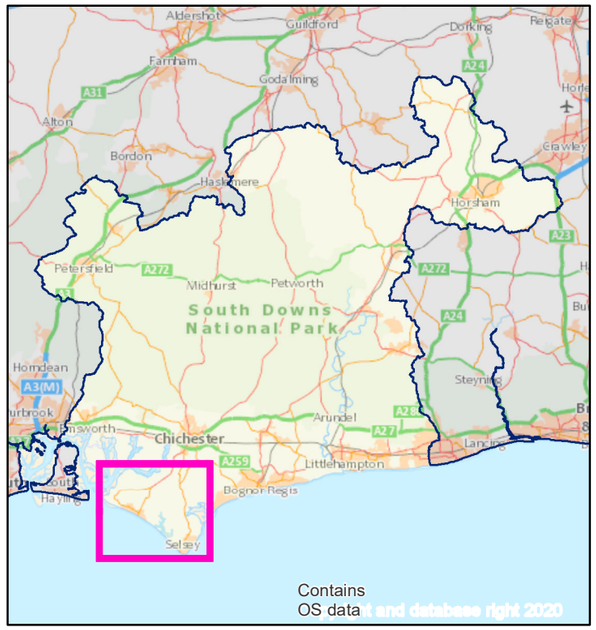
Drainage and Wastewater Management Plan

Sidlesham
Wastewater System Plan

from Southern Water

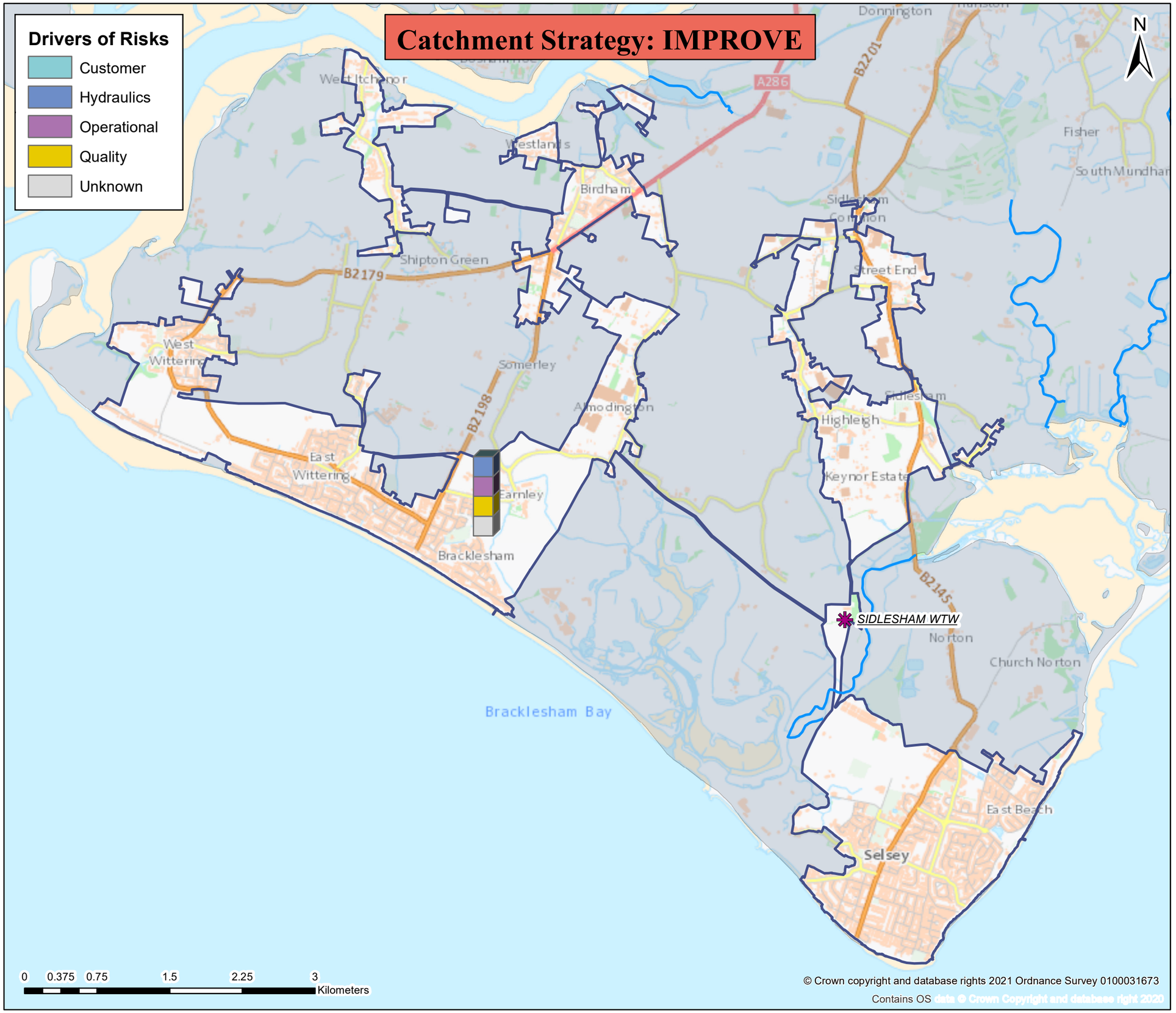
Contents

Sidlesham wastewater system: map and key facts



Population Equivalent (PE)	25,167
Discharge Waterbody	Broad Rife
Number of Pumping Stations	48
Number of Overflows	4
Length of Sewer (km)	272.7
Catchment Reference	SIDL

BRAVA Results Table (SIDL)			
	Planning Objective	2020	2050
1	Internal Sewer Flooding Risk	1	
2	Pollution Risk	1	
3	Sewer Collapse Risk	1	
4	Risk of Sewer Flooding in a 1 in 50 year storm	2	2
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	0	
10	Surface Water Management	0	
11	Nutrient Neutrality	2	2
12	Groundwater Pollution	0	
13	Bathing Waters	0	
14	Shellfish Waters	NA	



Problem Characterisation
Sidlesham (SIDL)

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 Sidlesham wastewater system

Planning Objectives		2020	Driver	2050
1	Internal Sewer Flooding Risk	1	Hydraulic	
2	Pollution Risk	1	Customer	
3	Sewer Collapse Risk	1	Operational	
4	Sewer Flooding in a 1 in 50-year storm	2	Hydraulic	2
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	0	-	
10	Surface Water Management	0	-	
11	Nutrient Neutrality	2	Unknown	2
12	Groundwater Pollution	0	-	
13	Bathing Waters	0	-	
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

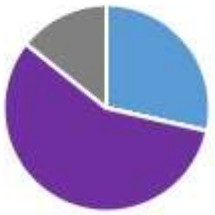
This means that we consider that the current performance of the drainage and wastewater system needs to be improved to reduce the impacts on our customers and/or the environment. We will plan investment to reduce the current risks by actively looking to invest capital funding in the short term to address 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 'Hydraulic'. The lack of capacity of the sewer network to convey rainfall is the main cause of internal flooding, contributing to 57% of all incidents recorded in this wastewater system. This is known as Hydraulic Overload.

