Drainage and Wastewater Management Plan

Millbrook
Wastewater System Plan

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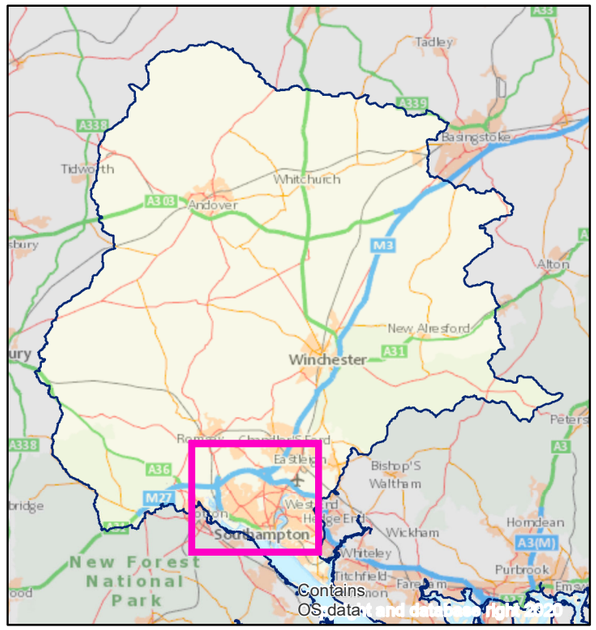
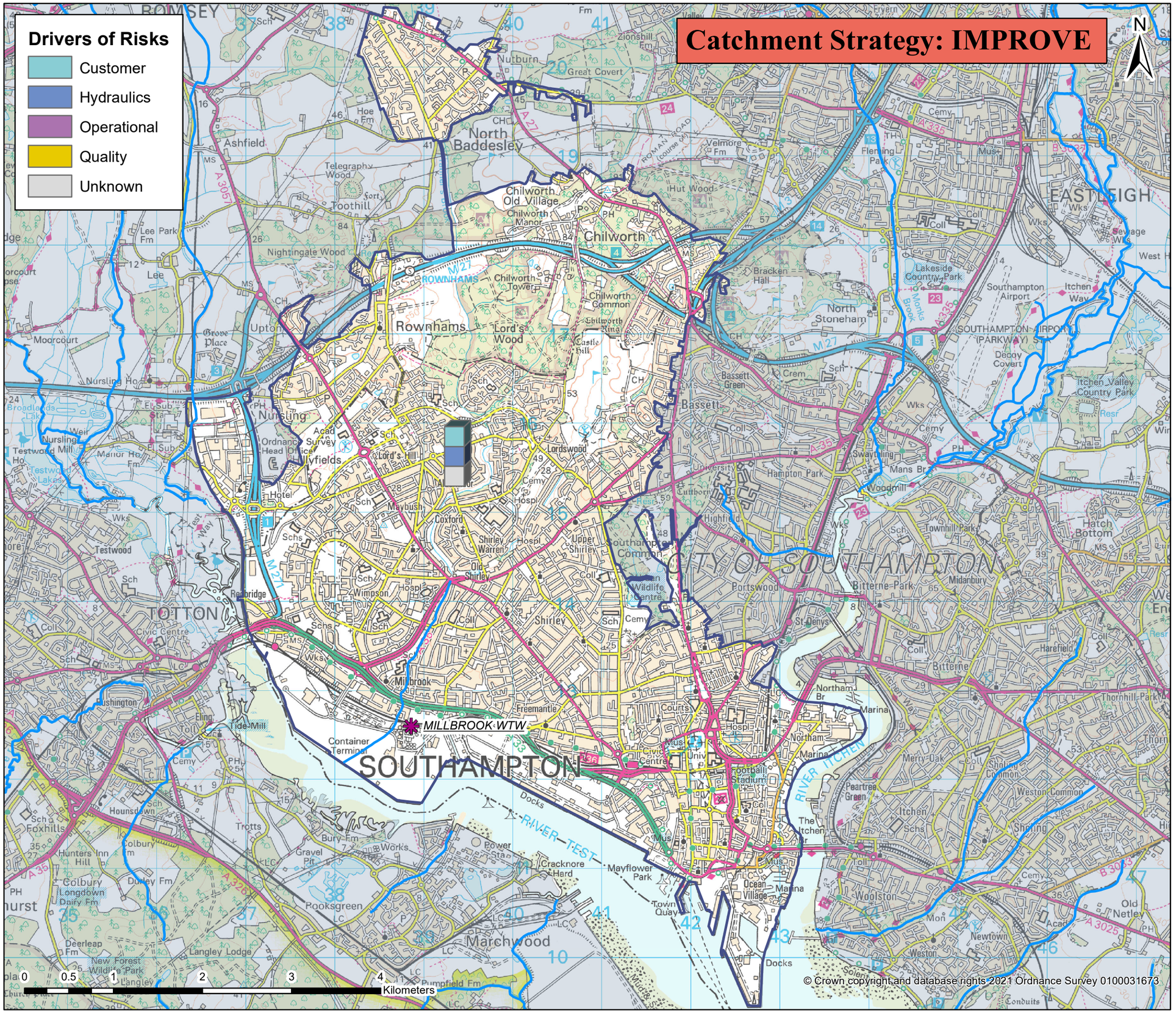
Millbrook wastewater system: map and key facts



