



Drainage and Wastewater Management Plan

Lyndhurst
Wastewater System Plan



from
**Southern
Water** 

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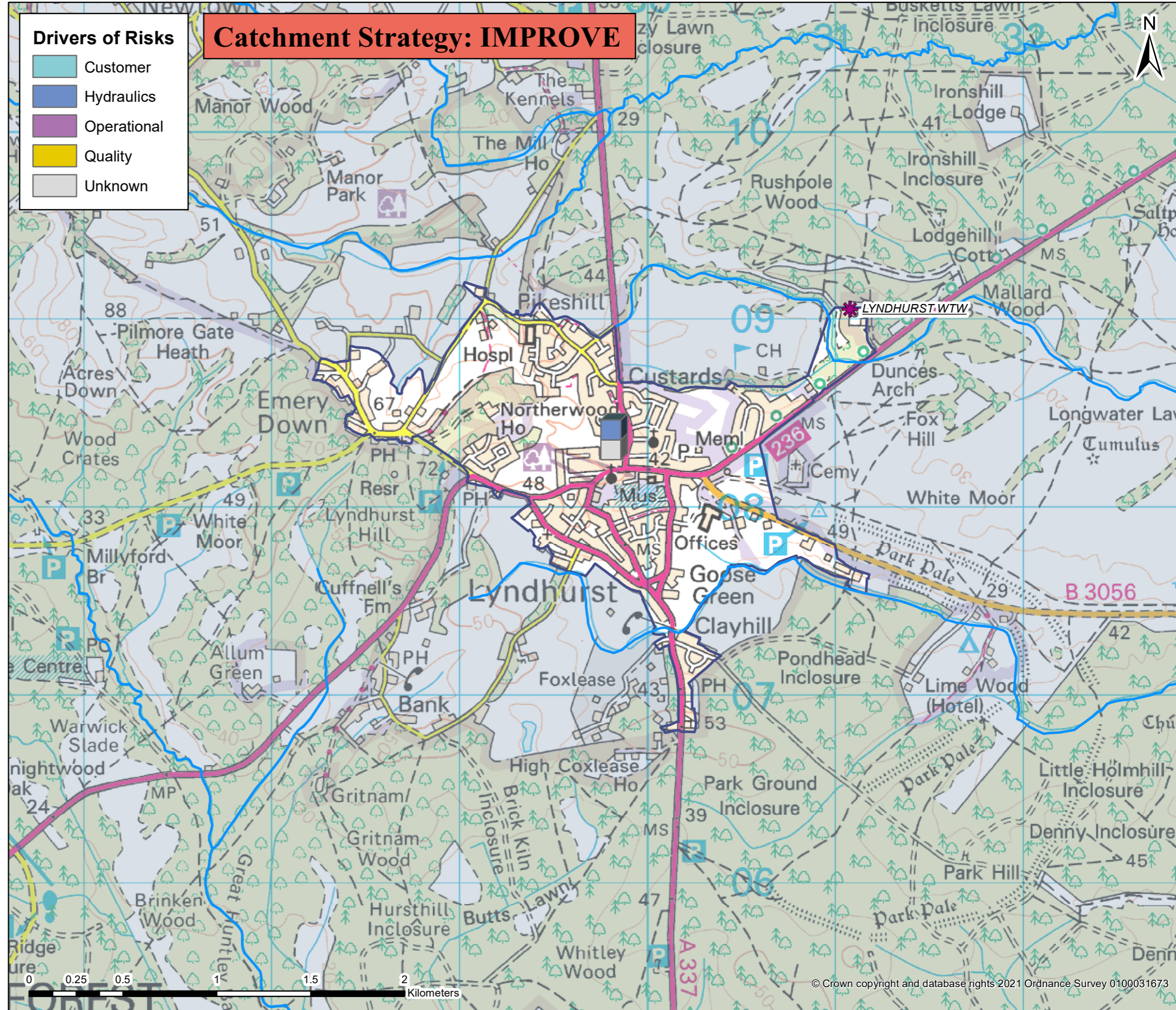
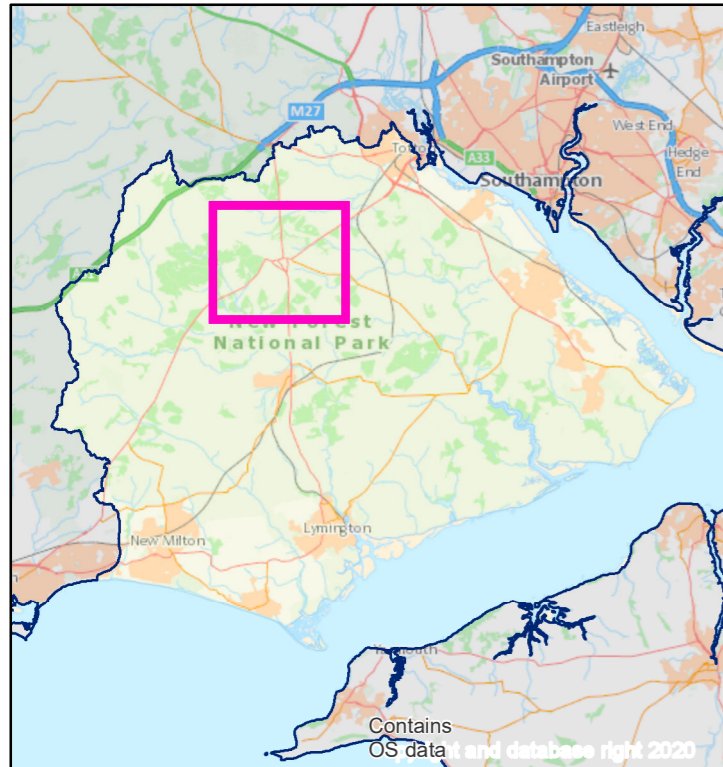
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Lyndhurst wastewater system: map and key facts



