Yes	No					Operational
Network Improvements (eg increase capacity, storage, conveyance)	Kings Hall Herne Bay WPS and Eddington Lane Herne Bay WPS	PO2 - Pollution Risk	HERN.PW01.7	Maintenance Programme WPS	An efficient maintenance programme for pumping stations to eliminate 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)	Herne Bay	PO2 - Pollution Risk	HERN.PW01.8	Additional Storage	Detailed modelling assessment and storage solution development in next cycle of DWMP.	Yes	No					Operational
Network Improvements (eg increase capacity, storage, conveyance)	Hampton, The Broadway, B2205 road	PO9 - GE Status PO3 - Sewer Collapse	HERN.PW01.9	Pipe Rehabilitation Programme	Targeted CCTV / electroscan surveys and proactive sewer rehabilitation to reduce risk of sewer collapse.	Yes	Yes	Yes	Minor Positive +	£380K	No	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Kings Hall Herne Bay WPS and Eddington Lane Herne Bay WPS areas	PO2 - Pollution Risk	HERN.PW01.10	Jetting Programme	Improved targeting and frequency of sewer jetting under MST (maintenance scheduled tasks) programme Link to improved jetting MST Programme for identified high risk locations.	Yes	Yes	Yes	Minor Positive +	£25K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	New Thanet Way (A299)	PO10 - Large inflow of black water after storms; content likely to be tyres and heavy metals	HERN.PW02.1	Treat Road Surface Water	Runoff from New Thanet Way (A299) could be captured, attenuated and treated in reed beds or similar along the side of the motorway as a more sustainable solution, before being treated at the Works.	Yes	Yes	Yes	Minor Positive +	TBC	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	MAY STREET HERNE BAY WTW	PO2- Pollution Risk	HERN.PW02.2	Maintenance Programme WTW	An efficient maintenance programme for the treatment works to eliminate the risk of a pollution incident due to an operational failure.	Yes	Yes	Yes	Minor Positive +	£2,260K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	MAY STREET HERNE BAY WTW	PO8 (2050)- Dry Weather Flow	HERN.PW02.3	Permit Review	Increase capacity at the Works / Permit Review.	Yes	Yes	Yes	Moderate Positive ++	£2,110K	Yes	Best Value
Wastewater Transfer												
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	Hogwell Sewer	PO9 & PO11 - GW supply area nearby; impact on NN issues	HERN.RC03.1	Installation of Reed Bed	WTW discharge to Reed bed.	Yes	Yes	Yes	Minor Positive +	TBC	No	Best Value
Mitigate impacts on Water Quality	Thanet Coast & Sandwich Bay	PO9 - Good Ecological Status/Potential PO11 - Secure Nutrient Neutrality	HERN.RC03.2	River enhancement and mitigation	Reduce consented permit levels for nutrients and solids in the final effluent from treatment works.	Yes	No					Feasibility and Risk
Mitigate impacts on Water Quality	Thanet Coast & Sandwich Bay	PO9 - Good Ecological Status/Potential PO11 - Secure Nutrient Neutrality	HERN.RC03.3	Effluent re-use	Re-use of effluent from site - pumping of this effluent or potable process treatment works.	Yes	No					Feasibility and Risk
Reduce consequences Properties (e.g. Property Flood Resilience)												
Study/ investigation to gather more data	Catchment wide	PO9 and PO14 - Shellfish Water Quality Misconnections	HERN.OT01.1	Identify misconnections	Identify areas to remove misconnections and reduce impermeable area contribution.	Yes	Yes	Yes	Minor Positive +	£100K	Yes	Best Value
Study/ investigation to gather more data	Thanet Coast & Sandwich Bay	PO11 - Continuous (WTW treated effluent) and / or intermittent (storm overflow) wastewater discharges affecting Nutrient Neutrality (NN)	HERN.OT01.2	Nutrient Budget	Study / Investigation required to understand the impact of wastewater discharges and achieve or prevent deterioration from Natrural England's revised Common Standards Monitoring Guidance (rCSMG) targets Total Phosphorus and Total Nitrogen.	Yes	Yes	Yes	Minor Positive +	£75K	Yes	Best Value
Study/ investigation to gather more data	Swale East	PO9 and PO14 - Shellfish Water Quality	HERN.OT01.3	Discharges to Shellfish Waters	Study / Investigation required to understand the impact of wastewater discharges, and achieve or prevent deterioration of shellfish waters Linking with 'Asset Strategy and Planning Team'.	Yes	Yes	Yes	Minor Positive +	£100K	Yes	Best Value
Study/ investigation to gather more data	KINGS HALL HERNE BAY WPS	PO5, PO13 and PO14 - Spill assessments and Water Quality	HERN.OT01.4	Modelling investigation	KINGS HALL HERNE BAY WPS discharges to Shellfish Waters (P014) and Bathing Waters (PO13).	Yes	Yes	Yes	Major Positive +++	£1,000K	Yes	Best Value
Study/ investigation to gather more data	MAY STREET HERNE BAY WTW	PO5, PO13 &PO14 - Spill assessments	HERN.OT01.5	Modelling investigation	DWMP model prediction: Offline storage of 239m3 required to achieve a 3 Spill 2020 solution.	Yes	Yes	Yes	Major Positive +++	£1,510K	Yes	Best Value

