



Drainage and Wastewater Management Plan

Morestead Road Winchester
Wastewater System Plan



from
**Southern
Water** 

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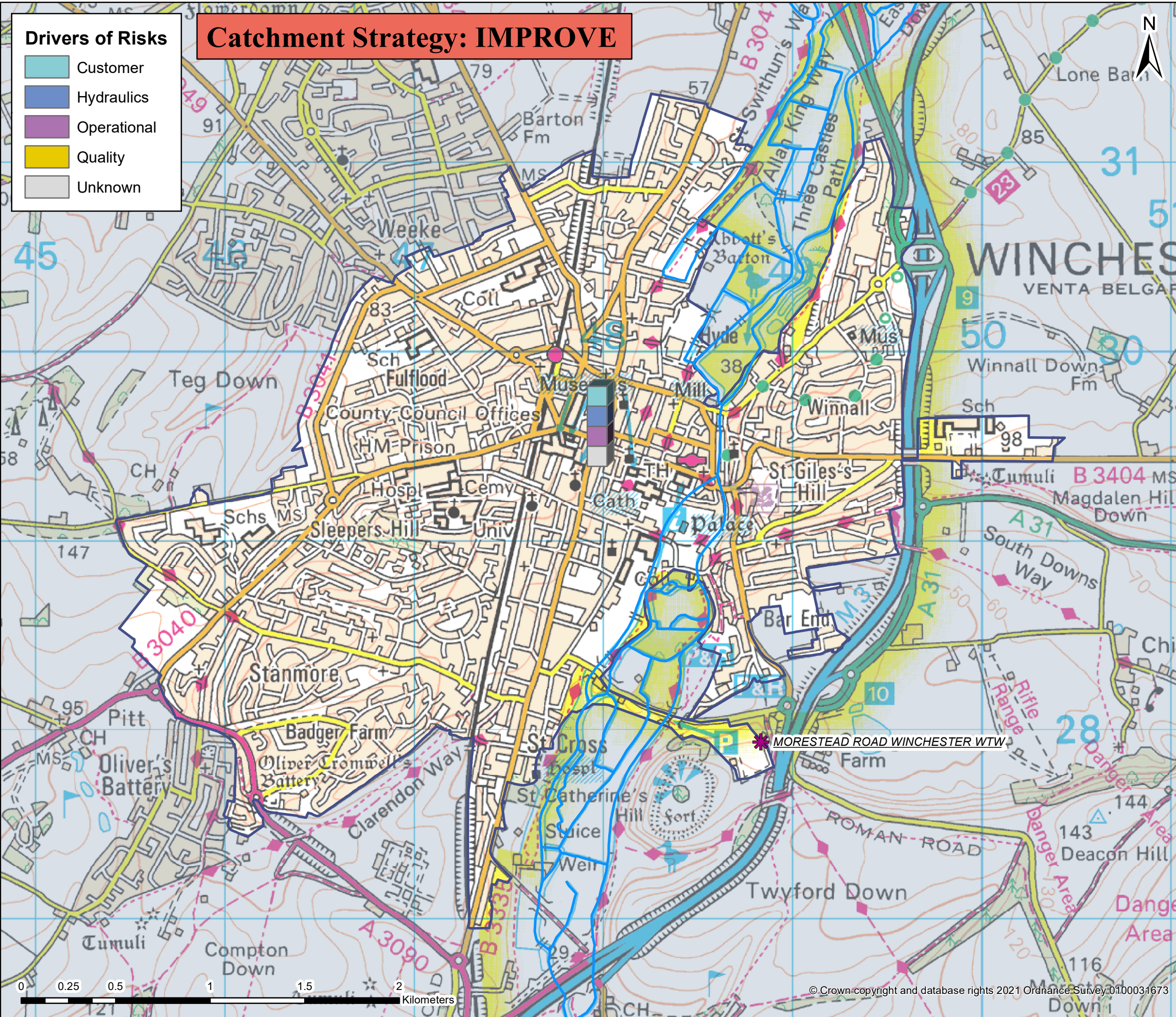
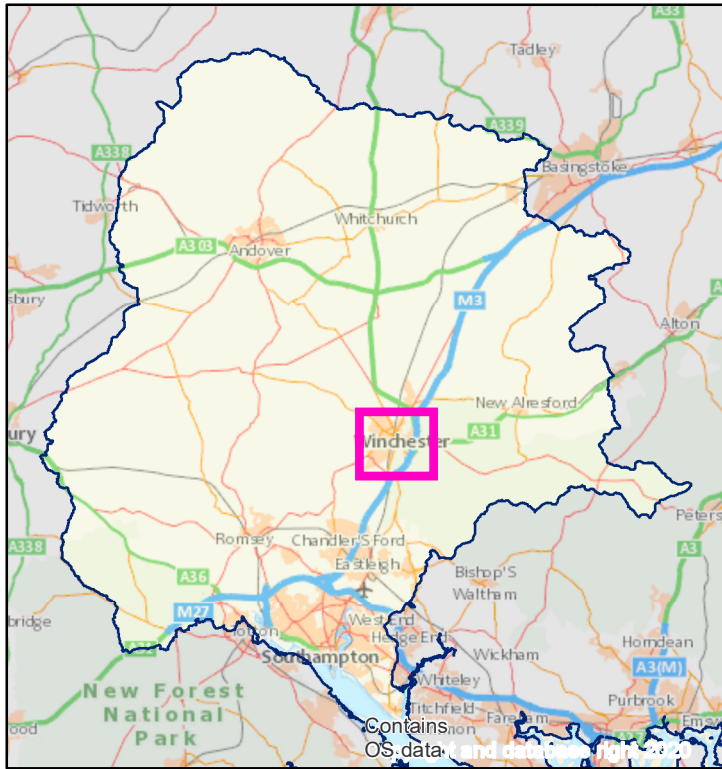
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Morestead Road Winchester wastewater system: map and key facts



