Winterborne St Martin Parish Council

21st April 2022

Wessex Water
YTL GROUP

To cover

- Introduction to Storm Overflows
- Water Quality in South Winterbourne
- Improvements
- Questions

What is a combined sewer?

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Foul water

Surface water

Combined

Comparison of flows

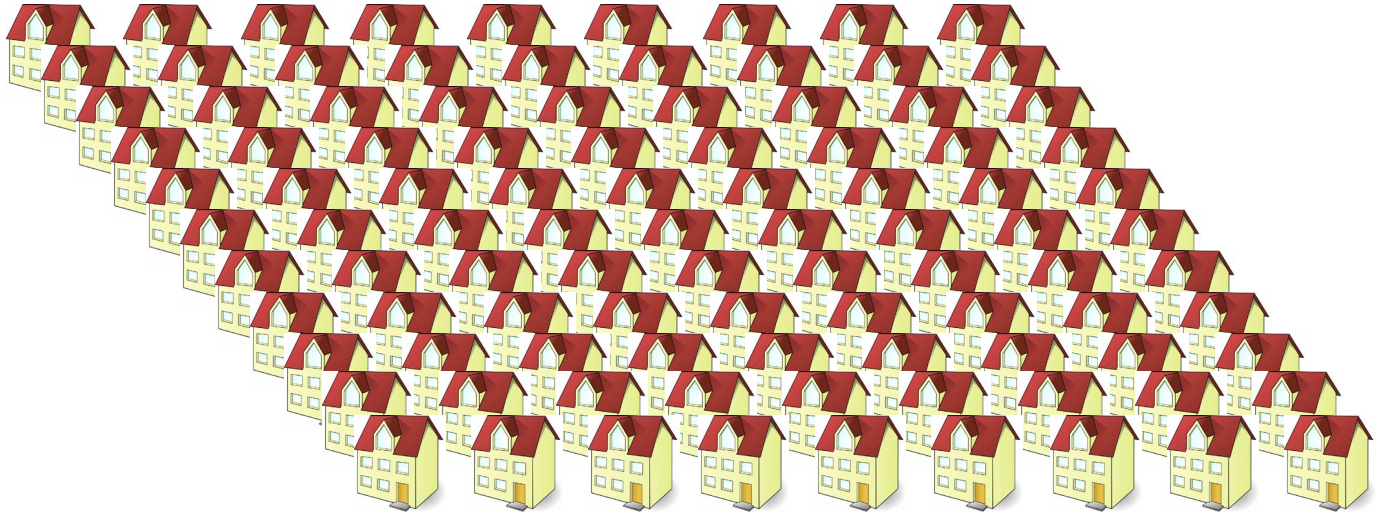
Surface water

The flow generated by 1 average house roof in a heavy* downpour

is equivalent to

Foul water

The flow generated by 1 average house roof in a heavy downpour = the foul flow generated by 128 houses



*e.g. a 1 hour-duration 1-in-1 year rainfall event

How did we get here?

Combined sewers systems have been constructed since the 1850s

Up until the 1960's properties were constructed with 1 drainage pipe which carried both:

surface water

and

foul water

This means c.50% of the houses in England are built this way

What does this look like?

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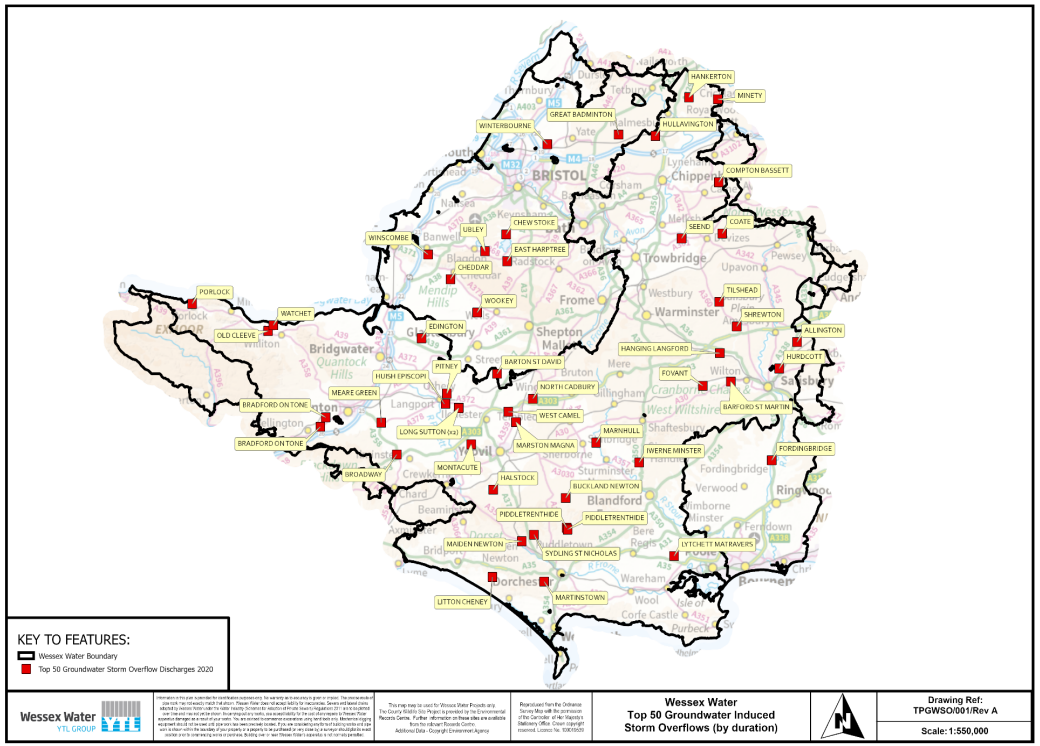
Examples of groundwater influenced storm overflows



