

Drainage and Wastewater Management Plans (DWMPs)

Workshop for the Adur and Ouse DWMP

Tuesday 18 May 2021



from
**Southern
Water** 

Agenda

- Welcome and Purpose of the workshop
- Presentation: Problem Characterisation
- Break Out Session 1: Understanding the risks and identifying our strategy
- **BREAK**
- Presentation: Options Development and Appraisal
- Break Out Session 2: Identifying generic options
- Prioritising Wastewater Catchments
- Next steps



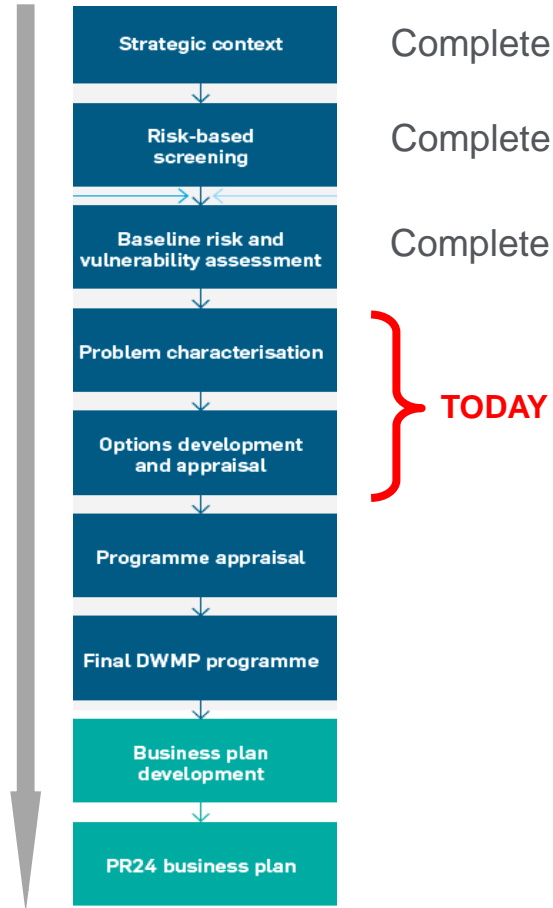
Welcome and Purpose

Cigolene Nguyen

Head of Asset Systems and Processes



DWMP Process: Where are we now?



Our aim today is to:

- Understand the problem: risks, causes and drivers
- Start the Options Development and Appraisal process by selecting generic options
- Prioritise catchments for detailed planning



Purpose of the Workshop

- Determine the investment strategy for all wastewater catchments within the Adur and Ouse river basin
- Start the options development and appraisal process by selecting generic options to progress to the detailed planning stage
- Prioritise wastewater catchments for the detailed planning stage; and
- Identify where we can work with partner organisations on the detailed (level 3) plans

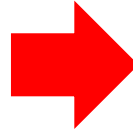


Presentation: Problem Characterisation

Problem Characterisation

3 parts:

1. Causes and drivers of risks



Drivers of Risks



Customer



Hydraulics



Operational



Quality



Unknown



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Drivers

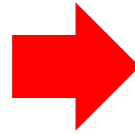
A **Driver** is “a factor which causes a particular risk to happen or develop”. For the DWMP, it is the category associated with the cause of the risk, as set out below.

Driver	Definition	Examples
Hydraulic	Risks dependent on the capacity of the sewer network to cope with current or future flows generated in the catchment	Rain water, surface water, highway run-off, and river flooding entering into combined or separate foul sewers. Infiltration from surface or groundwater.
Operational	Risks associated with our asset management and operational management activities	Asset failures such as sewer collapse, leaking sewers, pump breakdowns and power supply faults.
Customer	Risks dependent on the activities and behaviours of our customers.	Misconnections of surface water to foul sewers (or vice versa). Blockages caused by disposing of fats, oils and grease into sewer or flushing of baby wipes, nappies etc. Unconsented trade waste or chemicals being poured into drains.
Quality	Risks associated with the treatment capacity and flow and quality compliance of our wastewater treatment works	Unable to achieve permits specified by the Environment Agency, lack of adequate treatment capacity for the flow arriving at the treatment works.