Population Equivalent (PE)	**140,442**
Discharge Waterbody	**River Test**
Number of Pumping Stations	**35**
Number of Overflows	**12**
Length of Sewer (km)	**1089.6**
Catchment Reference	**MILL**

BRAVA Results Table (MILL)

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



Problem Characterisation

Millbrook (MILL)

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 Millbrook wastewater system

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

Investment Strategy

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

Improve

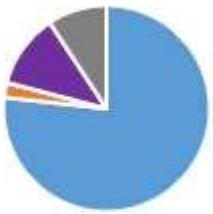
This means that we consider that the current performance of the drainage and wastewater system needs to be improved to reduce the impacts on our customers and/or the environment. We will plan investment to reduce the current risks by actively looking to invest capital funding in the short term to address 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 77% 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



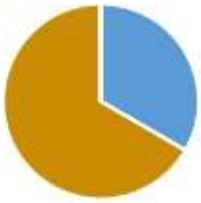
Blockage 77%
Pumping Station/ Treatment Work issue 2%
Sewer / Rising Main issue 0%
Hydraulic Overload 12%
Cause could not be Identified 9%

2017/18	2018/19	2019/20
11	10	22

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 less than 24.51 incidents per 10,000km per year (a threshold set by Ofwat) so the risk is in the 'not significant' band.

Figure 2: Number of pollution incidents per annum and causes



Blockage 33%
Pumping Station/ Treatment Work issue 67%
Sewer / Rising Main issue 0%
Hydraulic Overload 0%
Cause could not be Identified 0%

2017	2018	2019
1	1	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	3
	2019/20	6
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 2200 - 2300 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 3200 - 3300 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	2 High	2 High	Less than 8	Between 8-10	10 or more
Bathing Waters	0 Medium	0 High	Less than 3	Between 3-10	10 or more
Freshwater	1 High	1 High	Less than 20	Between 20-40	40 or more

Planning Objective 6: Wastewater Treatment Works Water Quality Compliance

The risk of non-compliance with our wastewater quality permit has been assessed as not significant for both 2020 and 2050. This is because the wastewater treatment works has no record of compliance failure during the last three years (2018-2020).

Planning Objective 7: Flooding due to Hydraulic Overload

This is an assessment of the risk of flooding from sewers during a 1 in 30 year storm, and more frequent rainfall, to understand where flooding could occur. The risk of sewer flooding due to hydraulic overload is moderately significant in 2020 and 2050. 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.

