



**South West  
Water**

# **Combe Martin Bathing Water Quality Investment**

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**15<sup>th</sup> January 2020**

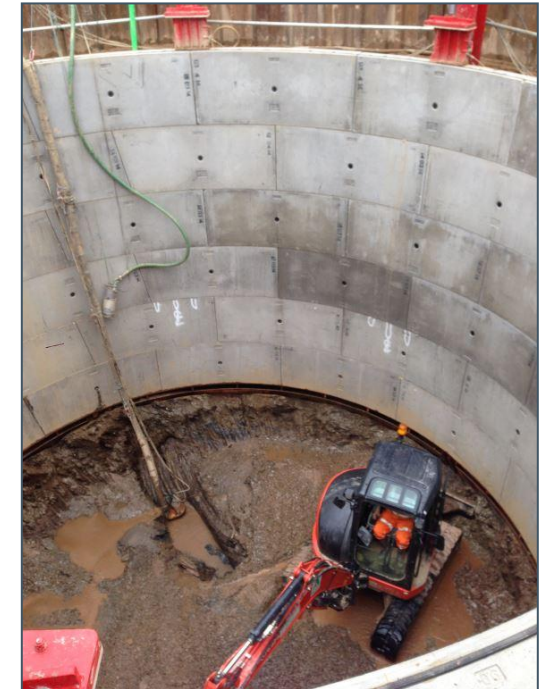
# Overview

- Historic Investment
- Existing Sewerage System
- Environmental Permitting
- Bathing water compliance and CSO performance
- Out of season CSO performance
- Improving bathing water quality
- Summary