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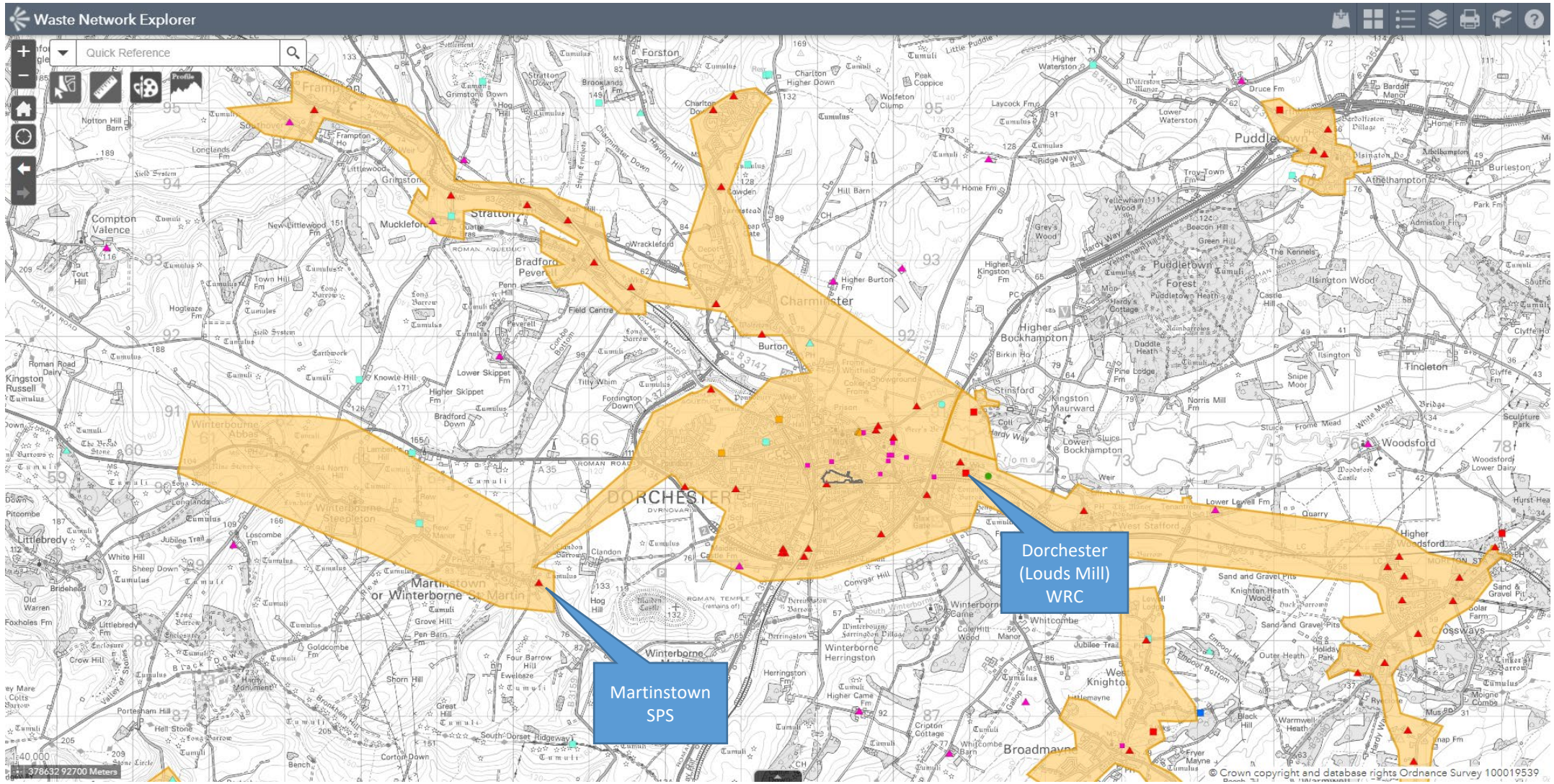

Dorchester Water Recycling Centre catchment (orange shading)

Winterborne St Martin Sewerage

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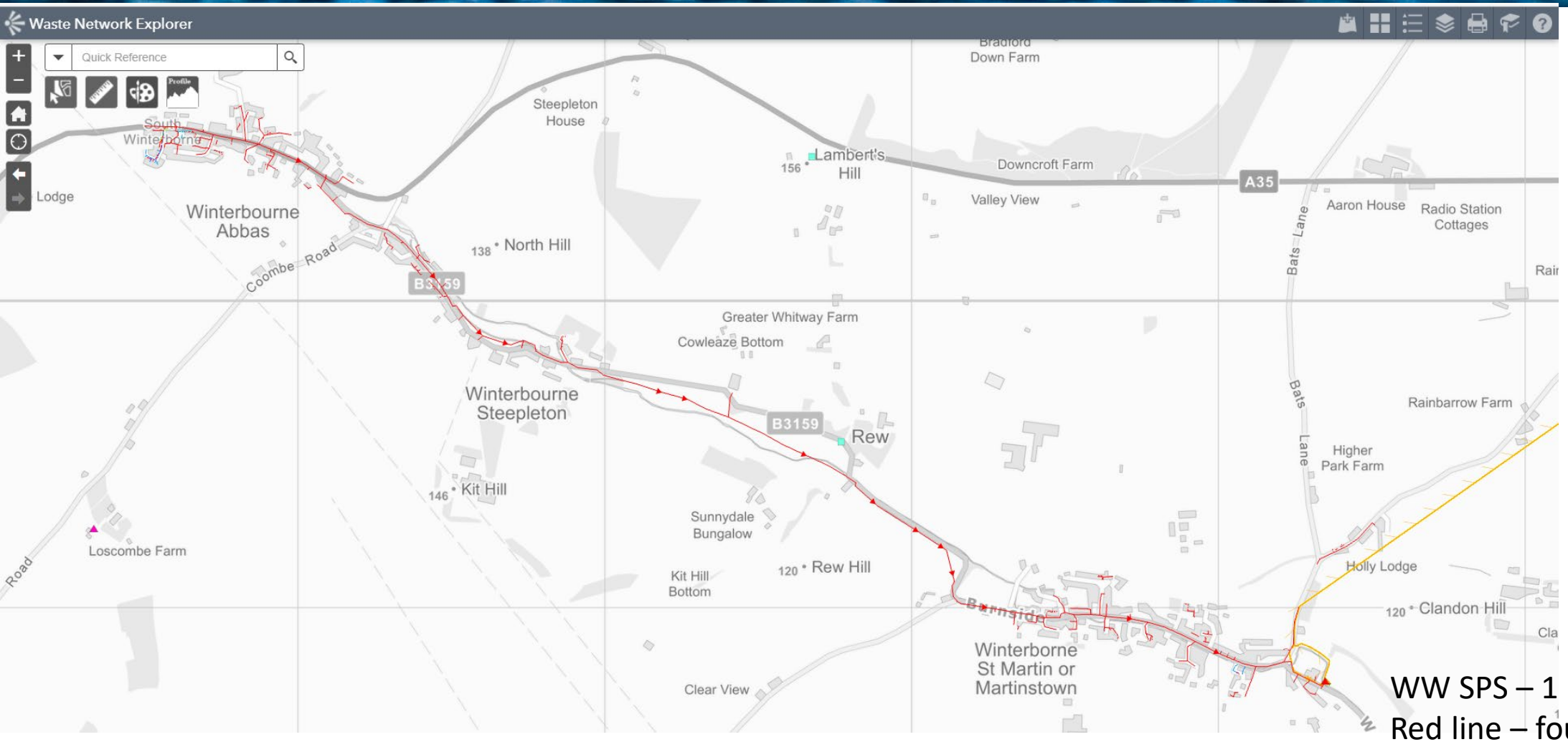
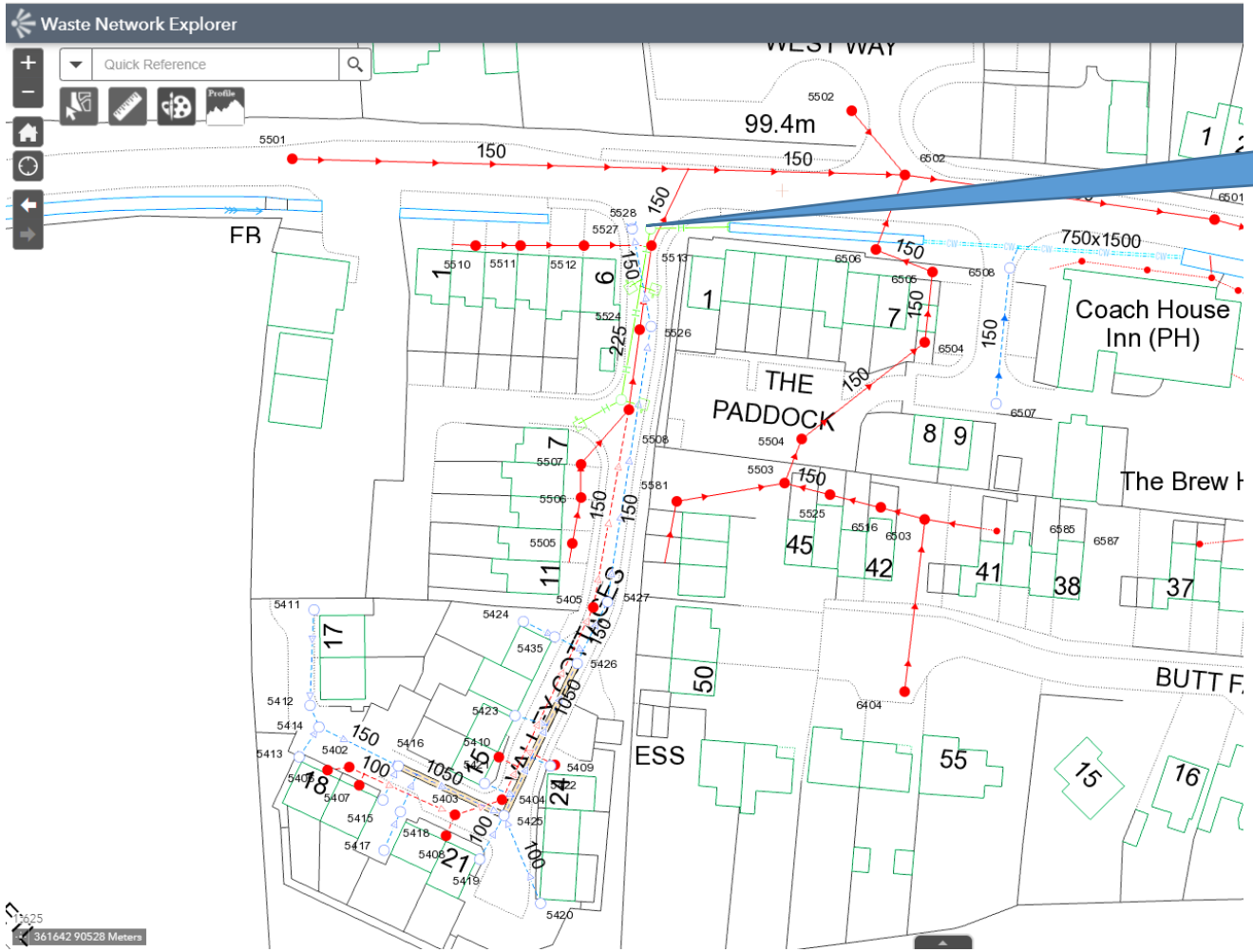