Problem Characterisation

3 parts:

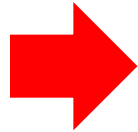
1. Causes and drivers of risk
2. Identifying Catchment Strategy



Problem Characterisation

3 parts:

1. Causes and drivers of risks
2. Identifying Catchment Strategy
3. Strategic Needs and Complexity Assessment



		Strategic needs score ("How big is the problem?")			
		Negligible	Small	Medium	Large
		1-2	3-4	5-6	7-8
Complexity factors score ("How difficult is it to solve")	High (8+)	Teal	Yellow	Red	Red
	Medium (5-7)	Teal	Teal	Yellow	Yellow
	Low (<4)	Teal	Teal	Teal	Yellow



Purpose of Catchment Strategies

- Moves us to longer term thinking (25 year plan)
- Provides a clear statement of intent for our customers
- Align our whole business to get behind it and deliver
- Provides a focus for where investment is needed, and when
- Supports our investment planning



Catchment Investment Strategies

Do Nothing

- No investment.
- Baseline upon which to judge the cost effectiveness of doing 'something'

Maintain

- Current performance within acceptable limits and no major concerns for future.
- Continue to maintain. Replace assets like for like when needing replacement.
- Accept that climate change and growth may cause slight deterioration in levels of performance

Sustain

- Current performance acceptable, but risks will increase in the future.
- Continue to maintain, but as assets need replacing look to increase capacity to keep pace with climate change, development and asset condition to sustain the existing level of performance into the future

Enhance

- Current performance is unacceptable. The causes are mostly operational.
- Enhance current maintenance programmes (opex with some capital maintenance) to improve performance e.g. asset replacement/upgrades to improve reliability. No significant new assets or infrastructure required.

Prepare

- Current risks and performance are acceptable at the current time.
- Maintain existing system and performance levels, but actively invest now to **plan and prepare** for future risks and performance issues (e.g. where significant growth planned, or future tightening of permits). Invest in data collection, surveys, model build and feasibility studies (not design).

Defer

- Current performance acceptable at current time, but concerns about future risks in longer term. Risks expected to be easy to resolve.
- Continue to maintain, but defer decision and our consideration of options for capital investment for future rounds of the DWMP

Improve

- Current performance unacceptable. Need to reduce the current risks
- Actively look to invest capital funding in the short term to address current performance issues (and allow for future changes when implementing improvements)