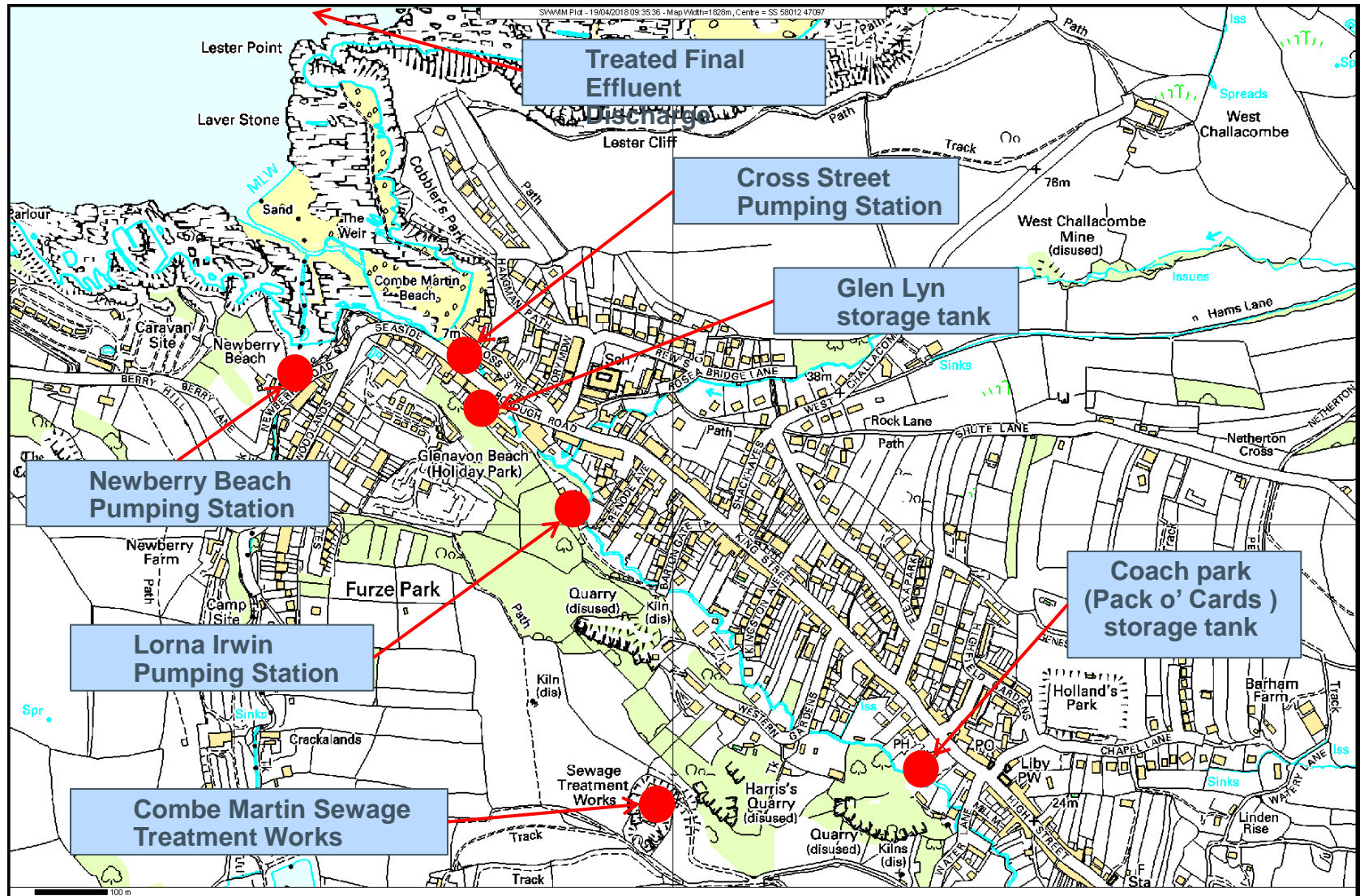
# Historic investment

- 1995 Original scheme completed
- 1996 Sewage treatment works outfall extended
- 2001 UV disinfection added to sewage treatment works
- 2013 sewer relining work to reduce infiltration
- 2014/15 Combined storm water overflows improved (bathing season)