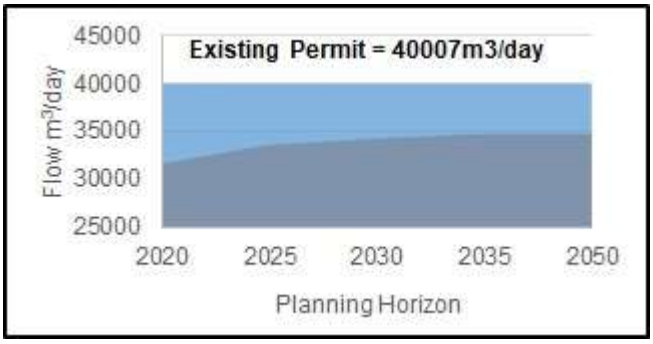
Rainfall Return Period (yr)	Number of Properties at Risk		Annualised per 10,000 connections	
	2020	2050	2020	2050
1 in 1	201	369	127	233
1 in 2	220	487	87	192
1 in 5	742	1340	135	243
1 in 10	1142	1883	109	179
1 in 20	1618	2308	79	113
1 in 30	1855	2778	61	91
Total Annualised			**597**	**1051**

This indicates that the capacity of the wastewater network can be exceeded during 1 in 30 year storms (or more frequent events). Future growth, creep and/or climate change are not anticapted to significantly increase the risk by 2050.

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

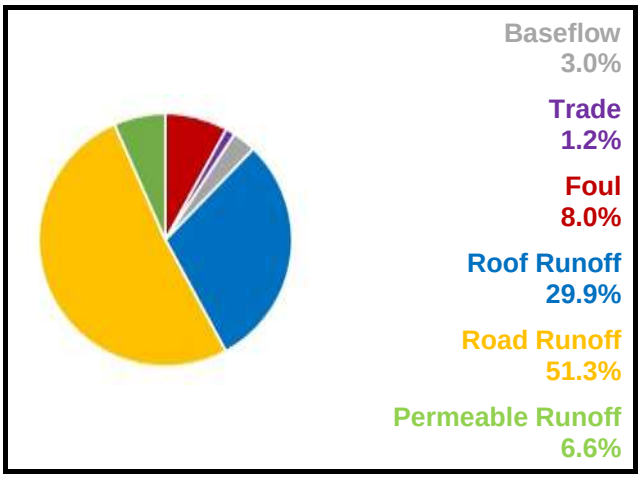
This wastewater system is not hydraulically linked to a waterbody where wastewater operations are contributing to not achieving GES/GEP, therefore the risk is not significant.

Planning Objective 10: Surface Water Management

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 87.8% of the flow in the sewers. The total contribution of foul water from homes is 8.0% with business contributing 1.2%. The baseflow is infiltration from water in the ground and makes up 3.0% 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	
Solent and Dorset Coast	Phosphate permit review required Overflow Spills
Solent & Southampton Water	No Threat/Remedy Identified or Anticipated

Planning Objective 12: Groundwater Pollution

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

Planning Objective 13: Bathing Waters

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

Planning Objective 14: Shellfish Waters

The discharges from this wastewater system can affect the designated shellfish waters shown in Table 6. 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.

Table 6: Shellfish Waters linked to wastewater system

Shellfish Waters
Southampton Water Sw

Generic Options Assessment for: Millbrook (MILL)

Planning Objectives		2020	Driver	2050
PO1	Internal Flooding	1	Customer	-
PO2	Pollution Risk	0	-	-
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	1
PO8	DWF Compliance	0	-	1
PO9	Achieve Good Ecological Status	0	-	-
PO10	Improve Surface Water Management	1	Hydraulic	-
PO11	Secure Nutrient Neutrality	2	Unknown	2
PO12	Reduce Groundwater Pollution	0	-	-
PO13	Improve Bathing Water Quality	NA	-	-
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	Reducing groundwater levels would reduce the risks from infiltration into the network. However, in practice, reducing groundwater levels will be detrimental to the environment, ground conditions and is prohibitively too costly to implement. For these reasons, this generic option has been discounted.	Reduce leakage from water supply pipes; pump away schemes to locally lower groundwater near sewer network
	Improve **quality** of wastewater		Y	-	Domestic and business customer education; incentives and behaviour change (reduce Fats, Oils & Grease, wet wipes etc.); monitoring trade waste at source; on-site black water and/or greywater pre-treatment
	Reduce the **quantity** / demand		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