Drivers of Risks

- Customer
- Hydraulics
- Operational
- Quality
- Unknown

Population Equivalent (PE)	39,351
Discharge Waterbody	Itchen
Number of Pumping Stations	29
Number of Overflows	2
Length of Sewer (km)	228.5
Catchment Reference	MORE

BRAVA Results Table (MORE)		
Planning Objective	2020	2050
1 Internal Sewer Flooding Risk	1	
2 Pollution Risk	1	
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	1	2
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	0	
13 Bathing Waters	NA	
14 Shellfish Waters	NA	



Problem Characterisation

Morestead Road Winchester (MORE)

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 Morestead Road Winchester wastewater system

Planning Objectives		2020	Driver	2050
1	Internal Sewer Flooding Risk	1	Customer	
2	Pollution Risk	1	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	1	Hydraulic	2
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	0	-	
13	Bathing Waters	NA	-	
14	Shellfish Waters	NA	-	

Key

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

*No issues relevant to planning objective within Wastewater System

Investment Strategy

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

Improve

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

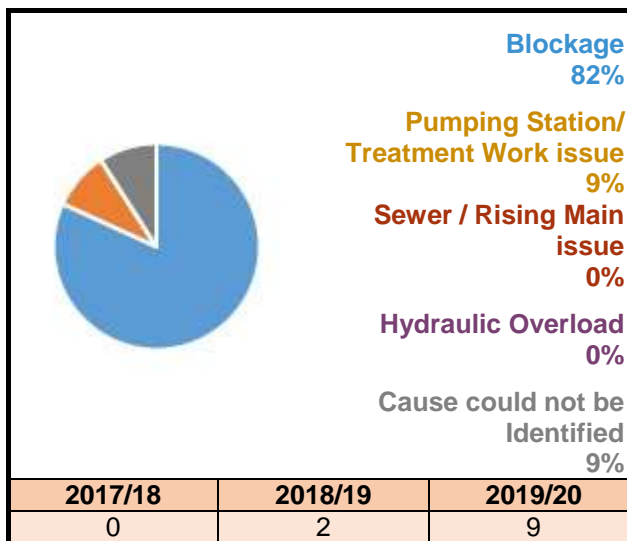


Planning Objective 1: Internal Sewer Flooding Risk

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 82% 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