Drivers of Risks

- Customer
- Hydraulics
- Operational
- Quality
- Unknown

Catchment Strategy: IMPROVE

Population Equivalent (PE)	3,558
Discharge Waterbody	Beaulieu River
Number of Pumping Stations	5
Number of Overflows	3
Length of Sewer (km)	37.6
Catchment Reference	LYND

BRAVA Results Table (LYND)		
Planning Objective	2020	2050
1 Internal Sewer Flooding Risk	0	
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	0
9 Good Ecological Status / Potential	0	
10 Surface Water Management	0	
11 Nutrient Neutrality	2	2
12 Groundwater Pollution	0	
13 Bathing Waters	NA	
14 Shellfish Waters	NA	



Problem Characterisation

Lyndhurst (LYND)

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 Lyndhurst wastewater system

Planning Objectives		2020	Driver	2050
1	Internal Sewer Flooding Risk	0	-	
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	-	0
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	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).



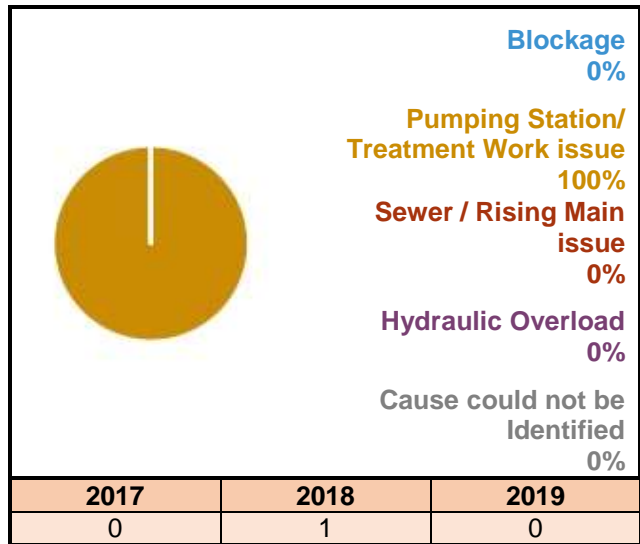
Planning Objective 1: Internal Sewer Flooding Risk

There have been zero (or less than 3) internal flooding incidents reported during the three year period considered by the risk assessment, so the risk is in the 'not significant' band.

Planning Objective 2: Pollution Risk

The number of pollution incidents reported during the three years considered by the risk assessment are shown in Figure 1. 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 1: Number of pollution incidents per annum and causes



Planning Objective 3: Sewer Collapse Risk

There have been no sewer collapses or rising main bursts in the three years considered by this risk assessment so the risk is in the 'not significant' band.