Millbrook Wastewater System - Outline Options Appraisal

Generic Option	Location of Risk	Planning Objective and Description of Risk	Option Reference	Description	Further Description	Unconstrained Option?	Constrained Option?	Feasible Option?	Net Benefits	Estimated Cost	Preferred Option	Best value / Least cost or Reasons for Rejection
Control/ Reduce surface water entering the sewers	Catchment Wide	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.1	Rain gardens	Rain gardens to take roof runoff.	Yes	No					Environmental - Strategic Environmental Assessment
Control/ Reduce surface water entering the sewers	Catchment Wide	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.2	SUDs	Smaller SuDS interventions – the flow can be held, intercepted, infiltrated.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Catchment Wide	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.3	SUDs	Target larger industrial units – roof runoff into tanks.	No						Cost Effective
Control/ Reduce surface water entering the sewers	North Baddesley	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.4	Surface water separation / SUDs	Removal of surface water flows from network, through SuDS schemes.	Yes	Yes	Yes	Moderate Positive ++	£TBC - With Partners	No	Best Value
Control/ Reduce surface water entering the sewers	Millbrook Road	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.5	Surface water separation	Surface Water Separation.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Mayflower Park	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.6	Surface water separation	Surface Water Separation.	Yes	Yes	Yes	Moderate Positive ++	£TBC - With Partners	No	Best Value
Control/ Reduce surface water entering the sewers	Blechynden Terrace Southampton CSO	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.25	Storm Overflows, Shellfish Waters	Storage or Separation of surface water to reduce spill frequency below 20 spills per annum at Blechynden Terrace Southampton CSO (area of separation / volume to be determined).	Yes	No					Environmental - Strategic Environmental Assessment
Control/ Reduce surface water entering the sewers	Millbrook WTW	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.26	Storm Overflows, Shellfish Waters	Surface water separation to reduce spills from Millbrook WTW storm overflow (average cost assumed to reduce CSO spills to Band 0).	Yes	No					Environmental - Strategic Environmental Assessment
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Freemantle	PO1- Internal Flooding	MILL.SC03.1	Customer Education Programme	Customer education programme to reduce the risk.	Yes	Yes	Yes	Minor Positive +	£115K	No	Best Value
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Catchment Wide	PO1 - Internal Flooding	MILL.SC03.2	Business Education	Partnership with manufacturers to make it clearer what can and can't be flushed/removal of non-flushable products from market.	No						Technically feasible and Deliver the required outcome
Control / Reduce the quantity / flow of wastewater entering sewer system												
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO1, PO4, PO7 - Flooding	MILL.PW01.1	Smart networks	Smart networks – improve incident response time.	No						Do customer support it
Network Improvements (eg increase capacity, storage, conveyance)	North Baddesley	PO5 - Storm Overflows	MILL.PW01.2	Storage for storm flows	Upstream attenuation.	No						Cost Effective
Network Improvements (eg increase capacity, storage, conveyance)	Blechynden Terrace CSO	PO14 - Shellfish Waters	MILL.PW01.3	Storage for storm flows	Additional Storage for Shellfish Schemes.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC01 Bellemoor Tavern, Bellemoor Road Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.4	Cut & Pump, Upsizing and Offline Storage	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC02 Bellemoor Tavern, Bellemoor Road Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.5	Upsizing and Parallel Rider Sewer (Box Culvert)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC03 Hill Lane, Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.6	Upsize & Divert Flows to a New Sewer	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC04 Hill Lane/Burgess Road, Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.7	Upsize	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO1, PO4, PO7 - Flooding	MILL.PW01.8	Network Screening	More intervention and protection for surface water sewers.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	2 TERMINUS TERRACE SOUTHAMPTON MPS	PO1- Internal Flooding	MILL.PW01.9	Maintenance Programme	Improve resilience: Review operation and maintenance of Harestock WTW to improve resilienceAn efficient maintenance programme for pumping stations and/Treatment works to elimate the risk of a pollution incident due to an operational failure.	No						Do customer support it and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Hotspot 1 - St Denys Hotspot 2 - Ocean Village	PO1- Internal Flooding	MILL.PW01.10	Additional Storage	Additional Storage.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO8 (2050)- Dry Weather Flow	MILL.PW01.11	Pipe Rehabilitation Programme	Relining/improving structural grades of sewers across the catchment.	No						Cost Effective, Do customer support it and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Freemantle	PO1- Internal Flooding	MILL.PW01.12	Jetting Programme	Jetting Programme.	No						Deliver the required outcome
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC05 - Redbridge Road	PO4 and PO5 - Growth	MILL.PW01.13	New Ring Sewer and Online Storage Tank Sewer (MILLGR020 Option 2 Section 1 (Plan 1))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC06 - Lord's Wood to rear of Goldcrest Gardens	PO4 and PO5 - Growth	MILL.PW01.14	New Parallel Ride Sewer (MILLGR020 Option 2 Section 2 (Plan 2))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC07 - Western Esplanade	PO4 and PO5 - Growth	MILL.PW01.15	New sewer and upsizing (MILLGR020 Option 2 Section 3 (Plan 3))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC08 - Romsey Road	PO4 and PO5 - Growth	MILL.PW01.16	New sewer and upsizing (MILLGR020 Option 2 Section 4 (Plan 4))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC09 - Millbrook WTW	PO4 and PO5 - Growth	MILL.PW01.17	Increase the pump rate at the WTW offline storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC10 - Thomas Road	PO4 and PO5 - Growth	MILL.PW01.18	Increase in manhole diameter (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC11 - Jarretts Lane	PO4 and PO5 - Growth	MILL.PW01.19	Increase in manhole diameter (MILLGR020 Option 2)	DAP Option.	No						