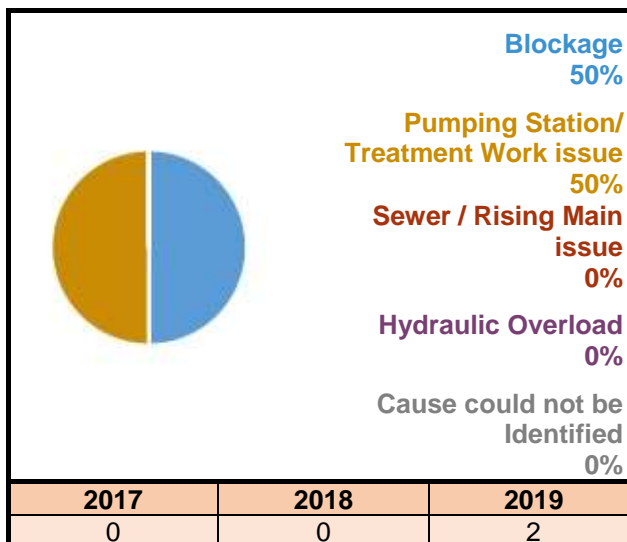


Planning Objective 2: Pollution Risk

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 'Customer'. Blockages caused 50% 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 2: Number of pollution incidents per annum and causes



Planning Objective 3: Sewer Collapse Risk

The number of sewer collapses reported during the three years considered by the risk assessment are shown in Table 2. The length of sewer in this wastewater system means there have been 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. This is because our computer model of the sewer network indicate for 2020 that approximately 600 - 700 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 1000 - 1100 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 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

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 3.

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.

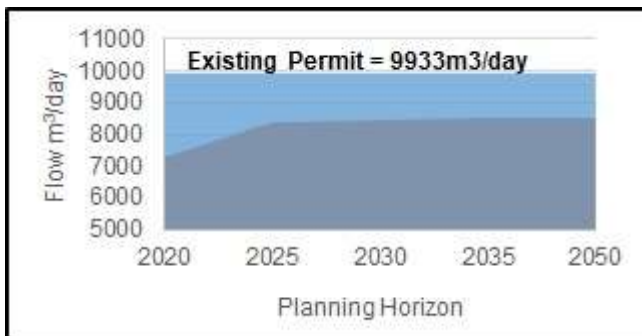
Table 3: Annualised number of properties at risk per 10,000 connections.

Rainfall Return Period (yr)	Number of Properties at Risk		Annualised per 10,000 connections	
	2020	2050	2020	2050
1 in 1	50	102	32	64
1 in 2	84	144	33	57
1 in 5	225	368	41	67
1 in 10	337	583	32	55
1 in 20	461	741	22	36
1 in 30	593	920	19	30
Total Annualised			179	310

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



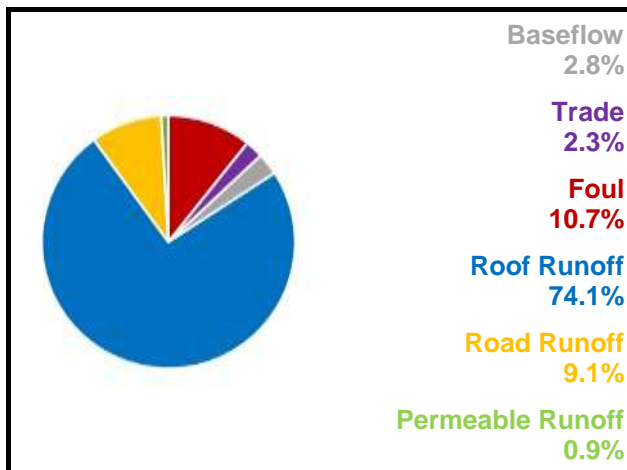
Planning Objective 9: Good Ecological Status / Good Ecological Potential

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

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 84.1% of the flow in the sewers. The total contribution of foul water from homes is 10.7% with business contributing 2.3%. The baseflow is infiltration from water in the ground and makes up 2.8% 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 that are hydraulically linked to our wastewater system, listed in Table 4.