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 very significant for both 2020 and 2050. Table 2 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 2: 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

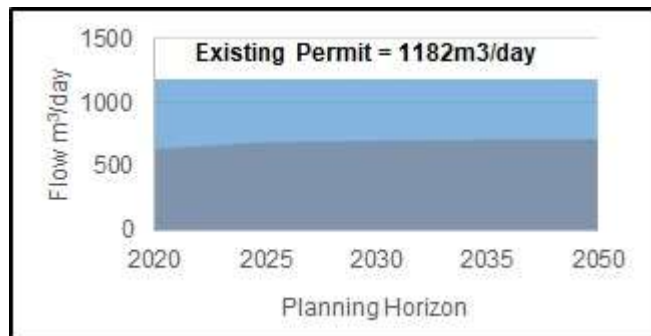
This is an assessment of the risk of flooding from sewers during a 1 in 30 year storm, and more frequent rainfall, to understand where flooding could occur. The risk of sewer flooding due to hydraulic overload is moderately significant in 2020 and 2050. A network model was not available for this assessment, however the network in the wastewater system was 75% design capacity for 2020 and 2050.

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 anticipated 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 (DWF) Compliance is not significant for both 2020 and 2050. This is because the average annual DWF for 2017, 2018 and 2019 has been below 80% of the current permit. The predicted DWF in 2050 is also expected to remain below 80% of the current permit, shown in Figure 2.

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 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 3.

Table 3: Habitat Sites hydraulically linked to wastewater system

Habitat Sites	
New Forest	Condition Assessment after 2025
Solent and Dorset Coast	Nitrate 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 do not impact on any designated shellfish waters.

Generic Options Assessment for: Lyndhurst (LYND)



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	0	-	-		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		N	None of the significant risks are caused by the quality of wastewater entering the wastewater system.	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		N	None of the significant risks are caused by too much foul wastewater entering our systems from homes and businesses.	Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
PO5	Storm Overflow Performance	2	Hydraulic	2	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	1		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	-	0	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	2	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		Y	-	Additional data required; hydraulic model development; WQ monitoring and modelling
PO13	Improve Bathing Water Quality	NA	-	-						
PO14	Improve Shellfish Water Quality	NA	-	-						