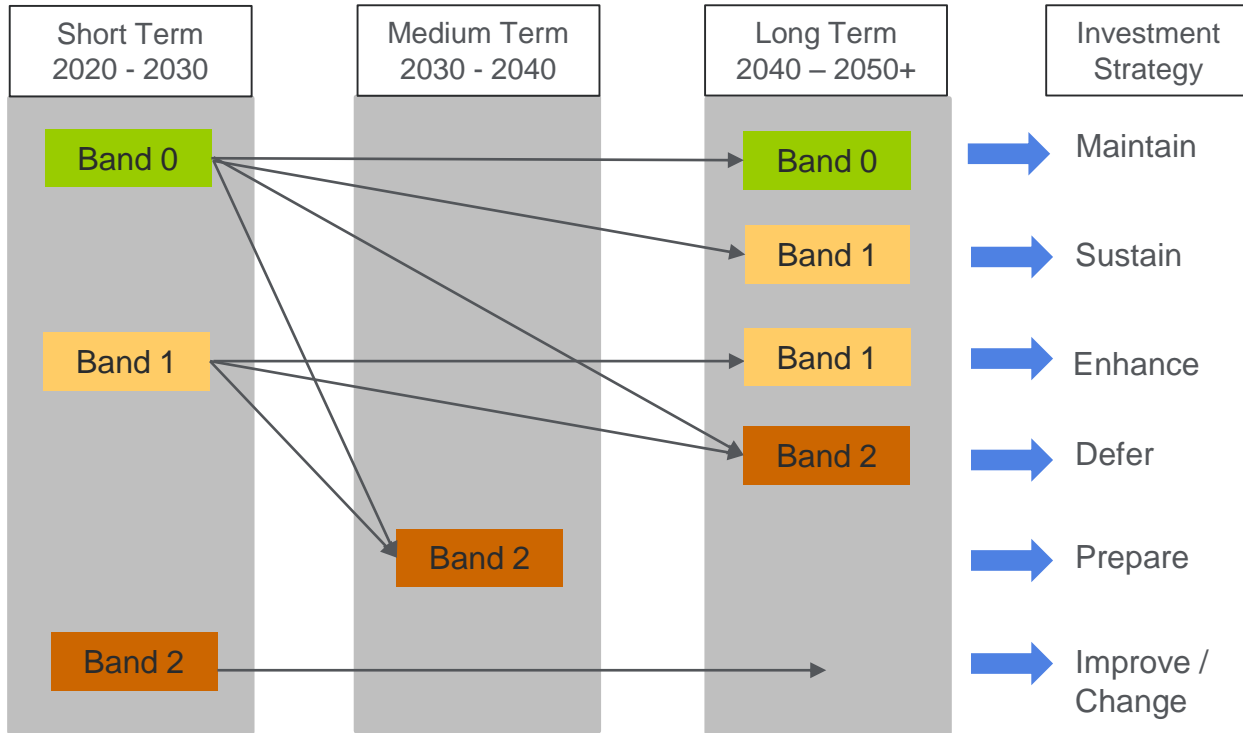
Change

- Current or future risk are/will be unacceptable, and the causes mean that the current system is not sustainable
- Changes to the wastewater system needed i.e. new technology, discharge to alternative water body / transfer, additional treatment, re-use. Potential requirement for WINEP investment.

LEVEL OF EFFORT



Determining our Investment Strategies



LEVEL OF EFFORT



BRAVA Results: Adur and Ouse

NF	Not Flagged *
NA	Not Applicable **
0	Not Significant
1	Moderately Significant
2	Very Significant

Wastewater Catchment Reference	Wastewater Catchment Reference	Population Equivalent	Sewer Length (KM)	Planning Objective													
				Internal Sewer Flooding Risk	Pollution Risk	Sewer Collapse Risk	Risk of Sewer Flooding in a 1 in 50 year storm	Storm Overflow performance	Risk of WTW Compliance Failure	Risk of flooding due to Hydraulic Overload	Dry Weather Flow Compliance	Good Ecological Status / Potential	Surface Water Management	Nutrient Neutrality	Groundwater Pollution	Bathing Waters	Shellfish Waters
				2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
BRIG	PEACEHAVEN	297,284	1,405.969	1	0	0	2	2	0	1	0	0	2	NA	2	1	NA
WEOA	EAST WORTHING	142,261	1,167.163	1	0	0	2	1	0	2	0	0	2	NA	1	2	NA
PORT	SHOREHAM	55,458	408.670	0	0	0	2	2	0	2	0	0	2	NA	0	NA	NA
NEWE	NEWHAVEN EAST	58,325	400.218	0	1	2	1	2	0	2	0	0	1	NA	1	0	NA
BURG	GODDARDS GREEN	49,686	363.017	0	2	2	1	2	0	1	0	0	1	NA	0	NA	NA
SCAY	SCAYNES HILL	39,458	298.144	1	1	2	1	1	1	1	0	0	1	NA	0	NA	NA
UCKF	UCKFIELD	17,629	160.796	0	2	2	1	0	0	1	0	0	0	NA	0	NA	NA
STEY	STEYNING	9,887	76.796	0	0	2	0	0	0	0	0	0	0	NA	0	NA	NA
RINL	NEAVES LANE RINGMER	5,216	73.793	0	1	0	1	2	0	0	0	0	0	NA	0	NA	NA
ASHI	ASHINGTON	3,770	52.519	0	0	0	0	2	0	0	0	1	0	2	0	NA	NA
HENF	HENFIELD	5,615	47.145	0	0	0	2	0	1	2	0	1	0	NA	0	NA	NA
BANE	BARCOMBE NEW	3,581	41.482	0	2	0	1	2	0	0	0	0	0	NA	0	NA	NA
NEWI	NEWICK	3,753	38.292	0	0	0	1	1	0	1	0	0	0	NA	0	NA	NA
CUNL	CUCKFIELD	3,614	32.310	0	0	0	2	0	1	0	0	0	0	NA	0	NA	NA
BUXT	BUXTED	2,306	26.653	0	0	0	1	2	0	0	0	0	0	NA	0	NA	NA
BALC	BALCOMBE	1,651	24.172	0	0	0	0	1	2	0	0	0	0	NA	0	NA	NA
MARE	MARESFIELD	1,862	23.172	0	0	0	0	0	0	0	0	0	0	0	0	NA	NA
PART	PARTRIDGE GREEN	2,347	20.700	0	0	0	1	0	0	1	0	0	0	NA	0	NA	NA
BARN	BARNS GREEN	1,075	18.512	0	0	0	1	1	0	0	0	0	0	NA	0	NA	NA
WIVE	WIVELSFIELD	1,721	18.279	0	0	0	0	0	0	0	0	2	0	NA	0	NA	NA
DANE	DANEHILL	1,250	17.727	0	0	0	0	2	2	1	0	0	0	0	0	NA	NA
DITC	DITCHLING	1,664	17.528	0	0	0	0	0	0	0	0	0	0	NA	0	NA	NA
BLBO	BLACKBOYS	1,098	17.179	0	0	0	0	1	0	0	0	0	0	NA	0	NA	NA
KING	KINGSTON HOLLOW	1,031	15.561	0	0	0	0	0	0	0	0	0	0	NA	0	NA	NA
COWF	COWFOLD	1,279	8.890	0	0	0	0	2	0	1	0	0	0	NA	0	NA	NA
ARDI	ARDINGLY	1,464	8.793	0	0	0	1	0	0	0	0	0	0	NA	0	NA	NA
HOKE	HORSTED KEYNES	1,240	7.790	0	0	0	0	0	1	0	0	0	0	0	0	NA	NA
HAND	HANDCROSS	1,214	7.614	0	0	0	0	NA	1	1	1	0	0	NA	0	NA	NA
SMAL	SMALL DOLE	814	7.066	0	1	0	0	1	0	1	0	0	0	NA	0	NA	NA
HALL	HALLAND	460	6.033	0	0	0	1	2	0	0	0	0	0	NA	0	NA	NA