To Dorchester WRC

WW SPS – 1 (Martinstown)
Red line – foul/combined
Blue – surface water only
Yellow – pumped combined

Surface water vs combined



Surface water outfall to watercourse

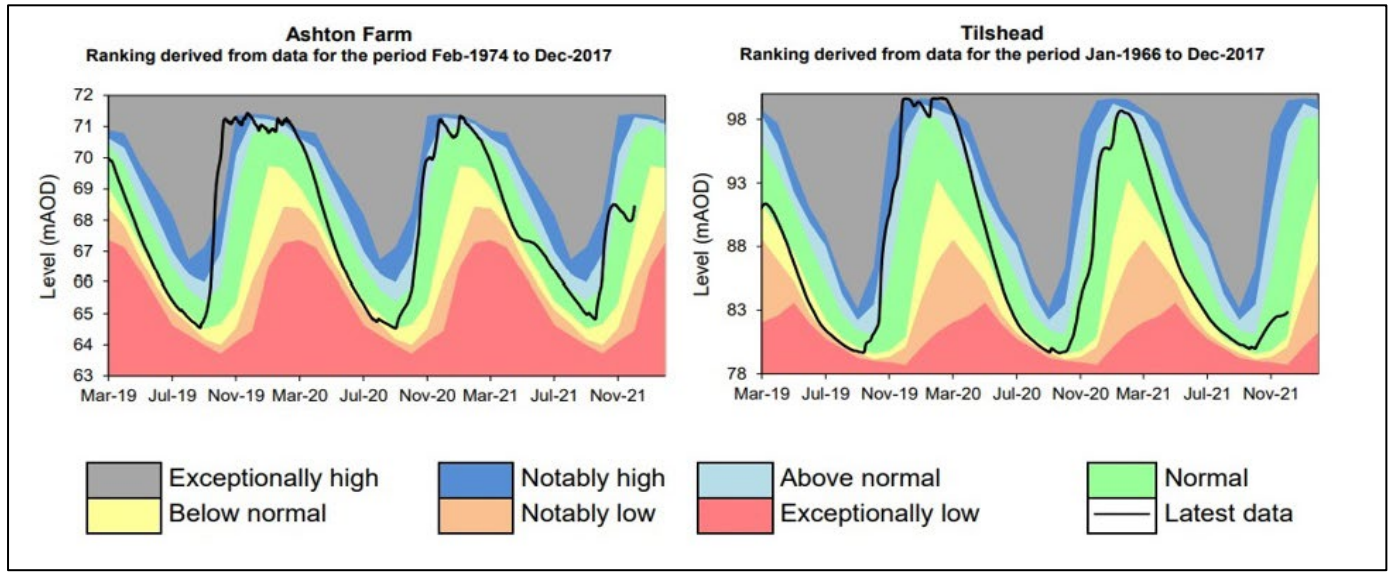
Only 2 very small areas with separate surface water: Winterborne Abbas & Manor Farm Court (Martinstown).

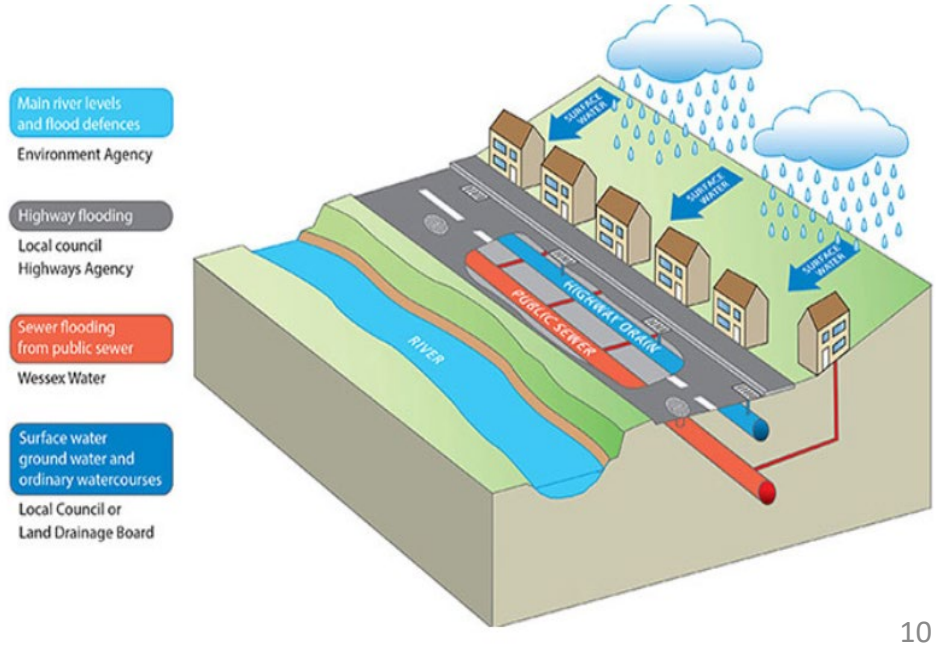
Remainder is all combined and flowing to Martinstown SPS & pumped into Dorchester catchment