Lyndhurst 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	PO4, PO5, & PO7 - Hydraulic Drivers	LYND.SC01.1	Changes in Rural Land Drainage	Using results of option LYND.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers	LYND.SC01.2	Surface Water Separation	Using results of option LYND.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers	LYND.SC01.3	SuDS	Using results of option LYND.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers	LYND.SC01.4	Rain Water Harvesting	Collect rainwater from roofs and other paved surfaces for use on site - flushing toilets, watering gardens in time of lower rainfall etc.	No						Deliver the required outcome and Risk and uncertainty - future resilience
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)												
Control / Reduce the quantity / flow of wastewater entering sewer system												
Network Improvements (eg increase capacity, storage, conveyance)	Lime Wood Hotel/Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers PO11 - Nutrient Neutrality	LYND.PW01.1	Additional Conveyance Capacity	Installation of new connecting sewers from Lime Wood Hotel, connecting to Southern Waters sewer system.	Yes	No					Environmental - Strategic Environmental Assessment
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers	LYND.PW01.2	Additional Storage Capacity	Improving technology on storm tanks.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers	LYND.PW01.3	Separate Flows	Construction of new sewers throughout the catchment to enable separation of foul and surface water flows into separate sewer systems.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO4, PO5 - Hydraulic Drivers & PO8 - Dry Weather Flow	LYND.PW01.4	Separate Flows	Separating surface water flows from sewers.	No						Cost Effective
Improve treatment (capacity and quality at existing works or develop new WTWs)	Lyndhurst WTW	PO11 - Nutrient Neutrality	LYND.PW02.1	Centralisation of Treatment	Connection to an alternative wastewater treatment works.	No						Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	Lyndhurst WTW	PO11 - Nutrient Neutrality	LYND.PW02.2	Optimisation of treatment process	Optimising treatment process by transferring (see option LYND).	No						Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	Lyndhurst WTW	PO11 - Nutrient Neutrality	LYND.PW02.3	Install P removal tertiary plant	Remove more P from final effluent, past the currently allowed 1Mg/L permitted rate.	No						Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	Lyndhurst WTW	PO11 - Nutrient Neutrality	LYND.PW02.4	Install N removal tertiary plant	Currently no Nitrate permit, although there is an Ammonia permit.	No						Risk and uncertainty - future resilience
Wastewater Transfer	LYNDHURST WTW	PO8 (2050)- Dry Weather Flow	LYND.PW03.1	Construct New WPS & Rising Main	No other WTWs are within a 20km radius of LYNDHURST WTW with spare capacity to take DWF.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	No	Best Value
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	Lyndhurst WTW/Catchment Wide	PO11 - Nutrient Neutrality	LYND.RC03.1	River enhancement and mitigation	Enhance river upstream of catchment to provide attenuation of flows, limiting unconsented spills from CSOs, and providing opportunity for natural nutrient removal.	No						Deliver the required outcome
Mitigate impacts on Water Quality	Lyndhurst WTW	PO11 - Nutrient Neutrality	LYND.RC03.2	Effluent re-use	Re-use of effluent from site - pumping of this effluent to potable process treatment works.	No						Cost Effective
Mitigate impacts on Water Quality	Lyndhurst WTW	PO11 - Nutrient Neutrality	LYND.RC03.3	Catchment permits	Reduce consented permit levels for nutrients and solids in the final effluent from treatment works.	No						Do customer support it and Risk and uncertainty - future resilience
Reduce consequences Properties (e.g. Property Flood Resilience)	Catchment Wide	PO4 - Hydraulic Drivers	LYND.RC04.1	Flood Mitigation for Flooding	Flooding mitigation to consider options (but not limited to); Non-return Valves, Smart Airbricks, Flood Doors.	Yes	No					Operational
Study/ investigation to gather more data	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers PO11 - Nutrient Neutrality	LYND.OT01.1	Improve Hydraulic Model	Study / Investigation: Build and verify the Lyndhurst Hydraulic Model to improve model confidence.	Yes	Yes	Yes	Minor Positive +	£325K	Yes	Best Value
Study/ investigation to gather more data	Catchment Wide	PO4, PO5, & PO7 - Hydraulic Drivers PO11 - Nutrient Neutrality	LYND.OT01.2	Further Study/Investigation	Further Study/Investigation - Identifying what effect transferring the flows out of the catchment, to a larger treatment works, would have on the sensitive waterways they discharge into - options LYND.	No						Cost Effective, Do customer support it and Risk and uncertainty - future resilience
Study/ investigation to gather more data	New Forest Solent and Dorset Coast Solent & Southampton Water	PO11 - Nutrient Neutrality	LYND.OT01.3	Nutrient Budget	Study / Investigation: Develop a nutrient budget and investigate the risks and sources impacting these named Habitat sites In order to take forward any unconstrained option - LYND.	Yes	Yes	Yes	Minor Positive +	£75K	Yes	Best Value
Study/ investigation to gather more data	High Spilling CSOs - Lyndhurst WTW	PO5 - High Spilling CSOs	LYND.OT01.4	Further Study/Investigation	Surface water separation to reduce spills from Lyndhurst WTW storm overflow (average cost assumed to reduce CSO spills to Band 0) Study to identify storage volumes needed to prevent the high spilling CSO discharge in the catchment should suitable areas for surface water separation not be found/available.	Yes	Yes	Yes	Major Positive +++	£1,000K	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

