



Drainage and Wastewater Management Plan

Harestock
Wastewater System Plan



from
**Southern
Water** 

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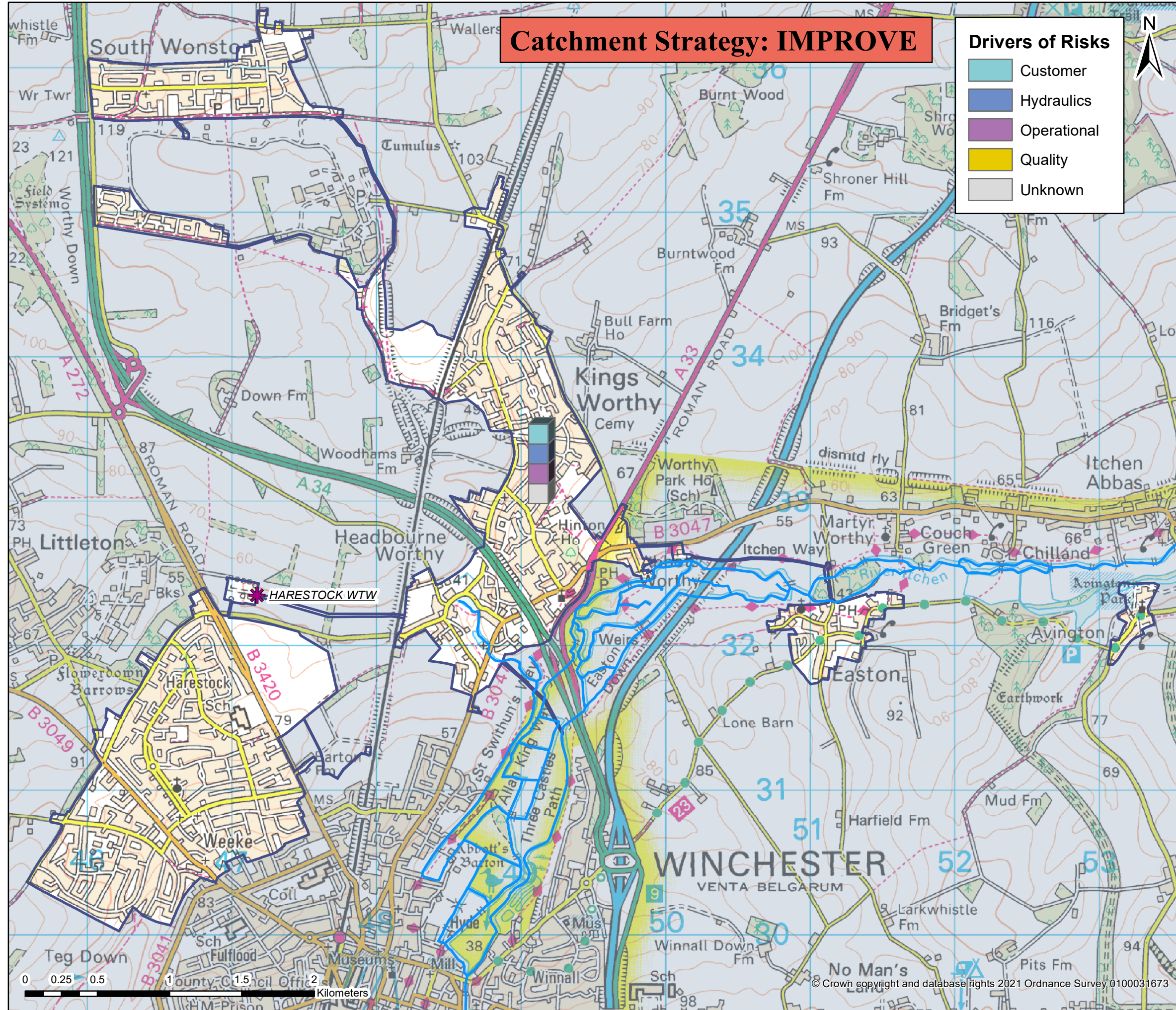
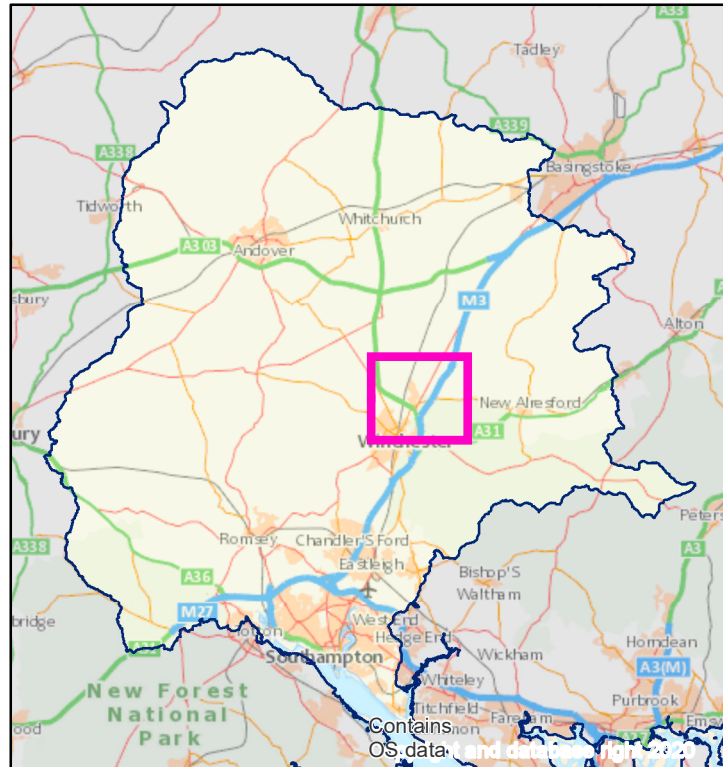
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Harestock wastewater system: map and key facts