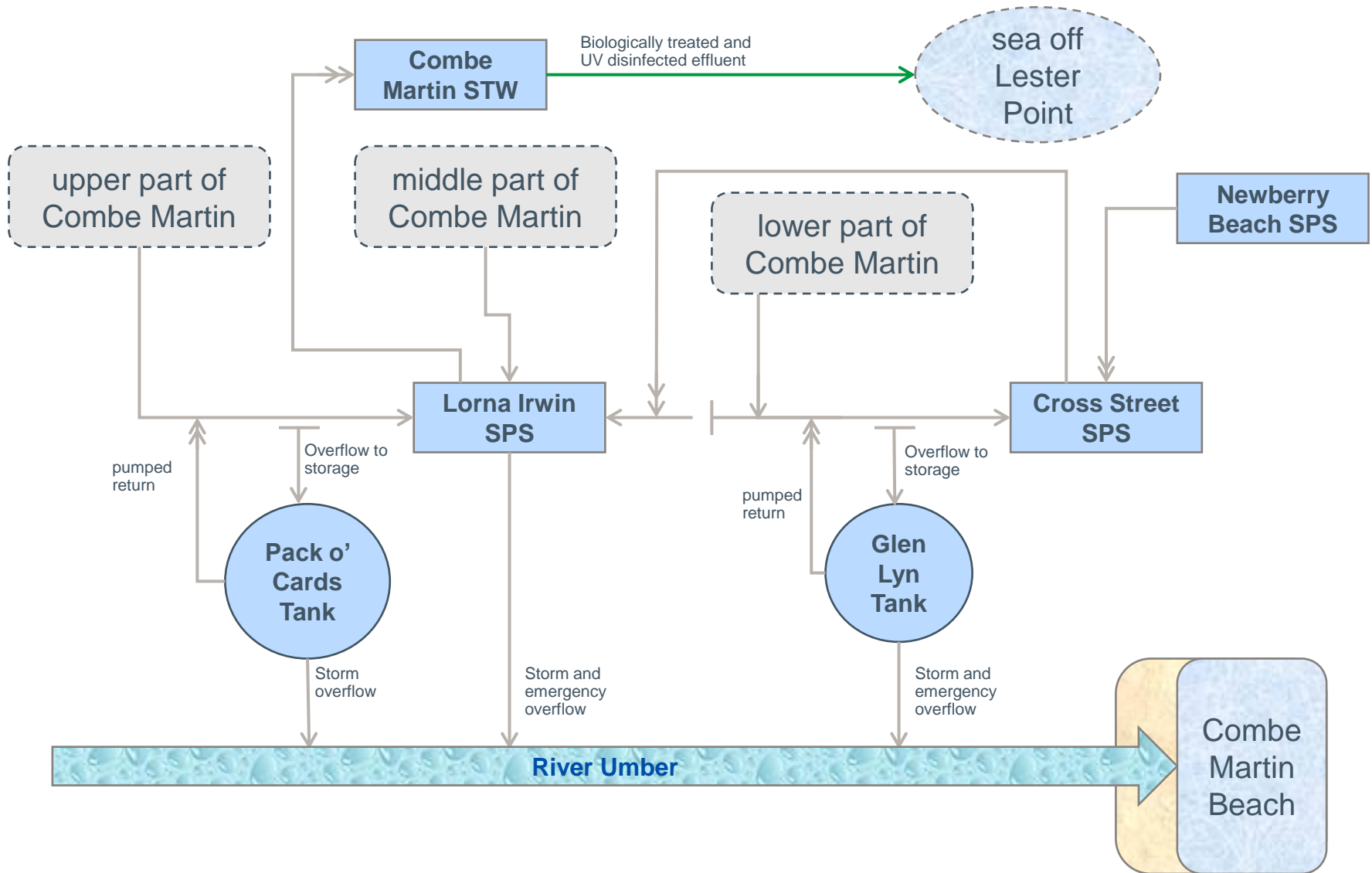




# Existing sewerage system



# Existing sewerage system



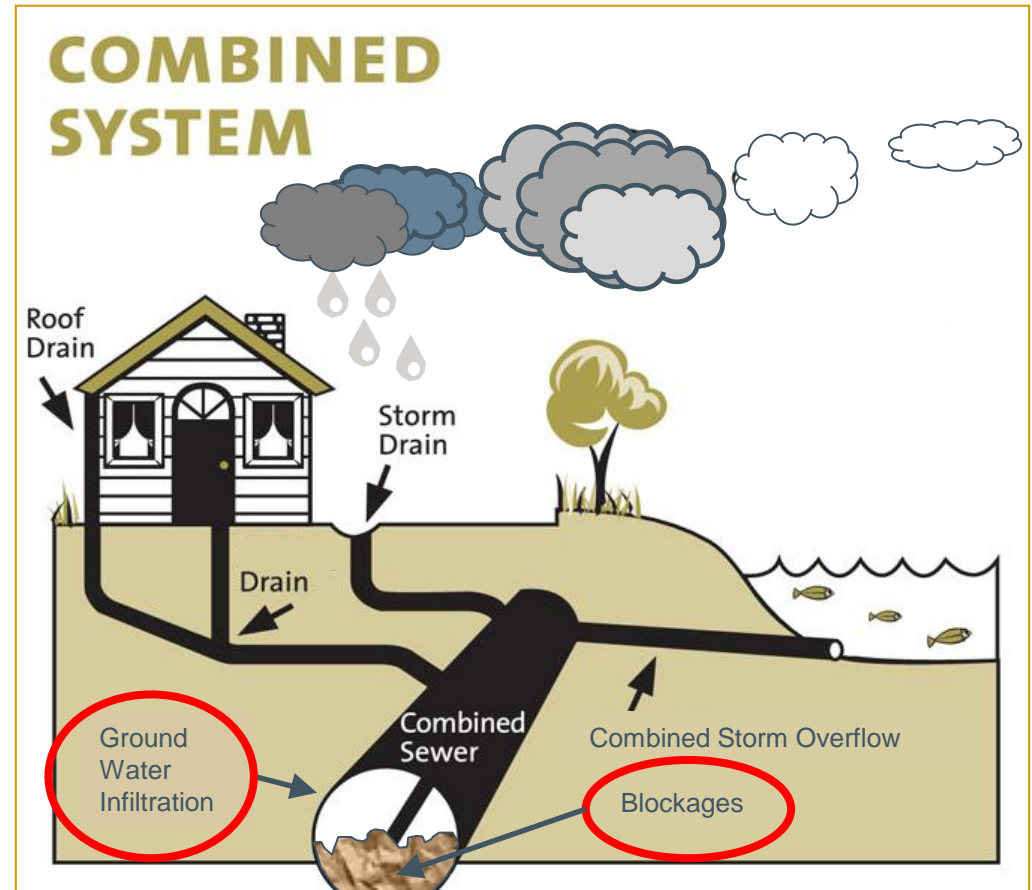
# Existing sewerage system

How much foul flow (sewage) should there be?

c. 7 litres per second

Lorna Irwin SPS CSO permit

= 47 litres per second



# Environmental permitting

- All SWWs overflows have Environment Agency discharge permits

## Permits detail:

- storage volumes
- flow rates
- screening
- telemetry
- monitoring and reporting



Site Name	Storage Volume (m <sup>3</sup> )	Pass Forward Flow (l/s)	Screening	Overflow Event and Duration Monitoring
Lorna Irwin SPS	398	47	5mm (1D)	Yes
Cross Street / Glen Lyn SPS	340	27	6mm (2D)	Yes
Pack o' Cards CSO	325	58	6mm (2D)	Yes

# Environmental permitting



Environment Agency permits do not contain the requirement to:

- measure CSO spill volume
- measure pass forward flow
- limit the number of CSO spills to a specific target
- limit the duration of CSO spill events
- immediately report CSO spill events