Millbrook 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
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC12 - Blechynden Terrace Southampton	PO4 and PO5 - Growth	MILL.PW01.20	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC13 - Liverpool Street Southampton	PO4 and PO5 - Growth	MILL.PW01.21	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC14 - Manor Road Chilworth	PO4 and PO5 - Growth	MILL.PW01.22	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC15 - Park Road Southampton	PO4 and PO5 - Growth	MILL.PW01.23	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC15 - Whitebeam Way	PO4 and PO5 - Growth	MILL.PW01.24	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL FC01 - BLECHYNDEN TERRACE SOUTHAMPTON CSO	PO5 and PO14 - Spill Assessments	MILL.PW01.25	Storage (FC01 - BLECHYNDEN TERRACE SOUTHAMPTON CSO)	The DAP model has a confidence score of 2 and was last verified in 2014.	Yes	Yes	Yes	Major Positive +++	£49,010K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	MILL FC02 - MILLBROOK WTW	PO5 and PO14 - Spill Assessments	MILL.PW01.26	Storage (FC02 - MILLBROOK WTW)	The DAP model has a confidence score of 2 and was last verified in 2014.	Yes	Yes	Yes	Major Positive +++	£TBC - With Partners	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	Treatment Works	PO1, PO4, PO7 - Flooding	MILL.PW02.1	Increase storm storage	Increase storm storage - more capacity at storm tanks.	No						Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	Treatment Works	PO11 - Nutrient Neutrality	MILL.PW02.2	Tertiary Treatment	Reedbeds to help with nutrient neutrality.	Yes	No					Operational
Improve treatment (capacity and quality at existing works or develop new WTWs)	Treatment Works	PO11 - Nutrient Neutrality	MILL.PW02.3	Tertiary Treatment	Work with EA to introduce nitrogen treatment at works (through WINEP?).	Yes	No					Operational
Improve treatment (capacity and quality at existing works or develop new WTWs)	MILLBROOK WTW	PO8 (2050)- Dry Weather Flow	MILL.PW02.4	Permit Review	Proposed permit-45128m3.	Yes	Yes	Yes	Minor Positive +	£2,555K	No	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)	Hotspot 1 - St Denys Hotspot 2 - Ocean Village	PO1- Internal Flooding	MILL.RC04.1	Property Flood Mitigation / Resistance	Short-term property level protection ahead of flood alleviation scheme - Non-return valves and flood mitigation doors / gates.	Yes			Minor Negative -		No	Least Cost
Study/ investigation to gather more data	Catchment Wide	PO4, PO5, PO7, PO10 Flooding/ Storm Overflows	MILL.OT01.1	data sharing	Better data sharing between partners – if we all know the full picture we can better apply for funding to undertake flooding schemes throughout the catchment.	No						Deliver the required outcome
Study/ investigation to gather more data	Hotspot 1 - Chapel Hotspot 2 - City Centre	PO1- Internal Flooding	MILL.OT01.2	Investigation into causes	Further investigation to identify the cause of the internal flooding incident.	Yes			Minor Negative -		No	Least Cost
Study/ investigation to gather more data	Catchment Wide	PO8 (2050)- Dry Weather Flow	MILL.OT01.3	Infiltration Reduction Plan	Relining/improving structural grades of sewers across the catchment.	Yes			Minor Negative -		Yes	Least Cost
Study/ investigation to gather more data	Solent and Dorset Coast Solent & Southampton Water	PO11 - Nutrient Neutrality	MILL.OT01.4	Nutrient Budget	Catchment is Hydraulically linked to; Solent and Dorset Coast (Threat/Remedy Identified or Anticipated) Solent & Southampton Water (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 PO7- Hydraulic Overload PO10- Surface Water Management	MILL.OT01.5	Improve Hydraulic Model	Improve Hydraulic Model.	Yes	Yes	Yes	Minor Positive +	£340K	Yes	Best Value
Study/ investigation to gather more data	Millbrook WTW	PO8 (2050)	MILL.OT01.6	Study / Investigation - Silt Removal at WTW	Study / Investigation: Removal of silt at Millbrook WTW to increase capacity.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	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.