Population Equivalent (PE)	18,094
Discharge Waterbody	River Itchen
Number of Pumping Stations	13
Number of Overflows	1
Length of Sewer (km)	140.2
Catchment Reference	HARE

BRAVA Results Table (HARE)		
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	1	1
5 Storm Overflow performance	0	0
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	0	
10 Surface Water Management	0	
11 Nutrient Neutrality	1	2
12 Groundwater Pollution	2	
13 Bathing Waters	NA	
14 Shellfish Waters	NA	



Problem Characterisation

Harestock (HARE)

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 Harestock 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	1	Hydraulic	1
5	Storm Overflow Performance	0	-	0
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	0	-	
10	Surface Water Management	0	-	
11	Nutrient Neutrality	1	Unknown	2
12	Groundwater Pollution	2	Operational	
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

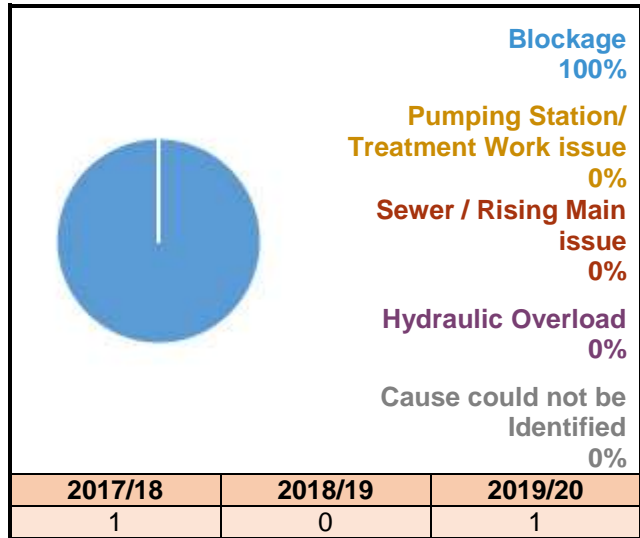
This means that we consider that the current performance of the drainage and wastewater system needs to be improved to reduce the impacts on our customers and/or the environment. We will plan investment to reduce the current risks by actively looking to invest capital funding in the short term to address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



Planning Objective 1: Internal Sewer Flooding Risk

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 less than 1.68 incidents per 10,000 connections per year (a threshold set by Ofwat) so the risk is in the 'not significant' band.