# Bathing water compliance: The assessment process

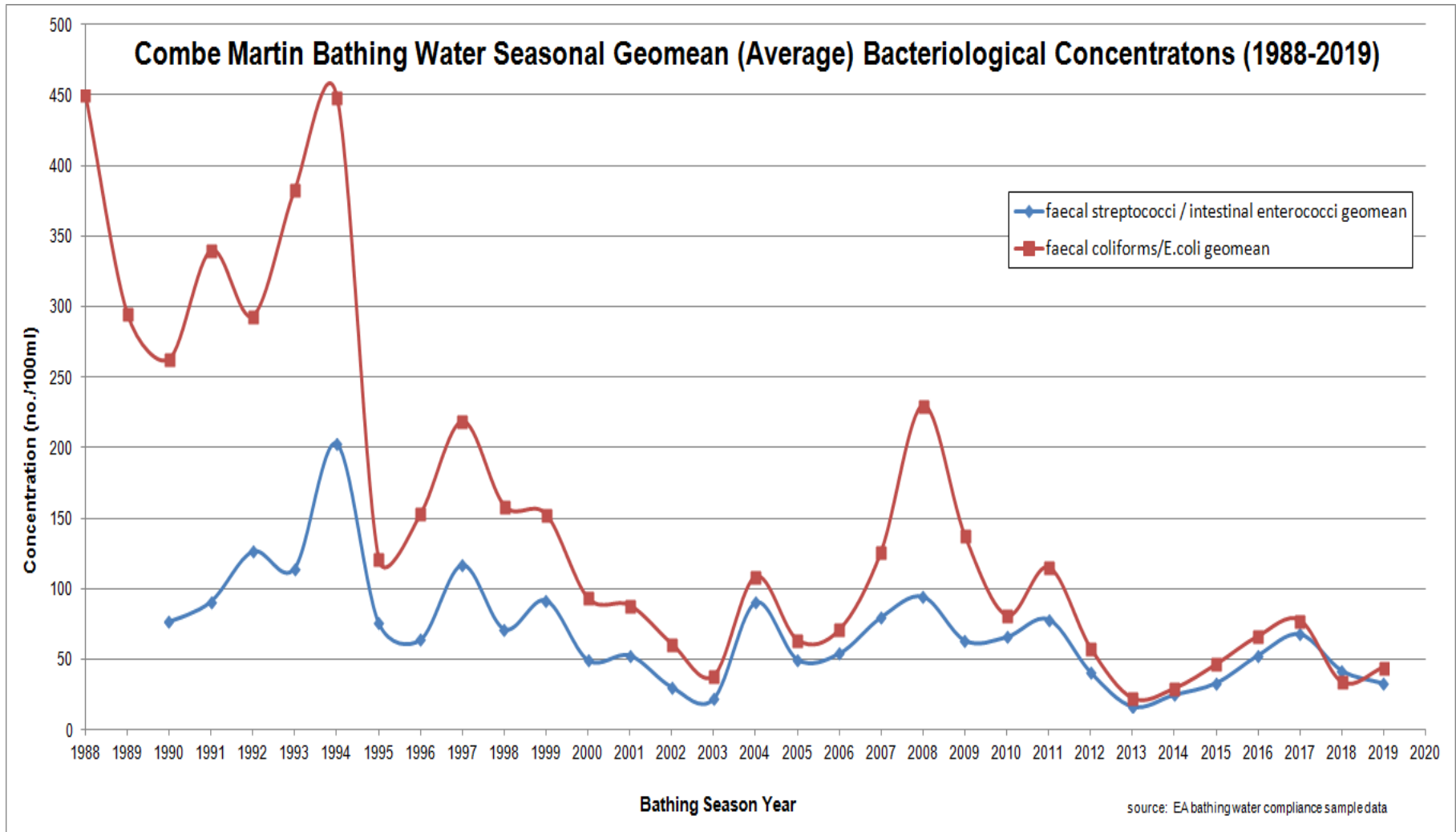
- Bathing season -1<sup>st</sup> May to 30<sup>th</sup> September
- Four seasons data used (e.g. 2019 based on 2016-2019 data)
- EA sample bathing water at a single designated point (line)
- Up to 20 samples per season (approximately 1 per week)
- 2 indicator parameters – intestinal enterococci and *E. coli*
- Combe Martin in EA Pollution Risk Forecast (PRF) system
- EA undertakes compliance assessment (including discounting)
- Defra publishes the annual classification



# Bathing water compliance: Annual vs. rolling 4 seasons

Year ( <sup>1</sup> discounting applied)	Single Season	Rolling 4 seasons (* predicted/actual)
2004	poor	poor*
2005	poor	poor*
2006	poor	poor*
2007	poor	poor*
2008	poor	poor*
2009	poor	poor*
2010	poor	poor*
2011	poor	poor*
2012	poor	poor*
2013	excellent	poor*
2014 <sup>1</sup>	good	poor*
2015 <sup>1</sup>	poor	good
2016 <sup>1</sup>	poor	sufficient
2017 <sup>1</sup>	poor	poor*
2018 <sup>1</sup>	poor	poor*
2019 <sup>1</sup>	sufficient	poor*

# Bathing water compliance: Average seasonal bathing water quality



# Bathing water compliance and CSO performance (2016-2019)

	Pack o' Cards CSO	Lorna Irwin SPS	Cross Street (Glen Lyn) SPS	Total No.	Total Duration (hrs)
2016	0	6	0	6	43
2017	1	9	1	11	68
2018	1	8	2	11	46
2019	12	8	7	27	261

EA design standards:

➤ 3 significant spills per bathing season (on average over ten years)

or

➤ 1.8% of the season (66 hours)

# Bathing water compliance and CSO performance (2016-2019)

	Total No.	Total Duration (hours)	% Annual Total No.	% Annual Total Duration
2012 (Pre Scheme)	51	247	27	13
2016	6	43	4	4
2017	11	68	10	4
2018	11	46	6	2
2019	27	261	11	6

- The CSO improvement scheme has delivered in-season benefits:
- 73% reduction in no. of spills (on average)
  - 58% reduction in duration of spills (on average)