1 roof = 128 properties during 60 min downpour…

Groundwater infiltration

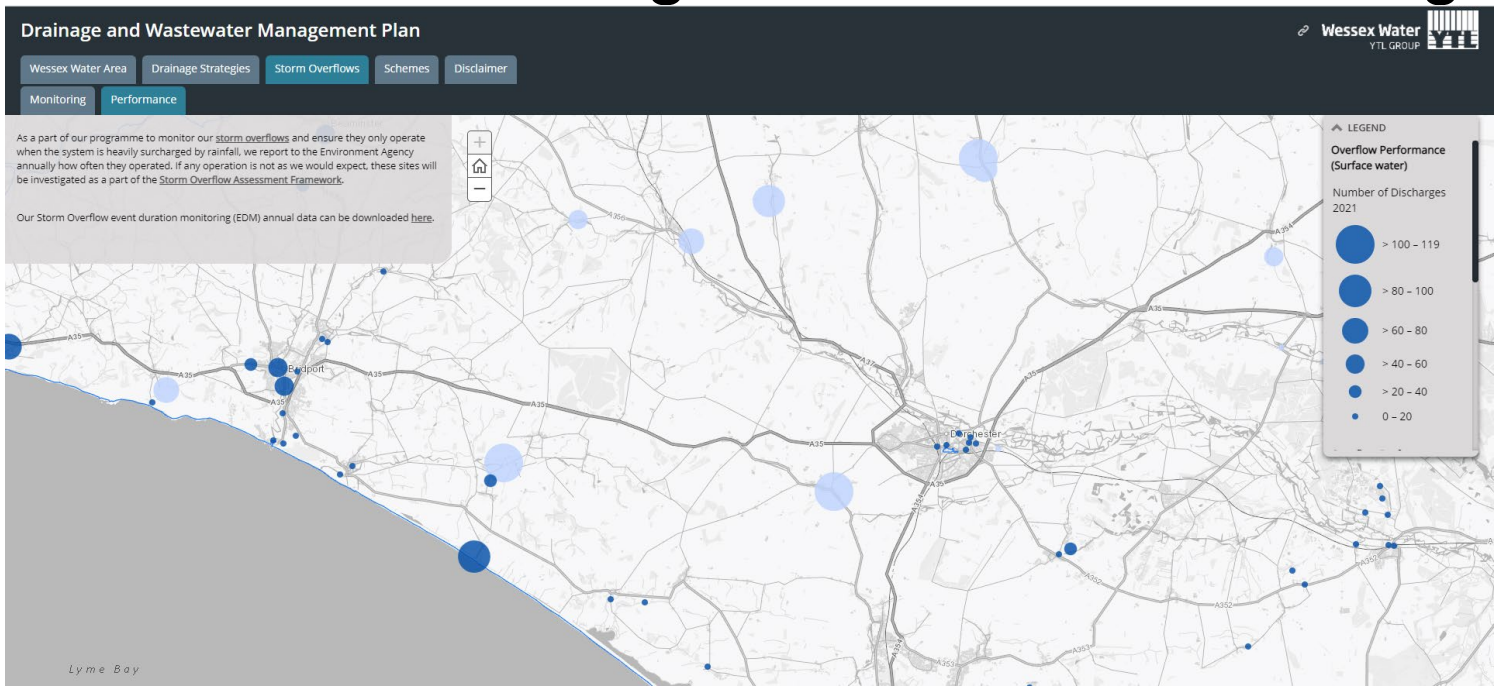
- During intense rainfall and as the water table rises, sewers can become inundated due to infiltration
- Particular problem in private drains from properties into the public sewer – homeowner responsibility not Wessex Water
- Video: HERE
- More info: Infiltration reduction plans | Wessex Water





Overflow operation

- Data reported on our Drainage & Wastewater Management Portal: HERE



	2020		2021	
	Operation	Hours	Operation	Hours
Martinstown SPS	145	2,257	104	1,149

Overflow operation

EDM stop/start is **not** the same as number of times storm overflow operated.

Month when operated (2021)	EDM start/stop	Hours
Jan	851	576
Feb	752	434
Mar	690	116
Apr	2	0.23
May	7	1.32
Jun	8	0.08
July	7	1.88
Aug	0	0
Sept	1	0.07
Oct	30	5.95
Nov	1	12.5
Dec	1	0.07

Coincides with higher than average rainfall & above normal/notably high water table

Very wet month

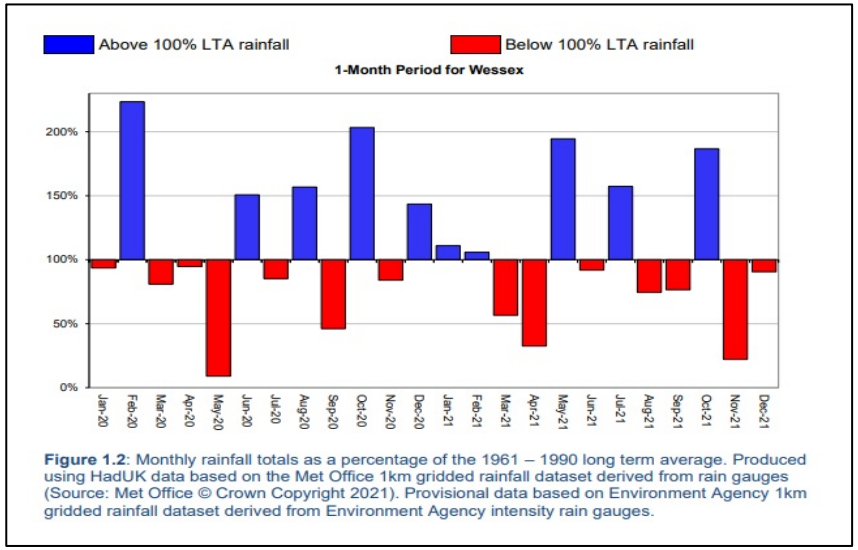
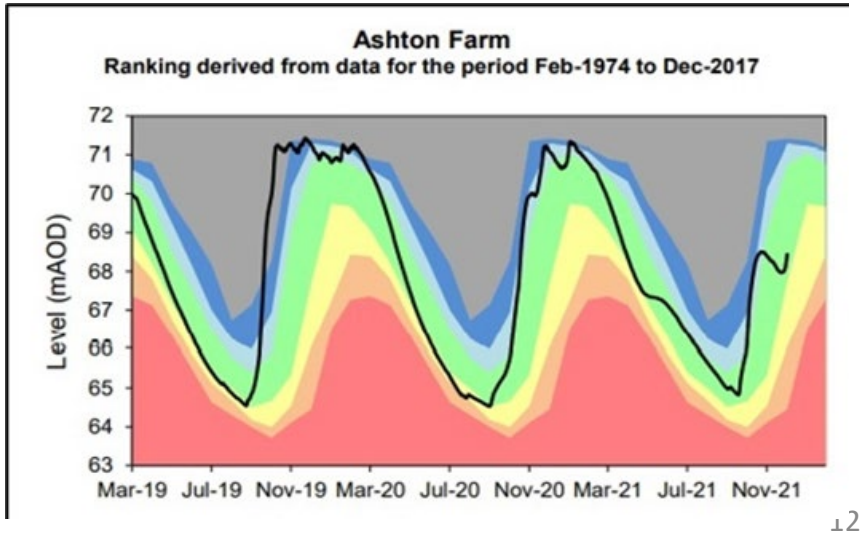