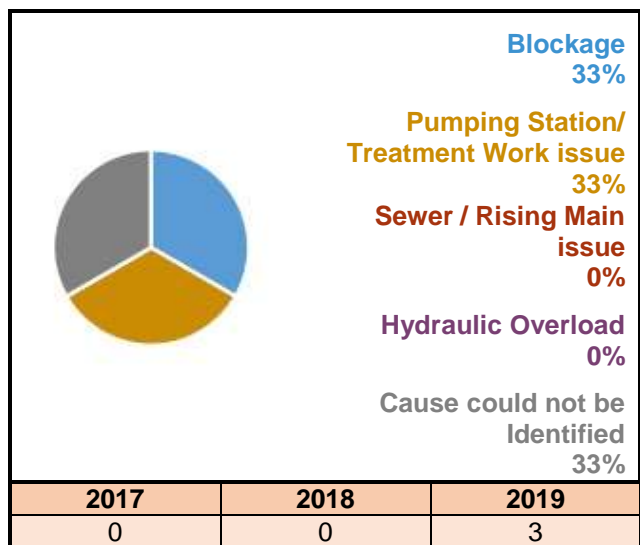
Figure 1: Number of internal flooding incidents per annum and causes



Planning Objective 2: Pollution Risk

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

Figure 2: Number of pollution incidents per annum and causes



The primary driver for pollution is 'Customer'. Blockages caused 33% 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.

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	1
	2018/19	0
	2019/20	0
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. A hydraulic model is not available for this wastewater system, however our wastewater system vulnerability assessment (using Ofwat's guidance on Risk of Sewer Flooding in a Storm) identified this wastewater system as grade 3/4.

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 not significant in 2020 and 2050.

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).

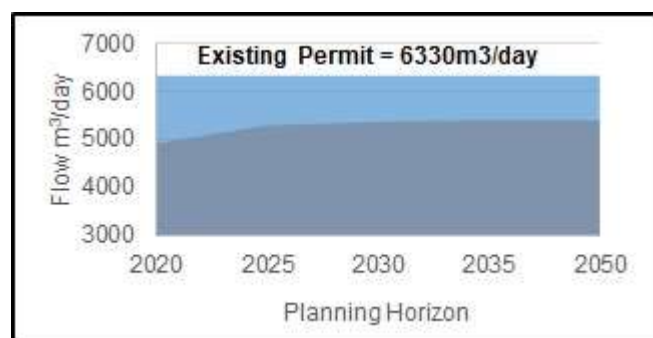
Planning Objective 7: Flooding due to Hydraulic Overload

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

This wastewater system is not hydraulically linked to a waterbody where wastewater operations are contributing to not achieving GES/GEP, therefore the risk is not significant.

Planning Objective 10: Surface Water Management

A network model was not available for this assessment, therefore the risk has been moderated to not significant for this planning objective.

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 that are hydraulically linked to our wastewater system, listed in Table 3.

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.

Table 3: Habitat Sites hydraulically linked to wastewater system

Habitat Sites	
River Itchen	Nitrate permit review required
Solent Maritime	Nitrate permit review required
Solent & Southampton Water	No Threat/Remedy Identified or Anticipated
Solent and Dorset Coast	Nitrate permit review required

Planning Objective 12: Groundwater Pollution

The risk of Groundwater Pollution is moderately significant. The wastewater system network of sewers extends across geographical areas that are designated as a Source Protection Zone (SPZ) for water supply. An estimated 14% of the sewer network crosses SPZ 1 or SPZ 2 and infiltration in the wastewater system is estimated to be of concern, based on infiltration equation used in the Wastewater Treatment Works Dry Weather Flow Compliance planning objective.