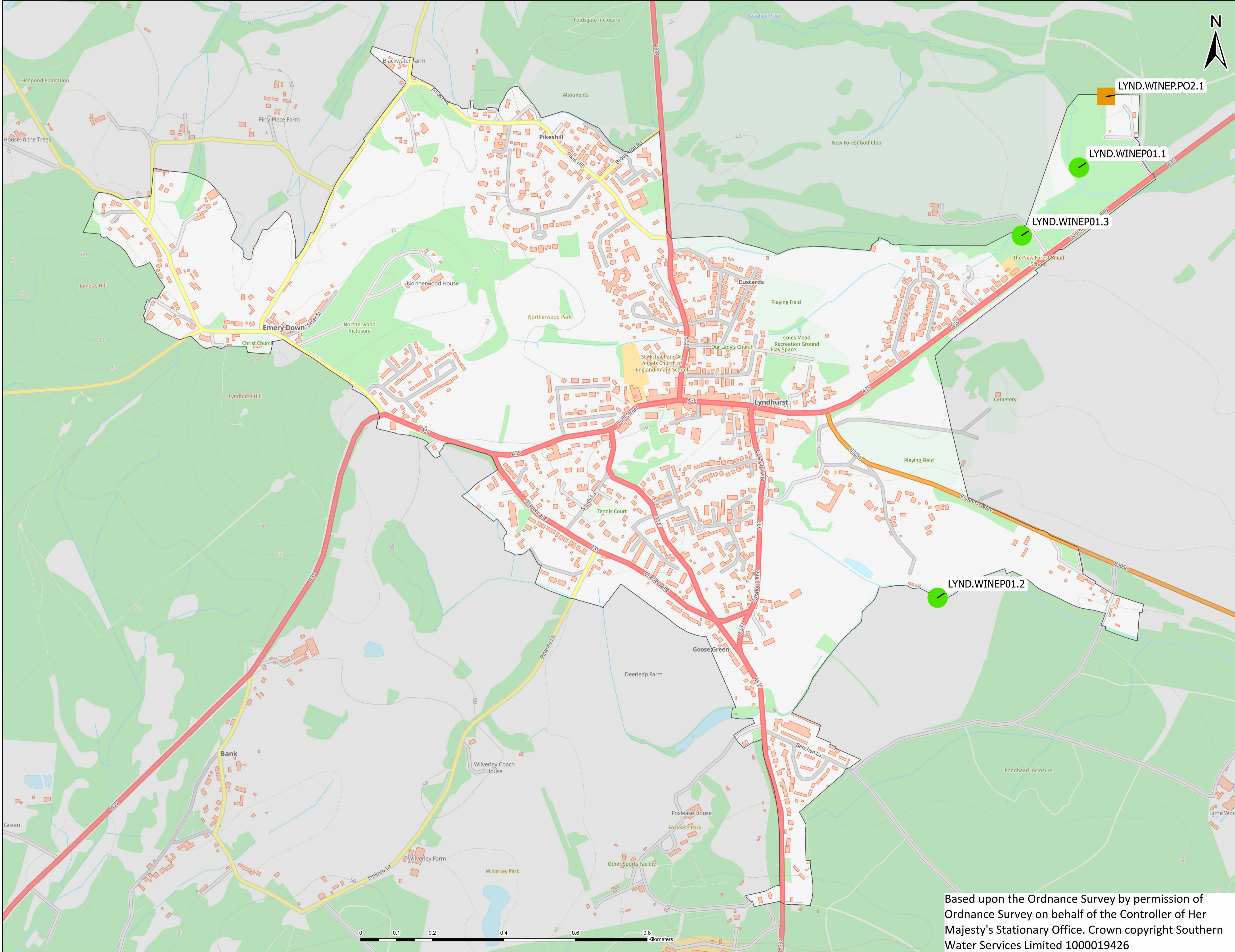
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Reference	River Basin (L2)	Wastewater System (L3)	Location	Option	Indicative Cost	Indicative Timescales	Potential Partners	Applicable Planning Objectives
New Forest								
Lyndhurst								
LYND.OT01.1	New Forest	Lyndhurst	System Wide	Improve the Hydraulic Model: Surveys and reverification of model to improve confidence and accuracy	£325K	AMP8	New Forest District Council New Forest National Park Authority	PO4 PO5 PO7 PO11
LYND.WINEP01.1	New Forest	Lyndhurst	LYNDHURST SSO	Reduce impact from storm spills from LYNDHURST SSO through wetland creation and/or sewer lining to reduce infiltration of groundwater	£2,995K	AMP10	-	PO5
LYND.WINEP01.2	New Forest	Lyndhurst	GREEN LANE LYNDHURST CEO	New or improved screen to reduce aesthetics impacts from storm discharges at GREEN LANE LYNDHURST CEO	£130K	AMP11	-	PO5
LYND.WINEP01.3	New Forest	Lyndhurst	LYNDHURST GOLF CLUB CEO	New or improved screen to reduce aesthetics impacts from storm discharges at LYNDHURST GOLF CLUB CEO	£130K	AMP11	-	PO5
LYND.WINEP.PO2.1	New Forest	Lyndhurst	Lyndhurst WTW	Expansion of existing biological treatment and conversion to denitrification to achieve 10mg/l Total N permit. (WINEP OAR 08SO103983)	£9,559K	AMP8	-	PO11

Drainage and Wastewater Management Plan: Location of Potential Options LYNDHURST Wastewater system in New Forest 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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