Figure 1.2: Monthly rainfall totals as a percentage of the 1961 – 1990 long term average. Produced using HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office © Crown Copyright 2021). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges.



Environmental Impact

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Overall waterbody

Ecological status

Biological

Fish [3097]
Invertebrates [2274]
Macroalgae [51]
Chironomids [22]
Angiosperms [31]
Littoral invertebrates
Phytoplankton [375]
Macrophytes &
Phytobenthos [4212]

Physio-chemical

Ammonia [657]
BOD [50]
Dissolved Organic N [142]
Dissolved Oxygen [1671]
pH [63]
Phosphate [5564]
Salinity [4]
Temperature [22]
Total Phosphorus [630]
Acid neutralising capacity

Hydro-morphological

Hydrological regime [661]
Morphology [5]

Specific pollutants

2,4-Dichlorophenol
2,4-Dichlorophenoxyacetic acid
Arsenic [2]
Carbendazim
Chlorothalonil
Copper [60]
Cyanide [2]
Diazinon [4]
Dimethoate
Glyphosphate
Iron [5]
Linuron
Manganese [17]
Mecoprop
Pendimethalin
Permethrin
Phenol [1]
Toluene, Triclosan [5]
Un-ionised ammonia
Zinc [193]

83+ parameters

[number of elements where WFD standards not achieved]

Chemical status

Priority substances

1,2-Dichloroethane
Atrazine
Benzene
Chlorfenvinphos
Dichloromethane
Dichlorvos [1]
Diuron
Flouranthene [8]
Isoproturon
Lead and its compounds [47]
Napthalene
Nickel and its compounds [57]
Pentachlorophenol
Simazine
Trichloronbenzenes
Trichloromethane [2]

Priority hazardous substances

Anthracene
Benzo (b) and (k) fluoranthene [4]
Benzo (ghi) perelyene and ideno(123-cd) pyrene [9]
Benzo(a)pyrene [6]
Brominated diphenylether (BDPE) [8]
Cadmium and its compounds [115]
Di(2-ethylhexyl)phthalate [6]
Endosulfan
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclohexane [1]
Mercury and its compounds [21]
Nonylphenol [1]
Pentachlorobenzene
PFOS
Tributyltin compounds [81]
Trifluralin

Other pollutants

Aldrin,Dieldrin,
Endrin, Isodrin [1]
DDT total
Carbon tetrachloride
Para-para DDT [3]
Tetrachloroethylene
Trichloroethylene [2]

Across WW Area

8 out of 444 waterbodies in Wessex Water area identified by EA as being impacted by storm overflows, amongst other factors. Seven are surface water induced, with one (The Bourne) being impacted by groundwater infiltration. None are in Dorset

Waterbody	No. Storm Overflows	RNAG	EA Certainty
R Isle to Cad Brook	6	Phosphorus	Confirmed
Sherford Stream	2	Phosphorus	Confirmed
Stoke Brook – source to Bradley Brook	3	Ammonia	Confirmed
R Tone d/s Taunton	7	Phosphorus	Confirmed
Trym – source to R Avon	25	Invertebrates	Probable
Wellow Brook – source to Snails Brook*	8	Phosphorus	Probable
Yeo – source to Congresbury Yeo	4	Phosphorus	Confirmed
The Bourne - source to conf R Avon (Brist)	2	Dissolved oxygen	Probable

RNAGS from EA Catchment Data Explorer: England | Catchment Data Explorer

South Winterbourne– River Quality

Wessex Water
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Department for Environment Food & Rural Affairs | Data Services Platfor

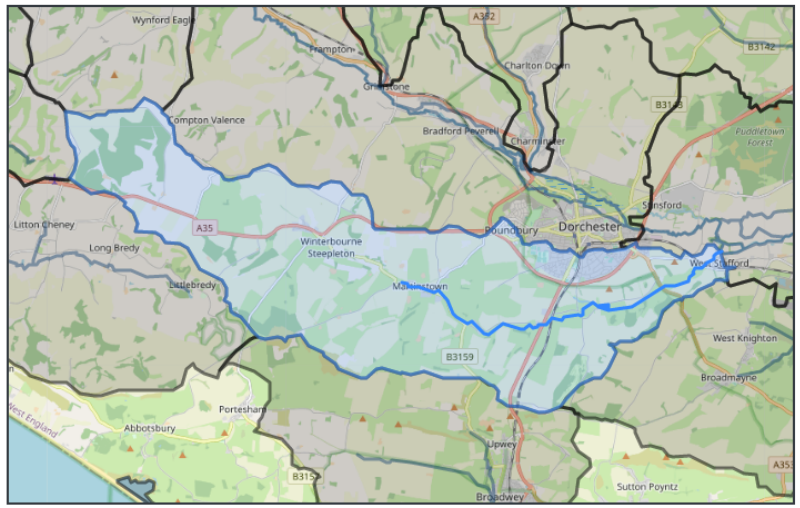
Environment Agency | Catchment Data Explorer | Home Search Help A

Home / South West / Dorset / Poole Harbour Rivers / South Winterbourne

South Winterbourne Water Body

Moderate ecological status

Viewing latest data (Updated on 01 February 2022). Switch to draft river basin management plan data



Get South Winterbourne data

Download water body (Shapefile)
Download water body (GeoJSON)
Download classifications (CSV)
Download investigations (CSV)
Download challenges (CSV)
Download objectives (CSV)
Download protected areas (CSV)

Related links

Draft plan maps on ArcGIS online
Draft flood risk management plans

Classifications

Time period: Cycle 2

Classification Item	2013	2014	2015	2016	2019
Fish				Moderate	Moderate
Invertebrates		High	High	High	High
Macrophytes and Phytobenthos Combined		Good	Good	Good	Good
Ecological	Moderate	Moderate	Good	Moderate	Moderate
Biological quality elements		Good	Good	Moderate	Moderate
Fish				Moderate	Moderate
Invertebrates		High	High	High	High
Macrophytes and Phytobenthos Combined		Good	Good	Good	Good
Physico-chemical quality elements			High	High	High
Ammonia (Phys-Chem)				High	High
Dissolved oxygen				High	High
Phosphate				High	High
Temperature				High	High
pH			High	High	High
Hydromorphological Supporting Elements	Supports good	Supports good	Supports good	Supports good	Supports good
Hydrological Regime	Does not support good	Does not support good	Does not support good	Does not support good	Supports good
Morphology	Supports good	Supports good	Supports good	Supports good	Supports good
Specific pollutants	Moderate	Moderate		High	High

Waterbody fails for chemicals: Polybrominated diphenyl ethers (PBDE) & Mercury
Reasons for not achieving good status: chemicals, hydrological regime and fish. No sector identified as responsible.