Table 4: Habitat Sites hydraulically linked to wastewater system

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

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

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: Morestead Road Winchester (MORE)



Planning Objectives		2020	Driver	2050	Type of Measures	Generic Option Categories	Icon	Take Forward?	Reasons	Examples of Generic Options
PO1	Internal Flooding	1	Customer	-	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	1	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	1	Hydraulic	2		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
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	0	-	-	Other	Study / Investigation		N	No further studies are required at this stage	Additional data required; hydraulic model development; WQ monitoring and modelling
PO13	Improve Bathing Water Quality	NA	-	-						
PO14	Improve Shellfish Water Quality	NA	-	-						

Morestead Road Winchester 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	Solent Maritime Solent & Southampton Water Solent and Dorset Coast	PO11 - Nutrient Neutrality	MORE.OT01.3	Nutrient Budget	Study / Investigation: Develop a nutrient budget and investigate the risks and sources impacting these named Habitat sites Catchment is Hydraulically linked to; 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	Catchment Wide	PO4- 1 in 50 year PO7- Hydraulic Overload	MORE.OT01.4	Improve Hydraulic Model	Study / Investigation: Update and re-verify the Morestead Road Winchester Hydraulic Model to improve model confidence.	Yes	Yes	Yes	Minor Positive +	£200K	Yes	Best Value
Study/ investigation to gather more data	Catchment Wide	PO4, PO7 - Hydraulic	MORE.OT01.5	Study and Investigation - Illegal connections	Study / Investigation: Identify locations of misconnections, reducing the unknown sources of flow into the catchments sewer systems.	Yes	Yes	Yes	Minor Positive +	£230K	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