May Street Herne Bay 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	Catchment wide	PO1- Internal Flooding (hydraulic causes) PO4- 1 in 50 year Flood Risk PO5- Storm Overflow PO7- Hydraulic Flood Risk PO10- Surface Water Management	HERN.OT01.6	Improve Hydraulic Model	Hydraulic surveys and reverification to improve model confidence and accuracy of simulations.	Yes	Yes	Yes	Minor Positive +	£150K	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.

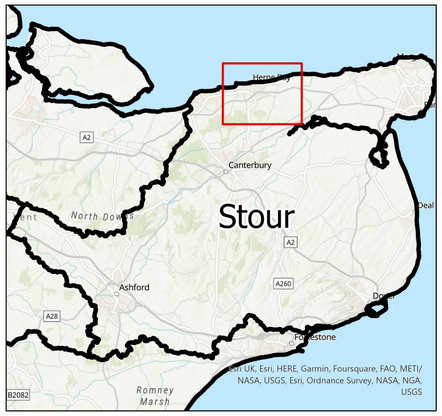
Date : May 2023
Version : 1.0

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
Stour								
May Street Herne Bay								
HERN.SC03.1	Stour	May Street Herne Bay	Clarendon Street, William Street, Mortimer Street, Central Parade, High Street, Bank Street, St. Georges Avenue, Hogarth Close	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	-	PO1
HERN.SC03.2	Stour	May Street Herne Bay	Park Place and Sea Street	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	-	PO2
HERN.PW01.1	Stour	May Street Herne Bay	Parsonage 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)	£2,605K	AMP9	-	PO4 PO7
HERN.PW01.2	Stour	May Street Herne Bay	Eddington Lane	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)	£7,815K	AMP9	-	PO4 PO7
HERN.PW01.3	Stour	May Street Herne Bay	Sweechbridge 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)	£2,605K	AMP9	-	PO4 PO7
HERN.PW01.4	Stour	May Street Herne Bay	Lower Herne 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)	£7,815K	AMP9	-	PO4 PO7
HERN.PW01.5	Stour	May Street Herne Bay	Land at Bullockstone Road, Herne Bay development	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)	£7,815K	AMP9	-	PO4 PO7
HERN.PW01.7	Stour	May Street Herne Bay	Kings Hall Herne Bay WPS and Eddington Lane Herne Bay WPS	Improve the operational resilience of wastewater pumping station (WPS) to reduce pollution incidents	£465K	AMP8 onwards	-	PO2
HERN.PW01.9	Stour	May Street Herne Bay	Hampton, The Broadway, B2205 road	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£380K	AMP8 onwards	Stour County Council Natural England	PO3 PO9
HERN.PW01.10	Stour	May Street Herne Bay	Kings Hall Herne Bay WPS and Eddington Lane Herne Bay WPS areas	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£25K	AMP8 onwards	-	PO2
HERN.PW02.2	Stour	May Street Herne Bay	MAY STREET HERNE BAY WTW	Improve the operational resilience of wastewater treatment works (WTW) to reduce pollution incidents	£1,000K	AMP7	-	PO2
HERN.PW02.3	Stour	May Street Herne Bay	MAY STREET HERNE BAY WTW	Increase capacity to allow for planned new development	£2,110K	AMP9	-	PO8
HERN.RC03.1	Stour	May Street Herne Bay	Hogwell Sewer	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	£TBC	AMP10	Environment Agency Stour County Council Natural England	PO9 PO11
HERN.OT01.1	Stour	May Street Herne Bay	System Wide	Study and Investigation to identify misconnections, understand the impact of wastewater discharges on the local environment and identify measures required to achieve good ecological status in the receiving waterbody	£100K	AMP8	Stour County Council	PO9 PO14
HERN.OT01.3	Stour	May Street Herne Bay	Swale East	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	£100K	AMP8	Environment Agency Stour County Council Natural England	PO9 PO14
HERN.OT01.6	Stour	May Street Herne Bay	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£150K	AMP8	-	PO1 PO4 PO5 PO7 PO10
HERN.WINEP01.1	Stour	May Street Herne Bay	KINGS HALL HERNE BAY CEO	Reduce the number of storm discharges from KINGS HALL HERNE BAY CEO by a combination of SuDS and storage options	£22,370K	AMP8	-	PO4 PO5 PO7 PO13 PO14
HERN.WINEP01.2	Stour	May Street Herne Bay	MAY STREET HERNE BAY SSO	Reduce the number of storm discharges from MAY STREET HERNE BAY SSO by creating below-ground storage	£10,955K	AMP8	-	PO5
HERN.WINEP01.3	Stour	May Street Herne Bay	GAINSBOROUGH DRIVE HERNE BAY CEO	Reduce the number of storm discharges from GAINSBOROUGH DRIVE HERNE BAY CEO by a combination of SuDS and storage options	£1,390K	AMP8	-	PO4 PO5 PO7 PO13 PO14