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



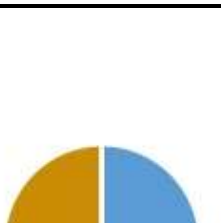
2017/18	2018/19	2019/20
2	0	5

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 75% 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



2017	2018	2019
1	1	2

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 between 5.72 and 9.44 incidents per 1,000km per year (a threshold set by Ofwat), the risk is in the 'moderately significant' band.

Table 2: Sewer collapses and rising main bursts

Sewer Collapse	**2017/18**	0
	2018/19	1
	2019/20	1
Rising Main Bursts	**2017/18**	1
	2018/19	3
	2019/20	0

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

Planning Objective 4: Sewer Flooding in a 1 in 50 Year Storm

The risk of flooding in a 1 in 50 year storm is very significant in 2020 and 2050. This is because our computer model of the sewer network indicate for 2020 that approximately 900 - 1000 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 1800 - 1900 by 2050.

Our wastewater networks are generally designed with capacity for up to a 1 in 30 year storm, hence flooding is expected to occur during more severe storms such as a 1 in 50 year event. Flooding will occur due to insufficient capacity of the drainage system either on the surface before it enters the drainage system, and/or from manholes, in people's homes or at a low point elsewhere in the system.

Planning Objective 5: Storm Overflow Performance

The storm overflow performance risk has been assessed as very significant for both 2020 and 2050. Table 3 shows the overflows that discharge above the low threshold set for storm overflow discharges to Shellfish Water, Bathing Water and inland rivers.

The primary driver for the Storm Overflow Performance is 'Hydraulic.'