Improvements

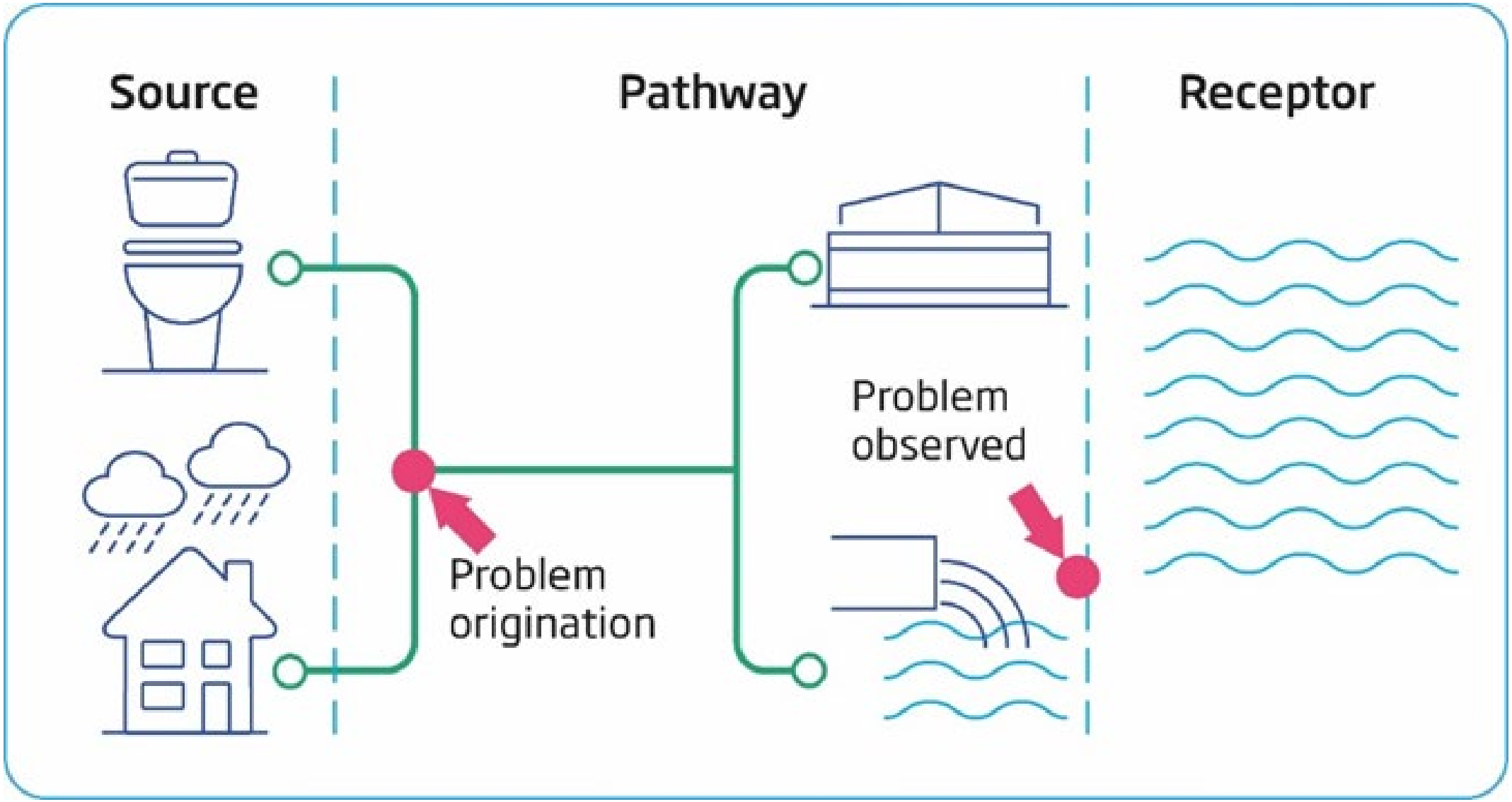
- Drainage & Wastewater Management Plan for Dorchester: HERE
- Sewerage improvements, relating to groundwater infiltration: HERE

Water Recycling Centre (WRC)		Details by Sewage Pumping Station (SPS)											Completed						Programmed			
Site Name	DWF Exc.	SPS Name	IRP	OMAP	FSO Driver	Historical Tankering	Historical Overpumping	Total CCTV Meterage	2015+ CCTV Meterage	Total Rehab Meterage	2015+ Rehab Meterage	2015 - 16	2016 - 17	2017 - 18	2018 - 19	2019 - 20	2020 - 21	2021 - 22	2022 - 23	2023 - 24	2024 - 25
DORCHESTER		Egdon Glen P.S.						0	0	0	0								I		I
DORCHESTER		Frampton (Muckleford) SPS	Y	Y		Y		4,952	2,190	37	37	S		I		IS		I	S	I	
DORCHESTER		Frampton, Southover						1,079	1,079	0	0			I		IS				I	
DORCHESTER		Higher Woodsford, Park Drive						963	0	0	0								I		I
DORCHESTER		Hybris Business Park						0	0	0	0								I		I
DORCHESTER		Martinstown, Winterbourne Abbas		Y		Y		10,804	8,308	343	343	I		I		IS		I	S	I	
DORCHESTER		Moreton, Queens Drive						0	0	0	0								I		I
DORCHESTER		Muckleford / Stratton					Y	1,102	828	0	0	S		I		IS				I	
DORCHESTER		Owermoigne SPS	Y	Y		Y		10,941	10,646	275	275		S	I	S	I	I				I
DORCHESTER		Stratton (Mill Lane) SPS				Y		881	347	0	0			I		IS				I	
DORCHESTER		Warmwell, Crossways of B3390						0	0	0	0								I		I