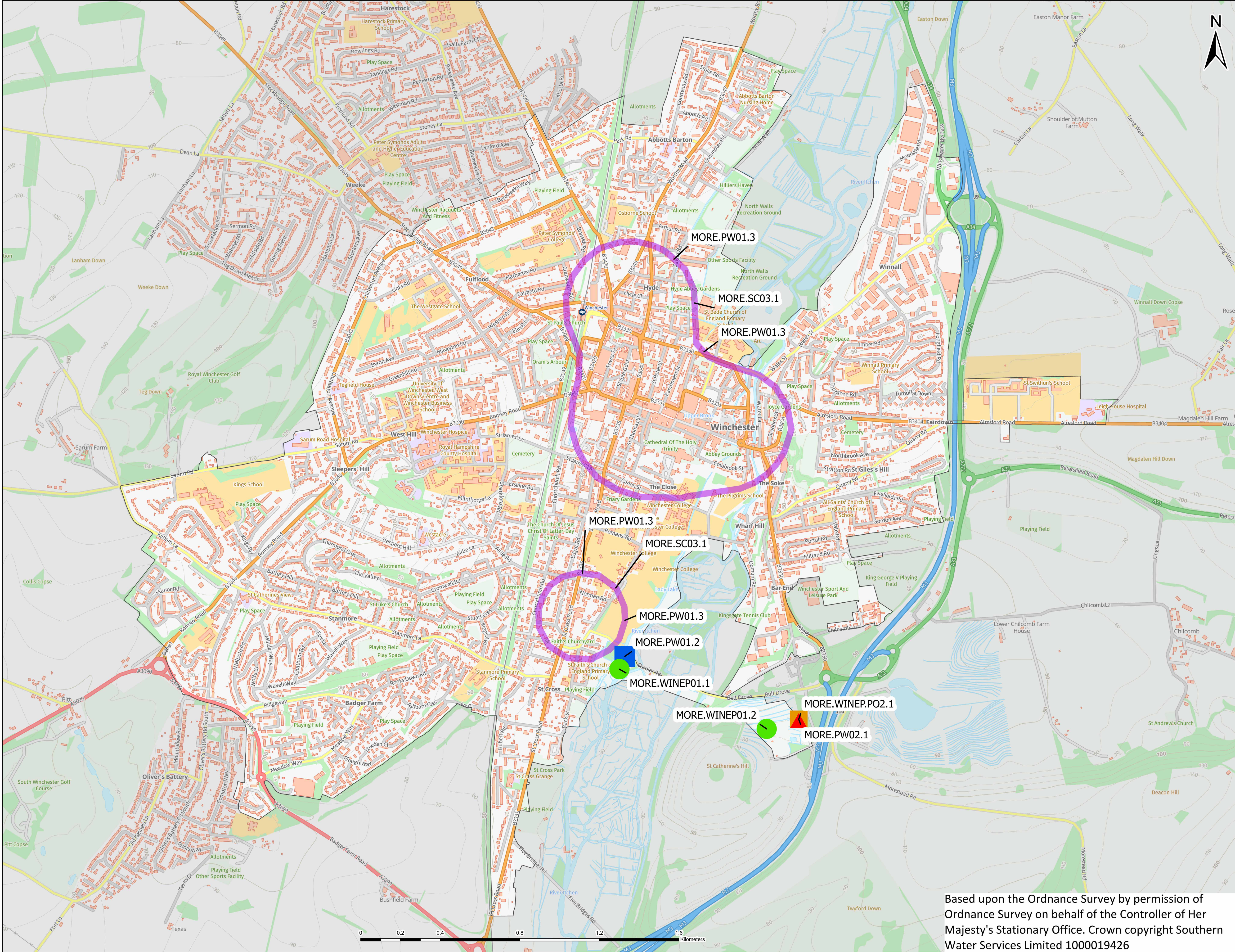
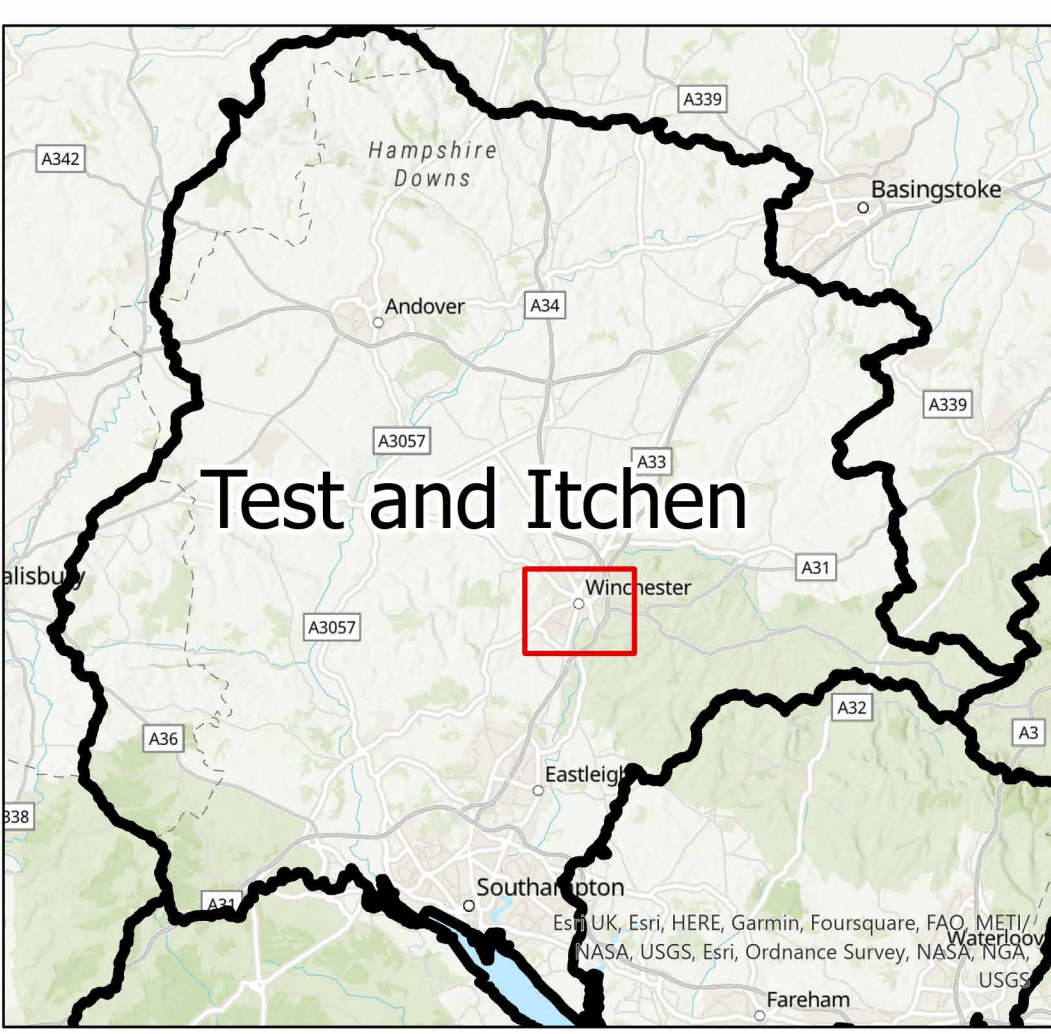
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Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
Test and Itchen								
Morestead Road Winchester								
MORE.SC03.1	Test and Itchen	Morestead Road Winchester	South Winchester (St. Cross Road)	Customer Education Programme: Targeted campaign to reduce the amount of FOG (fats, oils and grease) and unflushables discharged into the sewer network	£115K	AMP8 onwards	Hampshire County Council Test Valley Borough Council	PO1
MORE.PW01.2	Test and Itchen	Morestead Road Winchester	Garnier Road Winchester WPS	Improve the operational resilience of wastewater pumping station (WPS) to reduce pollution incidents	£235K	AMP8 onwards	-	PO2
MORE.PW01.3	Test and Itchen	Morestead Road Winchester	South Winchester (St. Cross Road)	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£105K	AMP8 onwards	-	PO1
MORE.PW01.9	Test and Itchen	Morestead Road Winchester	Garnier Road WPS	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)	£1,155K	AMP9	-	PO4 PO7
MORE.PW01.10	Test and Itchen	Morestead Road Winchester	Upstream trunk sewer at Garnier Roas WPS	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)	£230K	AMP9	-	PO4 PO7
MORE.PW01.11	Test and Itchen	Morestead Road Winchester	Pitt Manor, Romsey Road, Badger Farm Road to Garnier WPS	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)	£975K	AMP9	-	PO4 PO7
MORE.PW01.12	Test and Itchen	Morestead Road Winchester	Morestead Road Winchester WTW	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)	£1,725K	AMP9	-	PO4 PO7