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

Planning Objective 13: Bathing Waters

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

Planning Objective 14: Shellfish Waters

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

Generic Options Assessment for: Harestock (HARE)



Planning Objectives		2020	Driver	2050	Type of Measures	Generic Option Categories	Icon	Take Forward?	Reasons	Examples of Generic Options
PO1	Internal Flooding	0	-	-	Source (Demand) Measures (to reduce likelihood)	Control / Reduce surface water run-off		Y	-	Natural Flood Management; rural land management and catchment management; SuDS including blue and green infrastructure; storm management
PO2	Pollution Risk	2	Customer	-		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
PO3	Sewer Collapse	0	-	-		Improve quality of wastewater		Y	-	Domestic and business customer education; incentives and behaviour change (reduce Fats, Oils & Grease, wet wipes etc.); monitoring trade waste at source; on-site black water and/or greywater pre-treatment
PO4	Risk of Sewer Flooding in 1 in 50 yr	1	Hydraulic	1		Reduce the quantity / demand		Y	-	Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
PO5	Storm Overflow Performance	0	-	0	Pathway (Supply) Measures (to reduce likelihood)	Network Improvements		Y	-	Asset optimisation; additional network capacity; storage; separate flows; structural repairs; re-line sewer pipe and manholes; smart networks.
PO6	Risk of WTW Compliance Failure	0	-	0		Improve Treatment Quality		Y	-	Increase treatment capacity; rationalisation of treatment works (centralisation / de-centralisation); install tertiary plant; UV plant or disinfection facilities; innovation; improve Technical Achievable Limits; new WTWs
PO7	Annualised Flood Risk/Hydraulic Overload	0	-	0		Wastewater Transfer to treatment elsewhere		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.	Transfer flow to other network or treatment sites; transport sewage by tanker to other sites
PO8	DWF Compliance	0	-	1	Receptor Measures (to reduce consequences)	Mitigate impacts on Air Quality		N/A	Not included in first round of DWMPs	Carbon offsetting; noise suppression /filtering; odour control and treatments
PO9	Achieve Good Ecological Status	0	-	-		Improve Land and Soils		N/A	Not included in first round of DWMPs	Sludge soil enhancement
PO10	Improve Surface Water Management	0	-	-		Mitigate impacts on receiving waters		Y	-	River enhancement, aeration
PO11	Secure Nutrient Neutrality	1	Unknown	2		Reduce impact on properties		Y	-	Property flood resilience; non-return valves; flood guards / doors; air brick covers
PO12	Reduce Groundwater Pollution	2	Operational	-	Other	Study / Investigation		Y	-	Additional data required; hydraulic model development; WQ monitoring and modelling
PO13	Improve Bathing Water Quality	NA	-	-						
PO14	Improve Shellfish Water Quality	NA	-	-						