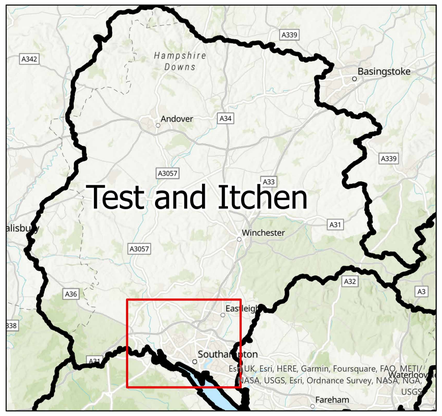
Date : May 2023
Version : 1.0

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
Test and Itchen								
Millbrook								
MILL.SC03.1	Test and Itchen	Millbrook	Freemantle	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	Southampton City Council	PO1
MILL.PW01.12	Test and Itchen	Millbrook	System Wide	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£375K	AMP8 onwards	-	PO1
MILL.PW02.4	Test and Itchen	Millbrook	Millbrook WTW	Increase capacity to allow for planned new development	£2,555K	AMP9	Environment Agency	PO8
MILL.OT01.5	Test and Itchen	Millbrook	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£340K	AMP8	-	PO4 PO5 PO7 PO10
MILL.OT01.6	Test and Itchen	Millbrook	Millbrook WTW	Study and Investigation into Silt Removal at the Wastewater Treatment Works	£TBC	AMP10	-	PO8
MILL.WINEP01.1	Test and Itchen	Millbrook	PARK ROAD SOUTHAMPTON CSO	Reduce the number of storm discharges from PARK ROAD SOUTHAMPTON CSO by a combination of SuDS and storage options	£25,440K	AMP8	-	PO4 PO5 PO7 PO14
MILL.WINEP01.2	Test and Itchen	Millbrook	BLECHYNDEN TERRACE SOUTHAMPTON CSO	Reduce the number of storm discharges from BLECHYNDEN TERRACE SOUTHAMPTON CSO by a combination of SuDS and storage options	£8,605K	AMP8	-	PO4 PO5 PO7 PO14
MILL.WINEP01.3	Test and Itchen	Millbrook	MILLBROOK SSO	Reduce the number of storm discharges from MILLBROOK SSO by creating below-ground storage	£10,880K	AMP8	-	PO5 PO14
MILL.WINEP01.4	Test and Itchen	Millbrook	RINGWOOD DRIVE NORTH BADDESLEY CEO	New or improved screen to reduce aesthetics impacts from storm discharges at RINGWOOD DRIVE NORTH BADDESLEY CEO	£130K	AMP11	-	PO5
MILL.WINEP01.5	Test and Itchen	Millbrook	IMPERIAL ROAD MOUNT PLEASANT CEO	New or improved screen to reduce aesthetics impacts from storm discharges at IMPERIAL ROAD MOUNT PLEASANT CEO	£130K	AMP11	-	PO5
MILL.WINEP01.6	Test and Itchen	Millbrook	GREEN LANE CHILWORTH CEO	New or improved screen to reduce aesthetics impacts from storm discharges at GREEN LANE CHILWORTH CEO	£130K	AMP12	-	PO5