Results shown for 2020 only

Suggested Catchment Strategies: Adur and Ouse

Catchment Ref	Wastewater Catchment	Population	Investment Strategy
BRIG	PEACEHAVEN BRIGHTON	297,284	Improve
WOEA	EAST WORTHING	142,261	Improve
NEWE	NEWHAVEN EAST	58,325	Improve
PORT	SHOREHAM	55,458	Improve
BURG	GODDARDS GREEN	49,686	Improve
SCAY	SCAYNES HILL	39,458	Improve
UCKF	UCKFIELD	17,629	Improve
HENF	HENFIELD	5,615	Improve
RINL	NEAVES LANE RINGMER	5,216	Improve
ASHI	ASHINGTON	3,770	Improve
NEWI	NEWICK	3,753	Improve
CUNL	CUCKFIELD	3,614	Improve
BANE	BARCOMBE NEW	3,581	Improve
PART	PARTRIDGE GREEN	2,347	Improve
BUXT	BUXTED	2,306	Improve
BALC	BALCOMBE	1,651	Improve
ARDI	ARDINGLY	1,464	Improve

COWF	COWFOLD	1,279	Improve
DANE	DANEHILL	1,250	Improve
HOKE	HORSTED KEYNES	1,240	Improve
HAND	HANDCROSS	1,214	Improve
BLBO	BLACKBOYS	1,098	Improve
BARN	BARNS GREEN	1,075	Improve
SMAL	SMALL DOLE	814	Improve
HALL	HALLAND	460	Improve
LOBE	LOWER BEEDING	362	Improve
POYN	POYNINGS	348	Improve
ANST	ANSTY	274	Improve
COOL	COOLHAM	264	Improve
FULK	FULKING	232	Improve
DIAL	DIAL POST	199	Improve
PYEE	PYECOMBE EAST	121	Improve
PYEW	PYECOMBE WEST	115	Improve
BLST	BLACKSTONE	88	Improve
WIST	WISTON	47	Improve