Harestock 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												
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	HARESTOCK WTW	PO8 (2050)- Dry Weather Flow	HARE.SC03.1	Water Efficient Appliance / Measures	Southern Water aims to reduce water consumption to 100 l/h/d by 2040.	No						Deliver the required outcome
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Catchment Wide	PO2- Pollution Risk	HARE.SC03.2	Customer Education Programme	Customer education programme.	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)	Catchment Wide	PO8 (2050)- Dry Weather Flow	HARE.PW01.1	Pipe Rehabilitation Programme	Relining/improving structural grades of sewers across the catchment.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Easton- Outer Zone TCZ Chilbolton- TCZ Otterbourne- TCZ	PO12- Ground Water Pollution	HARE.PW01.2	Pipe Rehabilitation Programme	Total length of sewer within protection zones- 36.	Yes	Yes	Yes	Minor Positive +	£5,285K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	HARE.PW01.3	Jetting Programme	Jetting Programme.	Yes	Yes	Yes	Minor Positive +	£10K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Avington Park	PO8 - Nutrient Neutrality	HARE.PW01.4	First time sewerage	Avington Park to be connected to network – helping nutrient neutrality.	No						Deliver the required outcome
Improve treatment (capacity and quality at existing works or develop new WTWs)	HARESTOCK WTW	PO2- Pollution Risk	HARE.PW02.1	Maintenance Programme WTW	Improve resilience: 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 +	£6,970K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	HARESTOCK WTW	PO8 (2050)- Dry Weather Flow	HARE.PW02.2	Permit Review	Proposed permit-6851m3.	Yes	Yes	Yes	Minor Positive +	£1,505K	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												
Reduce consequences Properties (e.g. Property Flood Resilience)												
Study/ investigation to gather more data	Catchment Wide	PO2- Pollution Risk	HARE.OT01.1	Pollution Investigation	Further investigation to identify the cause of the pollution incident.	Yes	Yes	Yes	Minor Positive +	£230K	Yes	Best Value
Study/ investigation to gather more data	Catchment Wide	PO8 (2050)- Dry Weather Flow	HARE.OT01.2	Infiltration Reduction Plan	Relining/improving structural grades of sewers across the catchment.	No						Risk and uncertainty - future resilience
Study/ investigation to gather more data	River Itchen Solent Maritime Solent & Southampton Water Solent and Dorset Coast	PO11 - Nutrient Neutrality	HARE.OT01.3	Nutrient Budget	Catchment is Hydraulically linked to; River Itchen (Threat/Remedy Identified or Anticipated) Solent Maritime (Threat/Remedy Identified or Anticipated) Solent & Southampton Water (NO Threat/Remedy Identified or Anticipated) Solent and Dorset Coast (Threat/Remedy Identified or Anticipated).	Yes	Yes	Yes	Minor Positive +	£75K	Yes	Best Value
Study/ investigation to gather more data	Easton- Outer Zone TCZ Chilbolton- TCZ Otterbourne- TCZ	PO12- Ground Water Pollution	HARE.OT01.4	Study and Investigations	Total length of sewer within protection zones- 35.	No						Deliver the required outcome
Study/ investigation to gather more data	Catchment Wide	PO4- 1 in 50 year	HARE.OT01.5	Improve Hydraulic Model	Improve Hydraulic Model.	Yes	Yes	Yes	Minor Positive +	£325K	Yes	Best Value

Drainage and Wastewater Management Plan (DWMP)