MILL.WINEP01.7	Test and Itchen	Millbrook	CEDAR ROAD SOUTHAMPTON CSO	New or improved screen to reduce aesthetics impacts from storm discharges at CEDAR ROAD SOUTHAMPTON CSO	£130K	AMP11	-	PO5
MILL.WINEP01.8	Test and Itchen	Millbrook	LIVERPOOL STREET SOUTHAMPTON CSO	New or improved screen to reduce aesthetics impacts from storm discharges at LIVERPOOL STREET SOUTHAMPTON CSO	£130K	AMP11	-	PO5
MILL.WINEP01.9	Test and Itchen	Millbrook	HIGH STREET SOUTHAMPTON CSO	New or improved screen to reduce aesthetics impacts from storm discharges at HIGH STREET SOUTHAMPTON CSO	£130K	AMP11	-	PO5
MILL.WINEP01.11	Test and Itchen	Millbrook	BRUNEL ROAD REDBRIDGE CEO	Reduce the number of storm discharges from BRUNEL ROAD REDBRIDGE CEO by a combination of SuDS and storage options	£2,255K	AMP11	-	PO4 PO5 PO7
MILL.WINEP01.12	Test and Itchen	Millbrook	MILLBROOK CSO	Reduce the number of storm discharges from MILLBROOK CSO by a combination of SuDS and storage options	£5,165K	AMP11	-	PO4 PO5 PO7
MILL.WINEP01.10	Test and Itchen	Millbrook	BOTLEY ROAD NORTH BADDESLEY CEO	Reduce the number of storm discharges from BOTLEY ROAD NORTH BADDESLEY CEO by a combination of SuDS and storage options	£2,630K	AMp12	-	PO4 PO5 PO7

Drainage and Wastewater Management Plan: Location of Potential Options MILLBROOK Wastewater system in Test and Itchen River Basin Catchment

WATER for LIFE 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.



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

MILL.WINEP01.10
MILL.WINEP01.4
MILL.WINEP01.6
MILL.PW01.12
MILL.SC03.1
MILL.PW01.12
MILL.SC03.1
MILL.SC03.1
MILL.PW01.12
MILL.PW01.12
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MILL.SC03.1
MILL.WINEP01.11
MILL.PW01.12
MILL.WINEP01.7
MILL.SC03.1
MILL.WINEP01.5
MILL.PW01.12
MILL.WINEP01.8
MILL.WINEP.PO2.1
MILL.SC03.1
MILL.PW02.4
MILL.WINEP01.1
MILL.PW01.12
MILL.WINEP01.12
MILL.WINEP01.3
MILL.WINEP01.2
MILL.WINEP01.9