Improve = 35 catchments



Suggested Catchment Strategies: Adur and Ouse

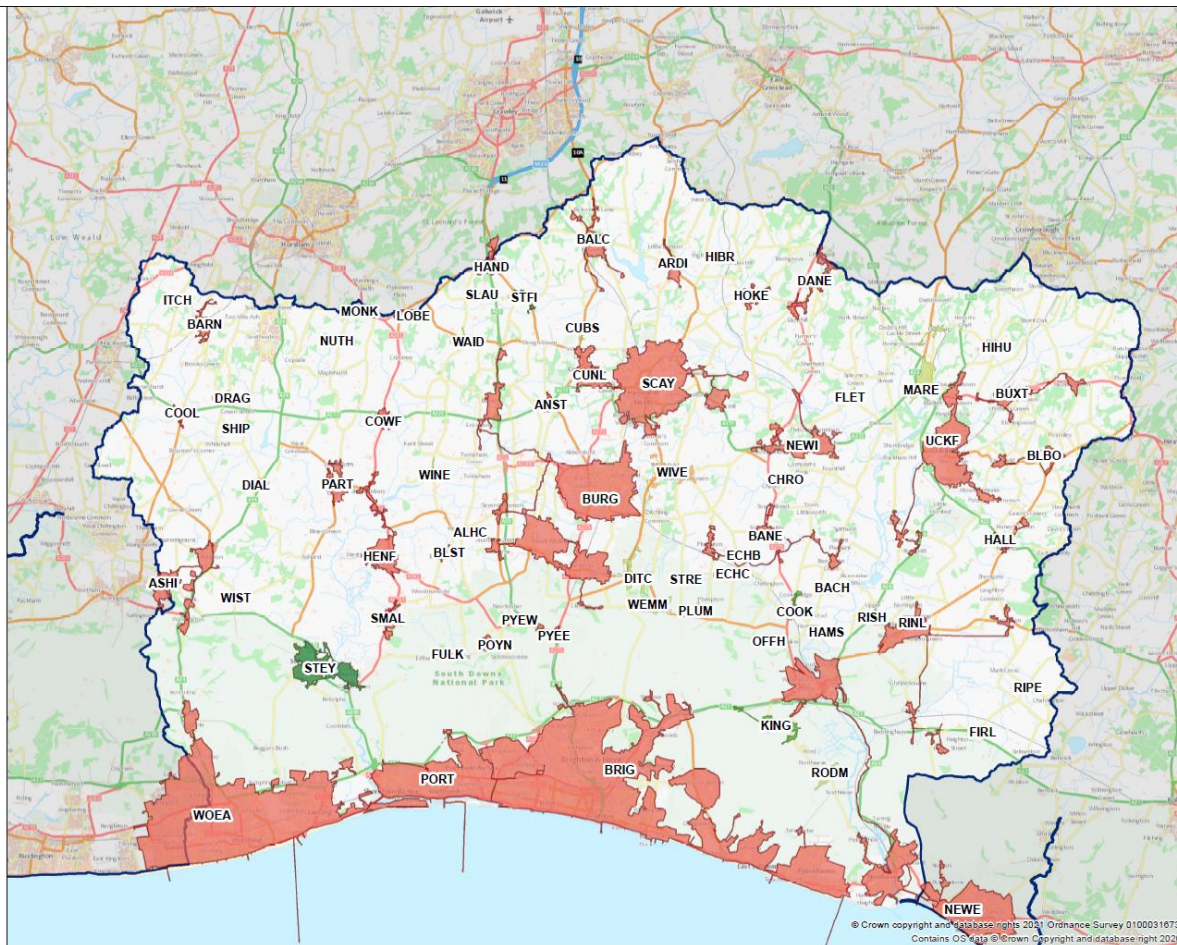
Catchment Ref	Wastewater Catchment	Population	Investment Strategy
STEY	STEYNING	9,887	Enhance
MARE	MARESFIELD	1,862	Maintain
WIVE	WIVELSFIELD	1,721	Prepare
DITC	DITCHLING	1,664	Maintain
KING	KINGSTON HOLLOW	1,031	Sustain
RODM	RODMELL	414	Maintain
COOK	COOKSBRIDGE	395	Sustain
FLET	FLETCHING	251	Maintain
WAID	WARNINGLID	247	Maintain
STFI	STAPLEFIELD	212	Enhance
MONK	MONKS GATE	189	Prepare
RIPE	RIPE	182	Maintain
HIHU	HIGH HURSTWOOD	154	Maintain
PLUM	PLUMPTON	153	Maintain
CUBS	BROOK STREET CUCKFIELD	150	Maintain
WINE	WINEHAM	122	Maintain

ECHC	HOLLYCROFT EAST CHILTINGTON	110	Maintain
SHIP	SHIPLEY	91	Maintain
RISH	SMALLHOLDINGS RINGMER	91	Maintain
SLAU	SLAUGHAM	86	Maintain
ITCH	ITCHINGFIELD	73	Maintain
OFFH	OFFHAM	61	Maintain
ALHC	HIGHCROSS ALBOURNE	57	Maintain
DRAG	DRAGONS GREEN	56	Maintain
STRE	STREAT	53	Maintain
HIBR	HIGHBROOK	44	Maintain
WEMM	WESTMESTON	41	Maintain
NUTH	NUTHURST	39	Maintain
HAMS	HAMSEY	31	Maintain
CHRO	CHAILEY	31	Maintain
FIRL	STAMFORD BUILDINGS FIRLE	28	Maintain
ECHB	HIGHBRIDGE EAST CHILTINGTON	27	Maintain
BACH	BARCOMBE CHURCH	23	Maintain