DWMP Investment Needs

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

Date : May 2023

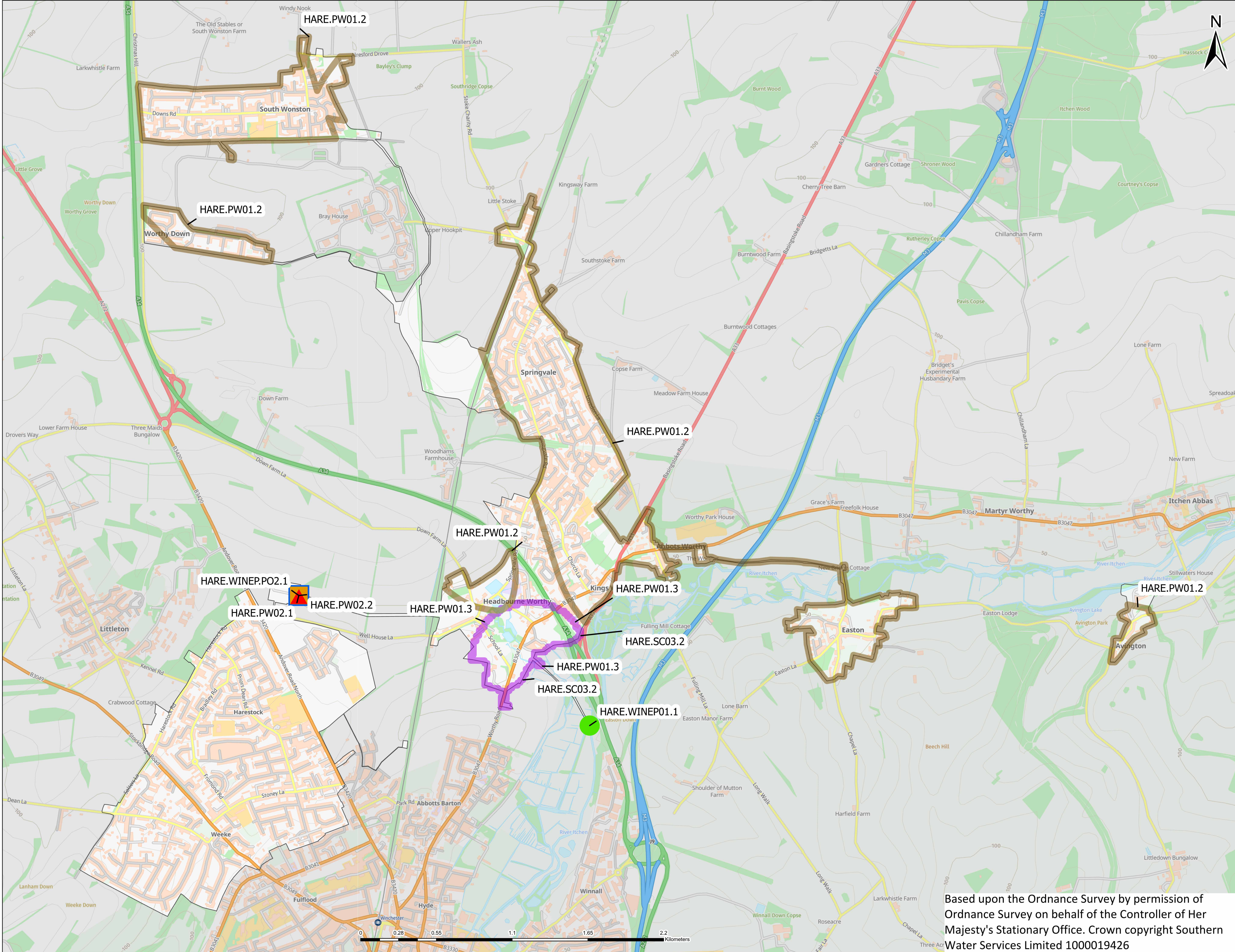
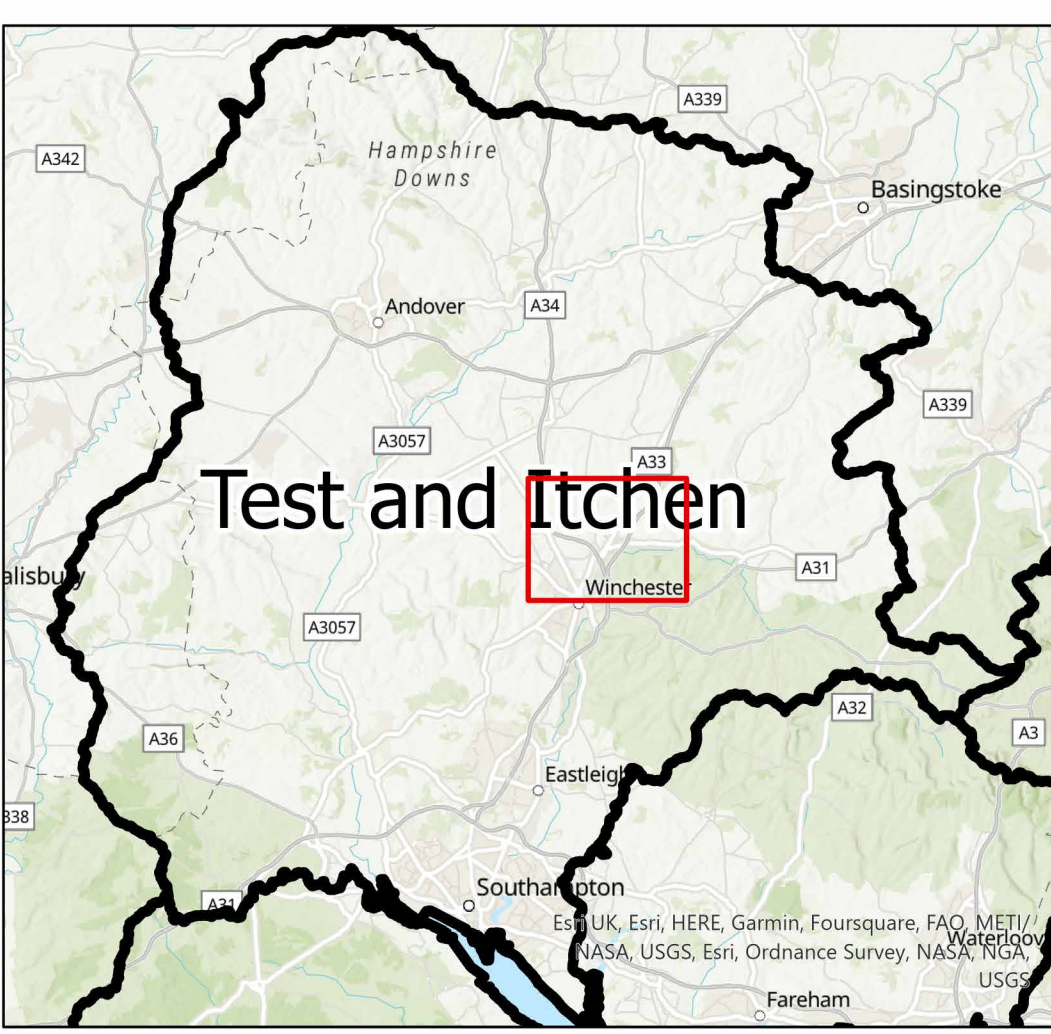
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Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
Test and Itchen								
Harestock								
HARE.SC03.2	Test and Itchen	Harestock	Kings Worthy	Customer Education Programme: Targeted campaign to reduce the amount of FOG (fats, oils and grease) and unflushables discharged into the sewer network	£115K	AMP8 onwards	Hampshire County Council Test Valley Borough Council	PO2
HARE.PW01.2	Test and Itchen	Harestock	Easton- Outer Zone TCZ, Chilbolton-TCZ, Otterbourne- TCZ	Sewer Rehabilitation: Targeted CCTV or electroscan surveys to check the integrity of sewers and reline or renew them to reduce the risk of groundwater pollution	£5,285K	AMP9	-	PO12
HARE.PW01.3	Test and Itchen	Harestock	Kings Worthy	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£10K	AMP8 onwards	-	PO2
HARE.PW02.1	Test and Itchen	Harestock	Harestock WTW	Improve the operational resilience of wastewater treatment works (WTW) to reduce pollution incidents	£6,970K	AMP8 onwards	-	PO2
HARE.PW02.2	Test and Itchen	Harestock	Harestock WTW	Increase capacity to allow for planned new development	£1,000K	AMP8	Environment Agency	PO8
HARE.OT01.1	Test and Itchen	Harestock	Easton	Study and Investigation: Investigation to identify the root cause of pollution to reduce the number of incidents	£230K	AMP8	-	PO2
HARE.OT01.5	Test and Itchen	Harestock	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£325K	AMP8	-	PO4
HARE.WINEP01.1	Test and Itchen	Harestock	HARESTOCK SSO	Reduce the number of storm discharges from HARESTOCK SSO by a combination of SuDS and storage options	£9,740K	AMP10	-	PO5
HARE.WINEP.PO2.1	Test and Itchen	Harestock	Harestock WTW	Provision of additional biological treatment and conversion of existing tertiary treatment to denitrification to achieve 10mg/l Total Nitrogen permit (WINEP action 08SO103976)	£7,435K	AMP8	-	PO11

Drainage and Wastewater Management Plan: Location of Potential Options HARESTOCK Wastewater system in Test and Itchen 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 Nutrient Neutrality
- WINEP Storm Overflows

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