# Bathing water compliance and CSO performance (2016-2019)



	2016	2017	2018	2019	Total
No. EA samples	20	20	20	20	80
<b>No. Samples with reduced water quality (&gt;100 IE or <i>Ec</i>/100ml)</b>	<b>8</b>	<b>12</b>	<b>8</b>	<b>9</b>	<b>37</b>
No. Samples covered by EA PRF warning (i.e. rainfall related)	1	6	3	7	17
<b>No. Samples not covered by EA PRF warning (i.e. not rainfall related)</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>2</b>	<b>20</b>
No. Samples with reduced water quality discounted by EA	1	3	3	3	10
No. Samples with reduced water quality potentially affected by storm water overflow (CSO) events	0	2	1	1	4
No. Samples with reduced water quality potentially affected by CSOs and discounted by EA	0	1	1	0	2
<b>No. Samples with reduced water quality <u>not</u> associated with CSO events</b>	<b>8</b>	<b>10</b>	<b>7</b>	<b>8</b>	<b>33</b>

# Bathing water compliance and CSO performance (2016-2019)



For the samples with reduced water quality:

- 33 of 37 (89%) were not associated with CSO events
- 20 of 37 (54%) were not link to rainfall (no PRF warning)
- Only 2 of 70 (<3%) were potentially affected by a CSO event
- Even if these two samples were discounted the bathing water would still have been 'poor' in 2019

So:

- **Non-CSO sources have a significant impact on bathing water quality compliance**
- **What's causing the non-rainfall related samples?**

# Out of season CSO performance (2016-2019)

	<b>Total No. of Spill Events</b>	<b>No. In Season</b>	<b>No. Out of Season</b>	<b>% No. Out of Season</b>
2016	141	6	135	96
2017	112	11	101	90
2018	173	11	162	94
2019	244	27	217	89

	<b>Total Hours of Spill Events</b>	<b>In Season Hours</b>	<b>Out of Season Hours</b>	<b>% Hours Out of Season</b>
2016	2362	43	2319	98
2017	1519	68	1451	96
2018	2801	46	2755	98
2019	4361	261	4100	94

# Out of season CSO performance (2016-2019)

- Typically more than 90% of CSO events are outside of the bathing season
- Given expected volume of foul flow what's driving out of season CSO performance?

**Ground and surface water  
infiltration**

# Improving bathing water quality: Diffuse agricultural pollution



Newport North bathing water  
(Pembrokeshire)