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
HERN.WINEP01.4	Stour	May Street Herne Bay	EDDINGTON LANE HERNE BAY CSO	New or improved screen to reduce aesthetics impacts from storm discharges at EDDINGTON LANE HERNE BAY CSO	£130K	AMP12	-	PO5
HERN.WINEP.PO2.1	Stour	May Street Herne Bay	May Street Herne Bay WTW	Expansion of existing biological treatment to achieve 10mg/l Total N permit. Provision of additional dosing and tertiary treatment to achieve 0.25mg/l Total P permit. (WINEP OAR 08SO104004)	£20,310K	AMP8	-	PO9 PO11

Drainage and Wastewater Management Plan: Location of Potential Options MAY STREET HERNE BAY Wastewater system in Stour 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

HERN.SC03.1
HERN.WINEP01.1
HERN.PW01.7
HERN.PW01.9
HERN.SC03.1
HERN.WINEP01.3
HERN.SC03.1
HERN.PW01.10
HERN.SC03.1
HERN.SC03.2
HERN.SC03.2
HERN.WINEP.PO2.1
HERN.WINEP01.2
HERN.PW02.2
HERN.PW02.3
HERN.PW01.10
HERN.SC03.1
HERN.WINEP01.4
HERN.SC03.2
HERN.PW01.10
HERN.SC03.2
HERN.PW01.10

Herne Bay
Hampton
Greenhill
Eddington
Beltinge
Hillborough
Broomfield
Hunters Forstal
Herne
Herne Common
Maypole
Boyden Gate
Hoath
Reculver
Hawthorn Corner
Colewood Farmste
Studd Hill
Purchas Wood
West Brook
Red House Farm
Woodcroft
West End
The Wilderness
Bleanbottom Shaw
Round Wood
Crow Park
Warren Farm
Banker's Wood
Bleangate House
Braggs Lane Farm
Hoath Wood
Hoathwood House
Underdown Wood
Cripps Wood
West Blean Wood
Whychurst
Boarded House Farm
Thornden Wood
Heather Cottage
Hicks Forstal
Hicks Forstal Rd
East Blean Wood
Maypole Farm Airfield
Knave's Ash
Rushbourne Manor
Calfs Wood
Chestnut Plantation
Beacon Wood
Millbank
Shelvingford Farm
Sandy Meadows Farm
Shelving Wood
Crowdown Wood
Ford
Claver House
Oxenden House Farm
Highstead
Woodlands
Under the Wood
Marshside
Homersham Lake
Tipper Cottage
Chitty
Chislet
Chislet Forstal
Hollow Street
Little Grays Farm
The Old Barn
Brook Farm
Oar Farm
The Old Mill House
Hogwell Sewer
Plenty Brook
Herne Bay
Reculver
Thanet Way
A299
A2990
A291
B2205
0 0.3 0.6 1.2 1.8 2.4 Kilometers