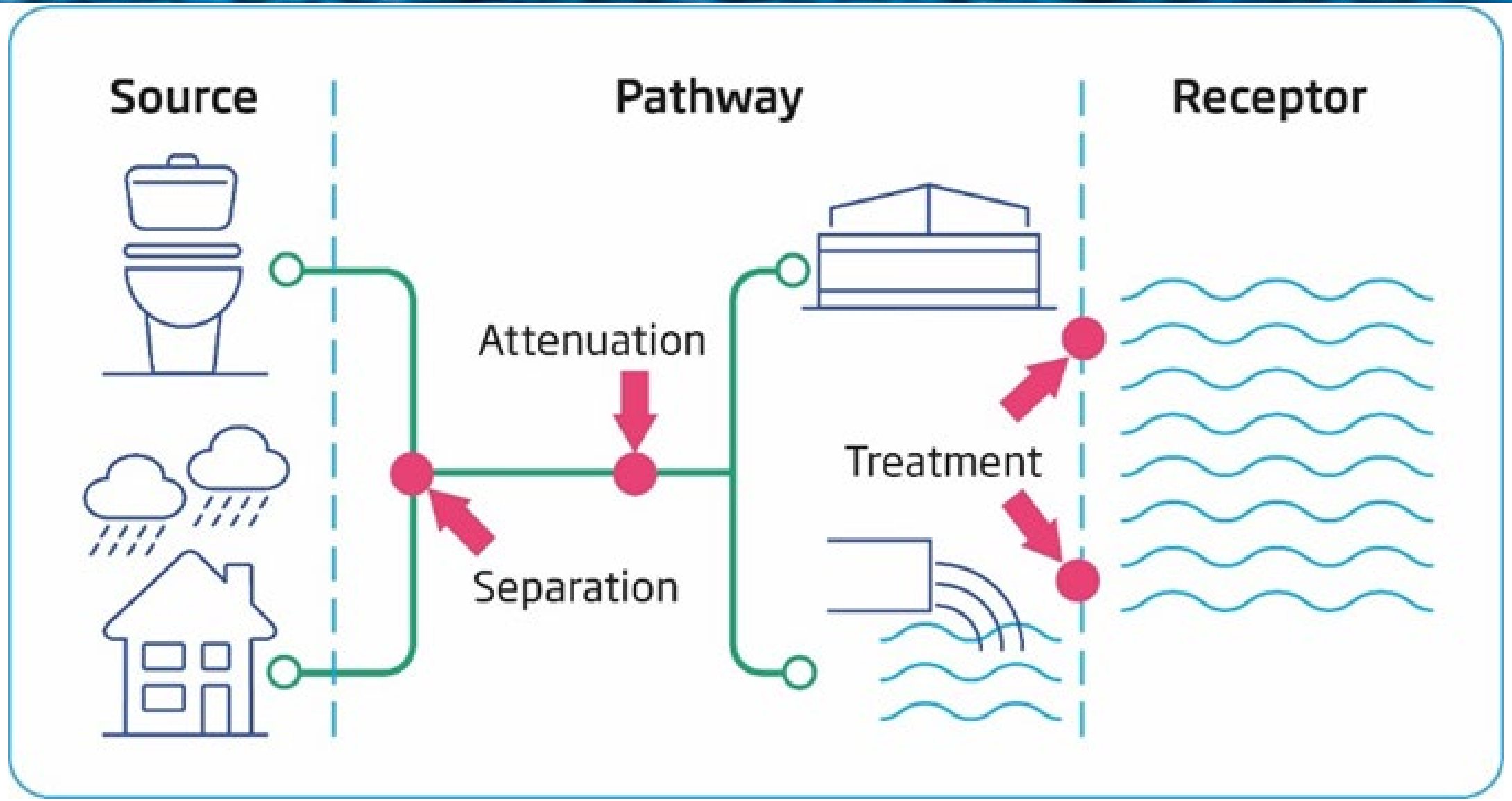
I = investigation
S = sewer sealing

OMAP = Operational Mitigation Action Plan, procedure agreed with the EA to reduce flooding to properties in exceptional circumstances, whilst monitoring the environmental impact

The problem


Source
Pathway
Receptor
Problem origination
Problem observed

Solutions


Source
Pathway
Receptor
Attenuation
Separation
Treatment

Addressing storm overflows

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Eliminating storm overflows by attenuation currently estimated at **>£300 billion (England & Wales)**

Storage is easiest but not optimal

We currently spend c.£3million/month to reduce storm overflows

Enabling the right solutions…

…by having **legislation** that supports the following 2 principles

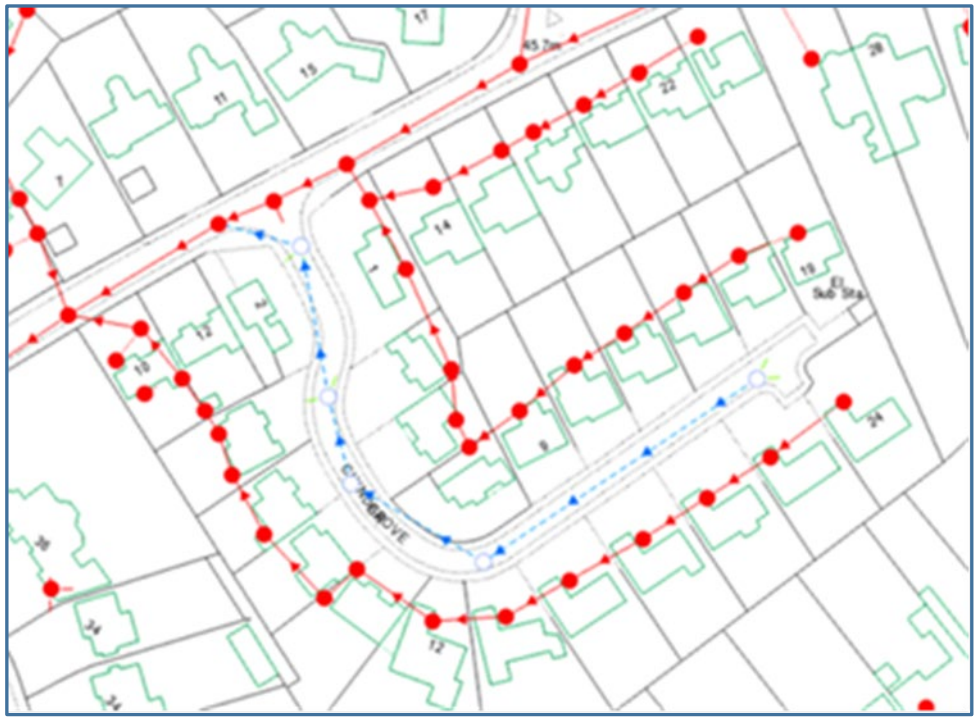
1. Surface water should be kept separate from foul water
2. Surface water should be returned to the environment as close as possible to where it lands

In other words legislation needs to….