Excludes “Improve” = 33 catchments

Suggested Catchment Strategies: Adur and Ouse

Catchment Strategy



- 68 sewer catchments
- 68 WTWs
- 409 WPS
- 4881km sewers
- 13.4% area
- 96% homes connected



Questions

Break Out Session 1

Instructions for Break-Out Session 1

For each wastewater catchment:

1. Review the BRAVA results and decide the appropriate catchment investment strategy; and
2. Review the causes of the risks and decide the appropriate drivers

Allocated time: 30 minutes



Plenary: Feedback from Break-Outs

Poll 1



Options Development and Appraisal (ODA)

DWMPs: Identifying and Developing Options

Generic Options

Screening Questions:

- Could this generic option be utilised to manage and/or reduce the risks identified in the BRAVA?

Unconstrained Options

Screening Questions:

- Is the option **technically feasible** given site, operational or option-specific circumstances?
- Is it **cost effective** (based on a simple high, medium, low cost assessment)?
- Does the option achieve the required **outcome**?
- Are there **environmental risks** that cannot be mitigated or benefits provided?
- Would the option likely be supported by **customers**?
- Risk and uncertainty – does the option provide **resilience** against future uncertainties?

Constrained Options

Screening Questions:













- 1. Feasibility and risk:**
 - Customer acceptability?
 - Political acceptability?
 - Timeline for implementation
 - Dependencies
 - 'Third parties'
 - Planning and regulatory constraints
- 2. Engineering and cost:**
 - Engineering complexity
 - Cost
- 3. Performance:**
 - Outcomes
 - Flexibility to adapt
 - Resilience
- 4. Operational**
- 5. Environmental**
 - High Level Screening (SEA, HRA, WFD, Biodiversity Net Gain, Natural Capital)

Feasible Options

Provide for each Feasible Option:

- A description of the option
- A description of how the option being described differs from baseline activities
- Scale of the benefits to be achieved against single or multiple planning objectives.
- An assessment of customers' likely support for the option.
- An estimate of the time needed to investigate and implement the option, including the earliest start date.
- An assessment of the risks and uncertainty associated with the option.
- An assessment of the flexibility of the option to adapt to future uncertainty.
- An explanation of whether the option depends on an existing scheme or a proposed option, or is mutually exclusive with another option.
- An assessment of factors or constraints specific to the option (e.g. planning risks).
- A description of how the option will be utilised and impact on costs.
- An assessment of the environmental impacts of the option
- A Habitats Regulations Assessment if an option could affect any designated European site.
- An assessment of the costs and benefits.

DWMPs: Generic Options

Type of Measures	Generic Option Categories	Icon	Examples of Generic Options
Source (Demand) Measures (to reduce likelihood)	Control / Reduce surface water run-off		Natural Flood Management; rural land management and catchment management; SuDS including blue and green infrastructure; storm management
	Reduce groundwater levels		Reduce leakage from water supply pipes; pump away schemes to locally lower groundwater near sewer network
	Improve quality of wastewater		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		Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
Pathway (Supply) Measures (to reduce likelihood)	Improve Sewer Network		Asset optimisation; additional network capacity; storage; separate flows; operational improvements; structural repairs; re-line sewer pipe and manholes; smart networks.
	Improve Treatment Quality		Increase treatment capacity; rationalisation of treatment works (centralisation / decentralisation); install tertiary plant; UV plant or disinfection facilities; innovation; improve Technical Achievable Limits; new WTWs
	Wastewater Transfer to treatment elsewhere		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		Carbon offsetting; noise suppression /filtering; odour control and treatments
	Improve Land and Soils		Sludge soil enhancement
	Mitigate impacts on receiving waters		River enhancement, aeration
	Reduce impact on properties		Property flood resilience; non-return valves; flood guards / doors; air brick covers
Other	Study / Investigation		Additional data required; hydraulic model development; WQ monitoring and modelling



Break Out Session 2

Instructions for Break-Out Session

Task:













Based on your understanding of the risks, causes and the drivers from the first break-out session