Table 3: Overflows exceeding discharge frequency threshold per annum

	Number of overflows		Threshold for number of discharges per annum		
	2020	2050	Low	Medium	High
Shellfish Waters	0 Medium	0 Medium	Less than 8	Between 8-10	10 or more
Bathing Waters	0 Medium	0 Medium	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. 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	9	160	6	101
1 in 2	30	253	12	100
1 in 5	176	701	32	127
1 in 10	392	1066	37	101
1 in 20	639	1405	31	69
1 in 30	789	1572	26	52
Total Annualised			**144**	**549**

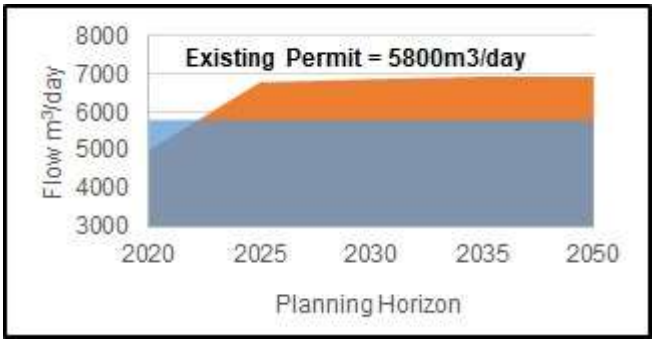
This indicates that the existing capacity of the wastewater network can be exceeded during 1 in 30 year storms (or more frequent events), and that the risk will increase due to future growth, creep and/or climate change by 2050.

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



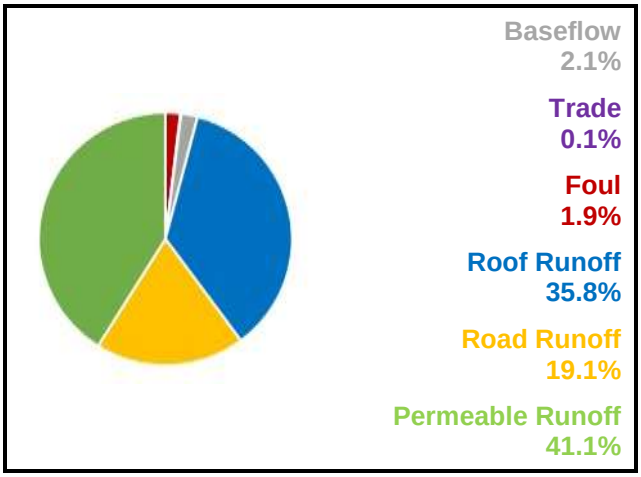
Planning Objective 9: Good Ecological Status / Good Ecological Potential

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 96. % of the flow in the sewers. The total contribution of foul water from homes is 1.9% with business contributing 0.1%. 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 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	
Pagham Harbour	Discharges from overflows

Planning Objective 12: Groundwater Pollution

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

Planning Objective 13: Bathing Waters

The designated bathing waters that could be affected by discharges from this wastewater system are shown in Table 6, along with the current classification from the Environment Agency. The risks from this wastewater system on these bathing waters is not significant. This is because all the designated bathing waters affected by this wastewater system have passed annual inspections..

Table 6: Bathing Water annual results

Bathing Waters	Annual Results		
	2017	2018	2019
Selsey	Excellent	Excellent	Excellent
Bracklesham Bay	Excellent	Excellent	Excellent

Planning Objective 14: Shellfish Waters

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

Generic Options Assessment for: Sidlesham (SIDL)

Planning Objectives		2020	Driver	2050
PO1	Internal Flooding	1	Hydraulic	-
PO2	Pollution Risk	1	Customer	-
PO3	Sewer Collapse	1	Operational	-
PO4	Risk of Sewer Flooding in 1 in 50 yr	2	Hydraulic	2
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	0	-	-
PO10	Improve Surface Water Management	0	-	-
PO11	Secure Nutrient Neutrality	2	Unknown	2
PO12	Reduce Groundwater Pollution	0	-	-
PO13	Improve Bathing Water Quality	0	-	-
PO14	Improve Shellfish Water Quality	NA	-	-

Type of Measures	Generic Option Categories	Icon	Take Forward?	Reasons	Examples of Generic Options
Source (Demand) Measures (to reduce likelihood)	Control / Reduce surface water run-off		Y	-	Natural Flood Management; rural land management and catchment management; SuDS including blue and green infrastructure; storm management
	Reduce groundwater levels		N	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		N	No further studies are required at this stage	Additional data required; hydraulic model development; WQ monitoring and modelling