A. Reduce volume of surface water continually being added
B. Make it easier to remove and dispose of surface water
C. Make it easier to tackle groundwater – keep it out
D. Improve probability of sewer capacity not being compromised

Currently it doesn't

A. Reducing the amount being added



- Address the ‘right to connect’
- Improve regulation of impermeable urban creep
- Current advice to developers is not to connect surface water to foul or combined systems

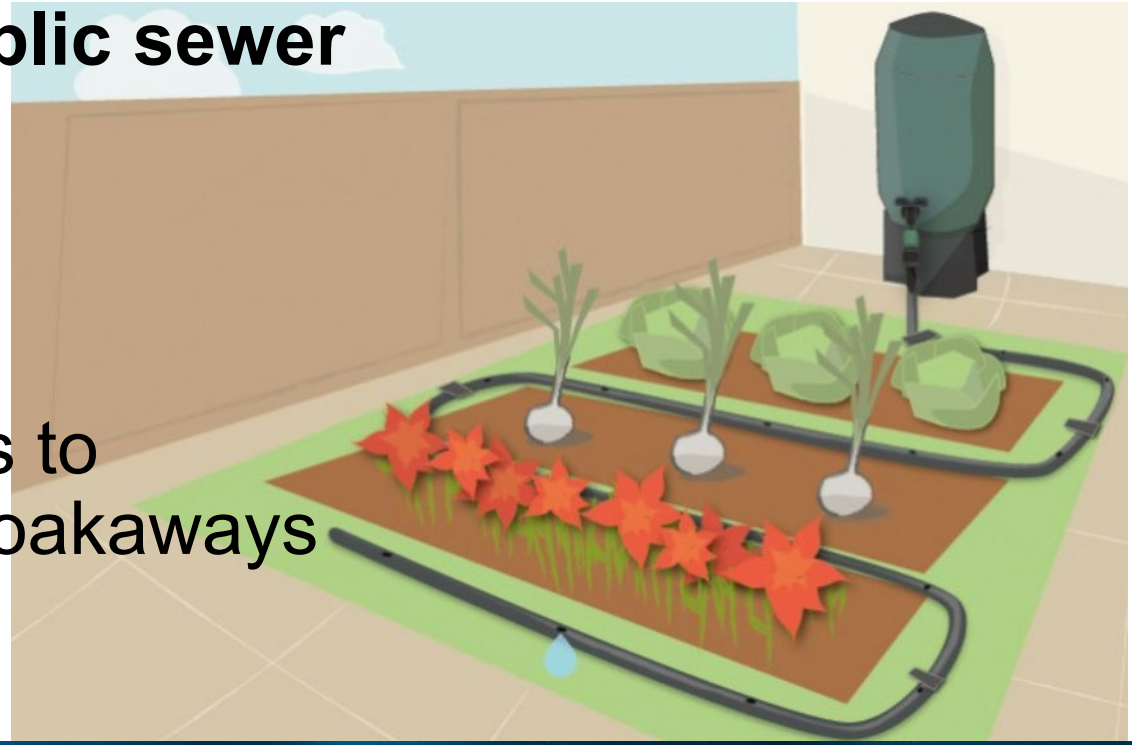
B. Make it easier to remove and discharge

There is no statutory right to discharge surface water (or treated sewage effluent) to a watercourse

B. Make it easier to remove and discharge

Enable/encourage surface water separation and local disposal where conditions allow

Whilst a sewerage undertaker can disconnect surface water (e.g. rainwater downpipes), it has to provide **a new public sewer**

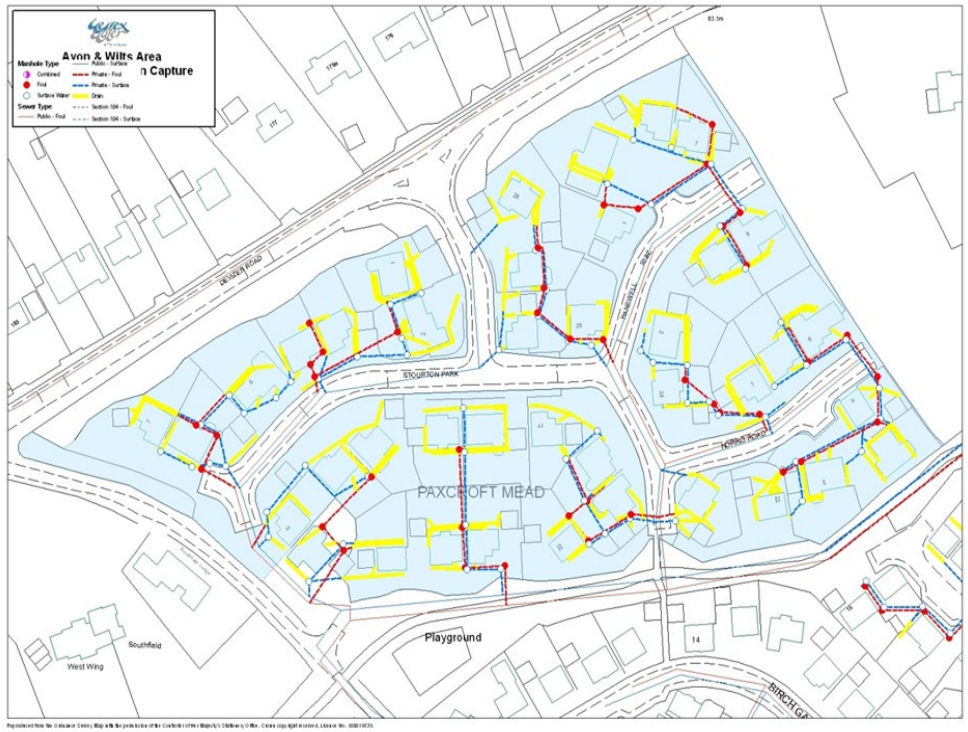


The sewerage undertaker has no rights to construct local (and privately owned) soakaways or garden infiltration systems

C. Tackling groundwater infiltration

Improve the prevention of groundwater infiltration to drains and sewers

- Provide powers to rectify private pipes



Opportunities to introduce water quality parameters for groundwater induced discharges

D. Improve sewer capacity

Nr.1 cause of sewage flooding and pollutions (and therefore presumably premature overflow operation?) : **sewer misuse**

- Introduce mandatory labelling of items that might be flushed

either 

or 

Questions?

Ruth.barden@wessexwater.co.uk

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Further info

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Background info	
Storm overflow page	Contains briefing note on why they exist, what impact they have and what can be done about them
Wild Swimming page	Video explains the consideration and risks associated with wild swimming
Warleigh Weir page	Explains the ongoing investigation at Warleigh Weir with latest water quality data
Combined sewers explained	Environment Agency explain why storm overflows exist. YouTube video here
Discharge data	
Historical data on Drainage and Wastewater Management Plan portal (Storm Overflows/Performance)	Contains Event and Duration data for all monitored overflows from 2016-2020.
Live data from Coast and RiversWatch	Near real-time alerts where water quality may be affected by storm overflows
Site specific discharge data	Available on request from Wessex Water
National Event and Duration Monitoring Data	Data for England for 2020
Surfers Against Sewage Safer Seas and Rivers App	Repeats information provided by Coastwatch for an Android and iOS app
Rainfall data	
Site and time specific	Available on request from Wessex Water
Impact data	
Warleigh Weir water quality info page	E.Coli and I. Enteroccocci data from bathing water investigation
Drainage and Wastewater Management Plan portal	Performance spreadsheet contains impact data: where we have carried out invertebrate surveys and where the SO is associated with a WFD Reason for Not Achieving Good status
Bathing Water Profiles	Historical and most recent bathing water samples for Faecal Indicator Organisms
Environmental impact data from Catchment Data Explorer	Historical water quality data for Water Framework Directive compliance
Investment planning approach	
Storm Overflow Assessment Framework	Process for assessing the costs and benefits associated with dealing with frequently spilling overflows
Investment Plans	
Drainage and Wastewater Management Plan	Performance spreadsheet (under Storm Overflows/Performance/*) has investment plans associated with storm overflows