..... now identify the **generic options** to progress in the detailed planning for the wastewater catchment

Allocated time: 30 minutes



Break-out Groups: Template to complete

Planning Objectives		Driver	Type of Measures	Generic Option Categories	Icon	Take Forward?	Reasons	Examples of Generic Options
PO1	Pollution	Operational	Source (Demand) Measures (to reduce likelihood)	Control / Reduce surface water run-off		N		Natural Flood Management; rural land management and catchment management; SuDS including blue and green infrastructure; storm management
PO3	Sewer Collapse Risk	Operational		Reduce groundwater levels		N		Reduce leakage from water supply pipes; pump away schemes to locally lower groundwater near sewer network
PO4	1 in 50 year	Hydraulic		Improve quality of wastewater		N		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
BP09	Good Ecological status	Quality		Reduce the quantity / demand		N		Water efficient appliances; water efficient measures; blackwater and/or greywater re-use; treatment at source
BP10	Surface Water flooding	Hydraulic	Pathway (Supply) Measures (to reduce likelihood)	Improve Sewer Network		N		Asset optimisation; additional network capacity; storage; separate flows; operational improvements; structural repairs; re-line sewer pipe and manholes; smart networks.
BP12	Groundwater Pollution	Operational		Improve Treatment Quality		N		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
BP13	Bathing Waters	Customer		Wastewater Transfer to treatment elsewhere		N		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		N		River enhancement, aeration
				Reduce impact on properties		N		Property flood resilience; non-return valves; flood guards / doors; air brick covers
			Other	Study / Investigation		N		Additional data required; hydraulic model development; WQ monitoring and modelling

Plenary: Feedback from Break-Outs

Poll 2



Prioritising Wastewater Catchments

Prioritising Wastewater Catchments

- How to prioritise the wastewater catchments on the Adur and Ouse for next stage of the DWMP?
- Where do we start?
- Which catchments should we do first?
- Would you like to work with us on any of these catchments?

Prioritising Wastewater Catchments in Adur and Ouse

Catchment Ref	Wastewater Catchment	Population	BRAVA Results 2020 No. of POs in each band			Investment Strategy	PC Matrix
			0	1	2		
BRIG	PEACEHAVEN BRIGHTON	297,284	5	3	4	Improve	Yellow
WOEA	EAST WORTHING	142,261	5	3	4	Improve	Yellow
PORT	SHOREHAM	55,458	7	0	4	Improve	Yellow
NEWE	NEWHAVEN EAST	58,325	5	4	3	Improve	Yellow
BURG	GODDARDS GREEN	49,686	5	3	3	Improve	Green
UCKF	UCKFIELD	17,629	7	2	2	Improve	Green
HENF	HENFIELD	5,615	7	2	2	Improve	Green
ASHI	ASHINGTON	3,770	9	1	2	Improve	Green
BANE	BARCOMBE NEW	3,581	8	1	2	Improve	Green
DANE	DANEHILL	1,250	9	1	2	Improve	Green
SCAY	SCAYNES HILL	39,458	3	7	1	Improve	Green
RINL	NEAVES LANE RINGMER	5,216	8	2	1	Improve	Green
CUNL	CUCKFIELD	3,614	9	1	1	Improve	Green
BUXT	BUXTED	2,306	9	1	1	Improve	Green
BALC	BALCOMBE	1,651	9	1	1	Improve	Green
COWF	COWFOLD	1,279	9	1	1	Improve	Green
HALL	HALLAND	460	9	1	1	Improve	Green
STEY	STEYNING	9,887	10	0	1	Enhance	Green
STFI	STAPLEFIELD	212	9	0	1	Enhance	Green
LOBE	LOWER BEEDING	362	9	0	1	Improve	Green
WIVE	WIVELSFIELD	1,721	10	0	1	Prepare	Green
MONK	MONKS GATE	189	10	0	1	Prepare	Green
NEWI	NEWICK	3,753	8	3	0	Improve	Green
HAND	HANDCROSS	1,214	7	3	0	Improve	Green
SMAL	SMALL DOLE	814	8	3	0	Improve	Green