August 2021
Version 1

Sidlesham 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	SIDL FC01_1 - Manor Lane	PO4 and PO7 Flooding	SIDL.SC01.1	Surface Water Separation	DAP Option.	No						
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Bracklesham Lane, East Bracklesham Drive	PO1- Internal Flooding	SIDL.SC03.1	Customer Education Programme	Customer education programme to reduce the risk.	No						Deliver the required outcome
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Catchment Wide	PO2- Pollution Risk	SIDL.SC03.2	Customer Education Programme	Customer education programme.	Yes	Yes	Yes	Minor Positive +	£115K	No	Best Value
Control / Reduce the quantity / flow of wastewater entering sewer system	SIDLESHAM WTW	PO8 (2050)- Dry Weather Flow	SIDL.SC04.1	Water Efficient Appliance / Measures	Southern Water aims to reduce water consumption to 100 l/h/d by 2040.	No						Deliver the required outcome
Network Improvements (eg increase capacity, storage, conveyance)	Highleigh Road, Itchenor Green	PO1- Internal Flooding	SIDL.PW01.1	Additional Storage	Additional Storage.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO3- Sewer Collapse	SIDL.PW01.2	Pipe Rehabilitation Programme	Targeted CCTV / electroscan surveys and proactive sewer rehabilitation to reduce risk of sewer collapse.	Yes	Yes	Yes	Minor Positive +	£535K	No	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO8 (2050)- Dry Weather Flow	SIDL.PW01.3	Pipe Rehabilitation Programme	Relining/improving structural grades of sewers across the catchment.	No						Cost Effective and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Bracklesham Lane, East Bracklesham Drive	PO1- Internal Flooding	SIDL.PW01.4	Jetting Programme	Jetting Programme.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO2- Pollution Risk	SIDL.PW01.5	Jetting Programme	Jetting Programme.	Yes	Yes	Yes	Minor Positive +	£25,945K	No	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	SIDL FC01_1 - Manor Lane	PO4 and PO7 Flooding	SIDL.PW01.6	Storage	DAP Option.	Yes	Yes	Yes	Major Positive +++	£6,970K	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	SIDLESHAM WTW	PO2- Pollution Risk	SIDL.PW02.1	Maintenance Programme WTW	An efficient maintenance programme for the treatment works to elimate the risk of a pollution incident due to an operational failure.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	SIDLESHAM WTW	PO8 (2050)- Dry Weather Flow	SIDL.PW02.2	Permit Review	Proposed permit-8868m3.	Yes	Yes	Yes	Minor Positive +	£2,535K	No	Best Value
Wastewater Transfer	SIDLESHAM WTW	PO8 (2050)- Dry Weather Flow	SIDL.PW03.1	Construct New WPS & Rising Main	No other WTWs are within a 20km radius of SIDLESHAM WTW with spare capacity to take DWF.	No						Technically feasible, Cost Effective, Deliver the required outcome, Do customer support it and Risk and uncertainty - future resilience
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)	Highleigh Road, Itchenor Green	PO1- Internal Flooding	SIDL.RC04.1	Property Flood Mitigation / Resistance	Short-term property level protection ahead of flood alleviation scheme - Non-return valves and flood mitigation doors / gates.	No						Risk and uncertainty - future resilience
Study/ investigation to gather more data	Stocks Lane	PO1- Internal Flooding	SIDL.OT01.1	Investigation into causes	Further investigation to identify the cause of the internal flooding incident.	No						Cost Effective
Study/ investigation to gather more data	Catchment Wide	PO3- Sewer Collapse	SIDL.OT01.2	CCTV Investigation	CCTV Investigation.	No						Risk and uncertainty - future resilience
Study/ investigation to gather more data	Catchment Wide	PO8 (2050)- Dry Weather Flow	SIDL.OT01.3	Infiltration Reduction Plan Investigation already planned for: Q1-2023	Relining/improving structural grades of sewers across the catchment.	No						Cost Effective
Study/ investigation to gather more data	Pagham Harbour	PO11 - Nutrient Neutrality	SIDL.OT01.4	Nutrient Budget	Catchment is Hydraulically linked to; Pagham Harbour (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	SIDL.OT01.5	Improve Hydraulic Model	Improve Hydraulic Model.	Yes	Yes	Yes	Minor Positive +	£430K	Yes	Best Value
Study/ investigation to gather more data	SIDL FC01_2 - Bell Lane	PO4 and PO7 Flooding	SIDL.OT01.6	Study/Model investigation	DAP Option.	Yes	Yes	Yes	Major Positive +++	£TBC - With Partners	No	Best Value
Study/ investigation to gather more data	Catchment Wide	PO4 PO7 Flooding & Drainage, Water Resources, Infiltration	SIDL.OT01.7	Study - Rainwater Harvesting	Study: Use of rainwater harvesting to be considered within routine planning objectives.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
Study/ investigation to gather more data	Catchment Wide	All Planning Objectives	SIDL.OT01.8	Study - Total Catchment Scheme	Study: Consider the system as the first 'Total Catchment Scheme', tackling climate change, sea level rise, flooding, water resources, water quality, and biodiversity and habitat loss, and funding schemes.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
Study/ investigation to gather more data	Pinks Lane WPS	PO8 PO12 Infiltration	SIDL.OT01.9	Study - Infiltration	Study: Joint position statement addressing localised flooding caused at the WPS by infiltration (incorporating an investigation into private sewer infiltration contribution).	Yes	No					Environmental - Strategic Environmental Assessment