MORE.PW02.1	Test and Itchen	Morestead Road Winchester	Morestead Road WTW	Increase capacity to allow for planned new development	£1,730K	AMP9	Environment Agency	PO8
MORE.OT01.4	Test and Itchen	Morestead Road Winchester	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£200K	AMP8	-	PO4 PO7
MORE.OT01.5	Test and Itchen	Morestead Road Winchester	System Wide	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)	£230K	AMP9	Hampshire County Council Test Valley Borough Council	PO4 PO7
MORE.WINEP01.1	Test and Itchen	Morestead Road Winchester	GARNIER ROAD WINCHESTER CEO	New or improved screen to reduce aesthetics impacts from storm discharges at GARNIER ROAD WINCHESTER CEO	£130K	AMP11	-	PO5
MORE.WINEP01.2	Test and Itchen	Morestead Road Winchester	MORESTEAD ROAD WINCHESTER SSO	New or improved screen to reduce aesthetics impacts from storm discharges at MORESTEAD ROAD WINCHESTER SSO	£130K	AMP12	-	PO5
MORE.WINEP.PO2.1	Test and Itchen	Morestead Road Winchester	Morestead Road Winchester WTW	Expansion of existing biological treatment and conversion to denitrification to achieve 10mg/l Total N permit. Provision of additional chemical dosing and tertiary treatment to achieve 0.25mg/l Total P permit. (WINEP OAR 08SO103985)	£20,834K	AMP8	-	PO11

Drainage and Wastewater Management Plan: Location of Potential Options MORESTEAD ROAD WINCHESTER 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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