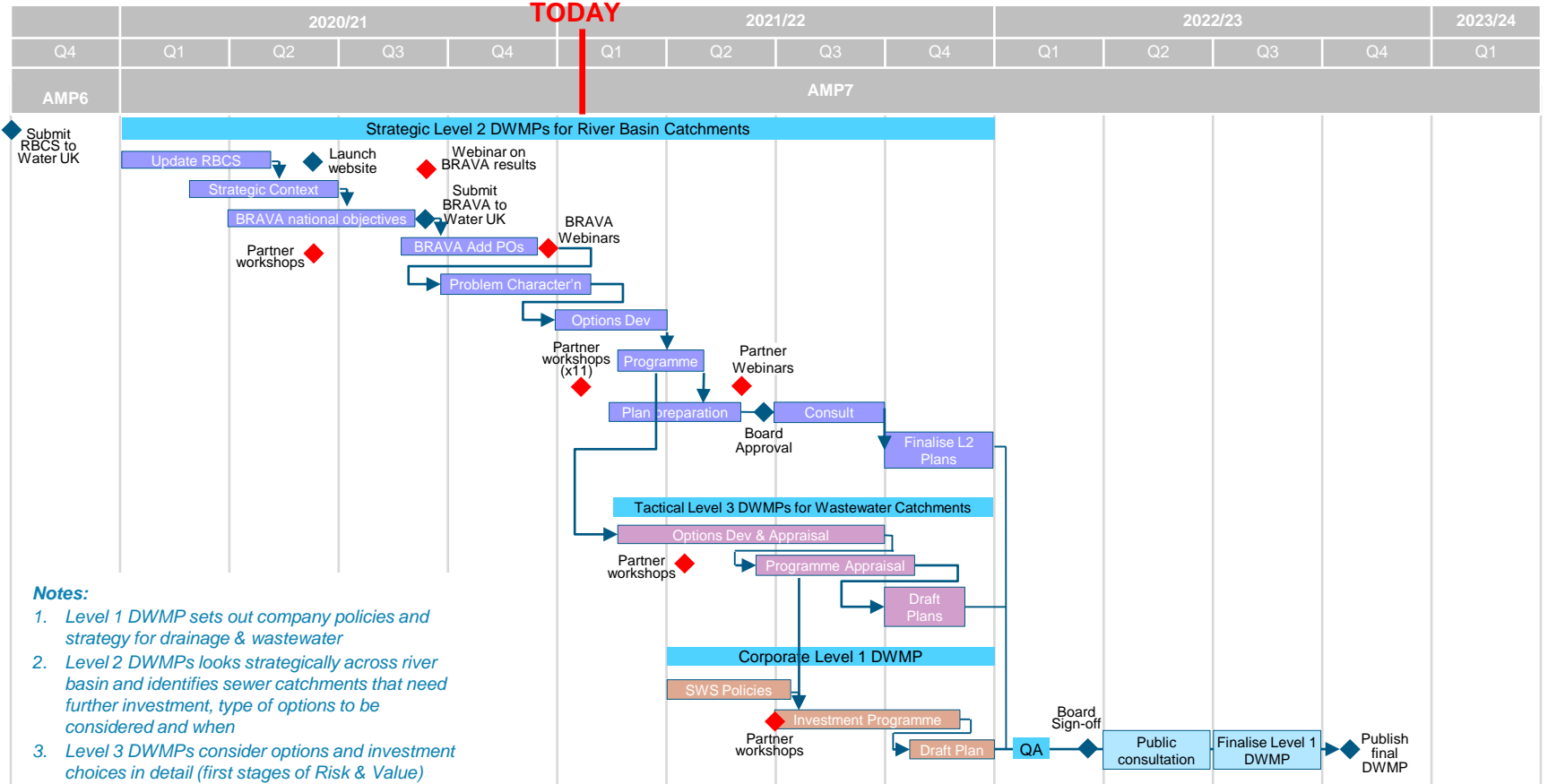
25 catchments shown



Next Steps



DWMP High-Level Delivery Programme



Questions

Summary



Summary of Workshop

What have we done today?

- Looked at causes and drivers of the risks
- Identified the catchment investment strategy for a wastewater catchment
- Determined the generic options to take forward and which to reject
- Prioritised the wastewater catchments in the Adur and Ouse river basin
- Started thinking about where we may be able to work together on plans for individual wastewater catchments



Poll 3



Thank you for participating today

Website: www.southernwater.co.uk/dwmp

Contact us: DWMP@southernwater.co.uk



from
**Southern
Water** 

The Southern Water logo graphic consists of three stylized, wavy blue lines of varying lengths, positioned to the right of the text "Southern Water".