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.

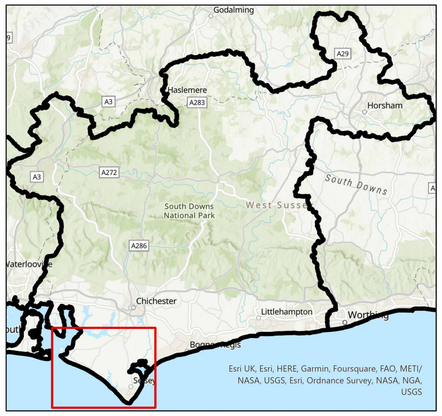
Date : May 2023
Version : 1.0

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
Arun and Western Streams								
Sidlesham								
SIDL.CONS01.1	Arun and Western Streams	Sidlesham	Bremere Lane, Highleigh	Growth scheme from our Drainage Area Plan (DAP): Infiltration reduction through sewer relining to reduce risk of flooding	£TBC	AMP10	West Sussex County Council	PO1 PO2 PO3 PO4 PO5 PO7 PO8 PO11
SIDL.CONS01.2	Arun and Western Streams	Sidlesham	Birdham	Growth scheme from our Drainage Area Plan (DAP): Infiltration reduction through sewer relining to reduce risk of flooding	£TBC	AMP10	West Sussex County Council	PO1 PO2 PO3 PO4 PO5 PO7 PO8 PO11
SIDL.CONS01.3	Arun and Western Streams	Sidlesham	Pinks Lane, Birdham	Growth scheme from our Drainage Area Plan (DAP): Infiltration reduction through sewer relining to reduce risk of flooding	£TBC	AMP10	West Sussex County Council	PO1 PO2 PO3 PO4 PO5 PO7 PO8 PO11
SIDL.CONS01.4	Arun and Western Streams	Sidlesham	Manor Lane, Selsey	Growth scheme from our Drainage Area Plan (DAP): Offline Storage	£TBC	AMP10	West Sussex County Council	PO1 PO2 PO3 PO4 PO5 PO7 PO8 PO11
SIDL.CONS01.5	Arun and Western Streams	Sidlesham	Bracklesham	Growth scheme from our Drainage Area Plan (DAP): Offline Storage	£TBC	AMP10	West Sussex County Council	PO1 PO2 PO3 PO4 PO5 PO7 PO8 PO11
SIDL.SC01.2	Arun and Western Streams	Sidlesham	Sidlesham 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)	£1,000K	AMP9	-	PO4 PO7
SIDL.SC03.2	Arun and Western Streams	Sidlesham	Street End	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	West Sussex County Council Chichester District Council	PO2
SIDL.PW01.2	Arun and Western Streams	Sidlesham	Itchenor	Sewer Rehabilitation: Targeted CCTV or electroscan surveys and sewer rehabilitation to reduce the risk of sewer bursts and collapses	£535K	AMP8 onwards	-	PO3
SIDL.PW01.5	Arun and Western Streams	Sidlesham	Street End	Enhanced Sewer Maintenance: Increase targeted sewer jetting to reduce the number of blockages in the network	£35K	AMP8 onwards	-	PO2
SIDL.PW01.6	Arun and Western Streams	Sidlesham	Manor 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)	£25,910K	AMP9	West Sussex County Council Chichester District Council	PO4 PO7
SIDL.PW02.1	Arun and Western Streams	Sidlesham	Sidlesham WTW	Improve the operational resilience of Wastewater Treatment Works (WTW) to reduce pollution incidents	£6,970K	AMP10	-	PO2
SIDL.PW02.2	Arun and Western Streams	Sidlesham	Sidlesham WTW	Increase capacity to allow for planned new development	£4,000K	AMP8	-	PO8
SIDL.OT01.5	Arun and Western Streams	Sidlesham	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£200K	AMP8	-	PO4 PO5 PO7
SIDL.OT01.6	Arun and Western Streams	Sidlesham	System Wide	Study and Investigation: Rainwater Harvesting	£TBC	AMP8	-	PO4 PO7

Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
SIDL.OT01.7	Arun and Western Streams	Sidlesham	System Wide	Study and Investigation: Consider the system as the first 'Total System Scheme', tackling climate change, sea level rise, flooding, water resources, water quality, and biodiversity and habitat loss, and funding schemes.	£TBC	AMP8	West Sussex County Council, Chichester District Council, Environmental Agency, Natural England	PO1 PO2 PO3 PO4 PO5 PO11
SIDL.OT01.8	Arun and Western Streams	Sidlesham	Pinks Lane WPS	Study and Investigation: Investigate the risk of groundwater pollution from infiltration at Pinks Lane WPS	£TBC	AMP8	West Sussex County Council Chichester District Council	PO8 PO12
SIDL.WINEP01.1	Arun and Western Streams	Sidlesham	SIDLESHAM SSO	Reduce impact from storm spills from SIDLESHAM SSO through wetland creation and/or sewer lining to reduce infiltration of groundwater	£16,150K	AMP10	-	PO5
SIDL.WINEP01.2	Arun and Western Streams	Sidlesham	EAST BEACH ROAD SELSEY CSO	New or improved screen to reduce aesthetics impacts from storm discharges at EAST BEACH ROAD SELSEY CSO	£130K	AMP11	-	PO5
SIDL.WINEP01.3	Arun and Western Streams	Sidlesham	CHURCH ROAD SELSEY CSO	New or improved screen to reduce aesthetics impacts from storm discharges at CHURCH ROAD SELSEY CSO	£130K	AMP12	-	PO5
SIDL.WINEP01.4	Arun and Western Streams	Sidlesham	EAST BEACH ROAD SELSEY CEO	Reduce impact from storm spills from EAST BEACH ROAD SELSEY CEO through wetland creation and/or sewer lining to reduce infiltration of groundwater	£2,795K	AMP9	-	PO5 PO13
SIDL.WINEP.PO2.1	Arun and Western Streams	Sidlesham	Sidlesham WTW	Action to reduce total phosphorus and/or total nitrogen levels from discharges which drain to internationally designated sites where there is a risk from nutrients	£17,050K	AMP10	-	PO9 PO11
SIDL.WINEP01.5	Arun and Western Streams	Sidlesham	OUTSIDE 83 EAST BEACH SELSEY CEO	Reduce impact from storm spills from OUTSIDE 83 EAST BEACH SELSEY CEO through wetland creation and/or sewer lining to reduce infiltration of groundwater	£2,795K	AMP9	-	PO5 PO13

Drainage and Wastewater Management Plan: Location of Potential Options SIDLESHAM Wastewater system in Arun and Western Streams 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

SIDL.PW01.2
SIDL.PW01.2
SIDL.PW01.5
SIDL.SC03.2
SIDL.PW01.5
SIDL.PW01.5
SIDL.SC03.2
SIDL.SC03.2
SIDL.PW01.5
SIDL.SC03.2
SIDL.WINEP01.1
SIDL.WINEP.PO2.1
SIDL.PW02.1
SIDL.PW02.2
SIDL.PW01.2
SIDL.WINEP01.3
SIDL.WINEP01.2
SIDL.WINEP01.5
SIDL.WINEP01.4

Bosham Hoe
Westlands
Birdham
Shipton Green
West Wittering
Somerley
Almodington
East Wittering
Earnley
Bracklesham
Sidlesham Common
Street End
Highleigh
Sidlesham
Hunston
Donnington
Fisher
South Mundham
Pagham
Norton
Church Norton
East Beach
Selsey
Bracklesham Bay
Chichester Channel
The Spit
Pilsey Island
Pilsey Sand
Stocker's Lake
Thorney Channel
Creek Rithe
Bosham Deeps
Chichester Ship Canal
Pagham Lagoon
Keynor Estate

0 0.42 0.85 1.7 2.55 3.4 Kilometers