Diffuse agricultural stream risk up to  
1,000,000 Ec/100ml

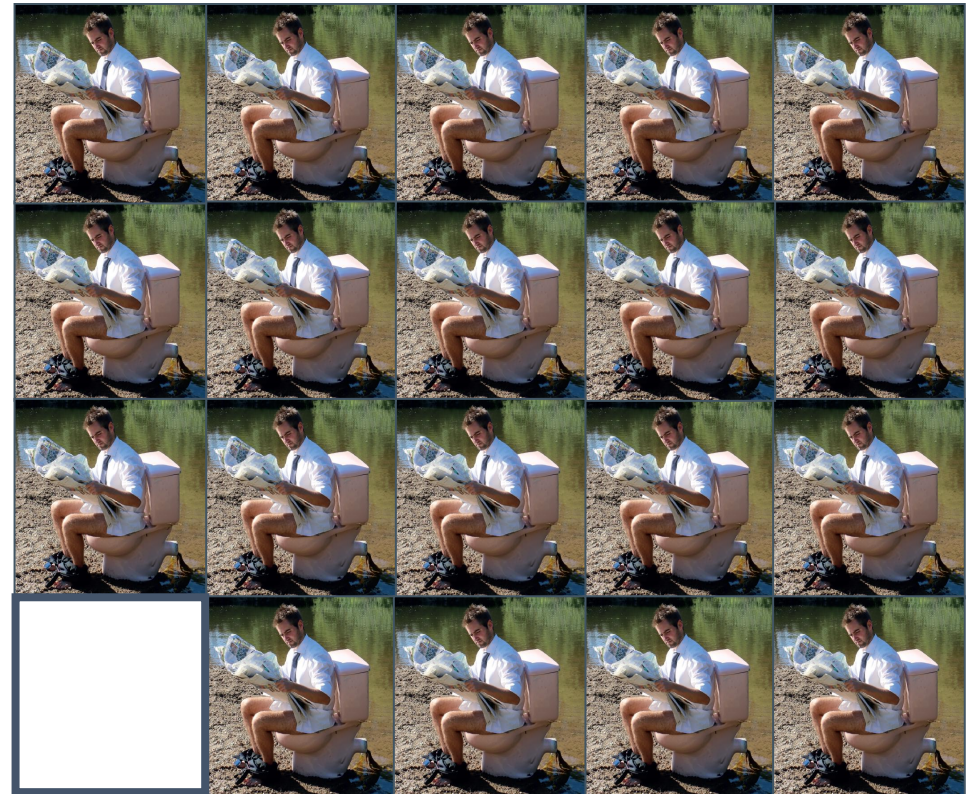


(c) Environment Agency

10 x *E.coli*  
'equivalence'



# Improving bathing water quality: Dog fouling



20 x *E.coli*  
'equivalence'

# Improving bathing water quality; Dog fouling



≈



300 x Intestinal enterococci  
'equivalence'



# Improving bathing water quality: Public campaigns



SWW removes:

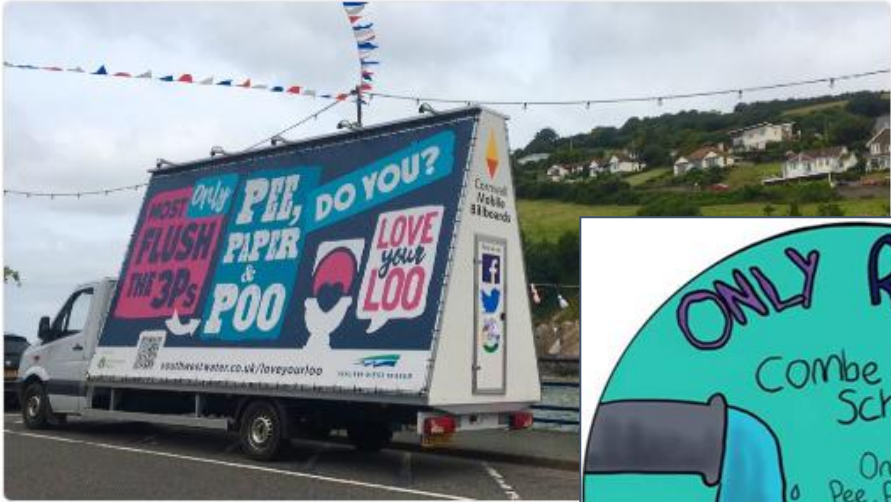
- c.15 cubic meters of liquid fat per week (peak season)
- c. 9 cubic meters of liquid fat per week (low season)
- July 2016 incident
- July 2018 incident

# Improving bathing water quality: Public campaigns



You Retweeted

**Cori Mol Bill** Cornwall Billboards @corn\_billboards · 19h  
At @SouthWestWater we are asking 😊 please #loveyourloo and only flush the 3 p's and help to keep #combemartin ❤️ lovely



1




LOVE your LOO

MOST ONLY FLUSH THE 3Ps

PEE, PAPER & POO DO YOU?

southwestwater.co.uk/loveyourloo



# Improving bathing water quality: Operational activity

- Enhanced planned cleansing of pumping station sumps
- Lorna Irwin & Cross Street SPS both cleaned twice in 2019 season
- 6 no. vacators
- c. £1.9M





# Improving bathing water quality: SWW investment



- Infiltration investigations:
  - CCTV surveys
  - Jan – Feb 2019 (and possibly beyond)
  - c. £10K
- Infiltration reduction/removal :
  - targeting April/May 2019
  - est. £70K (subject to findings)

## R&M

Utility and Civil Engineering Services

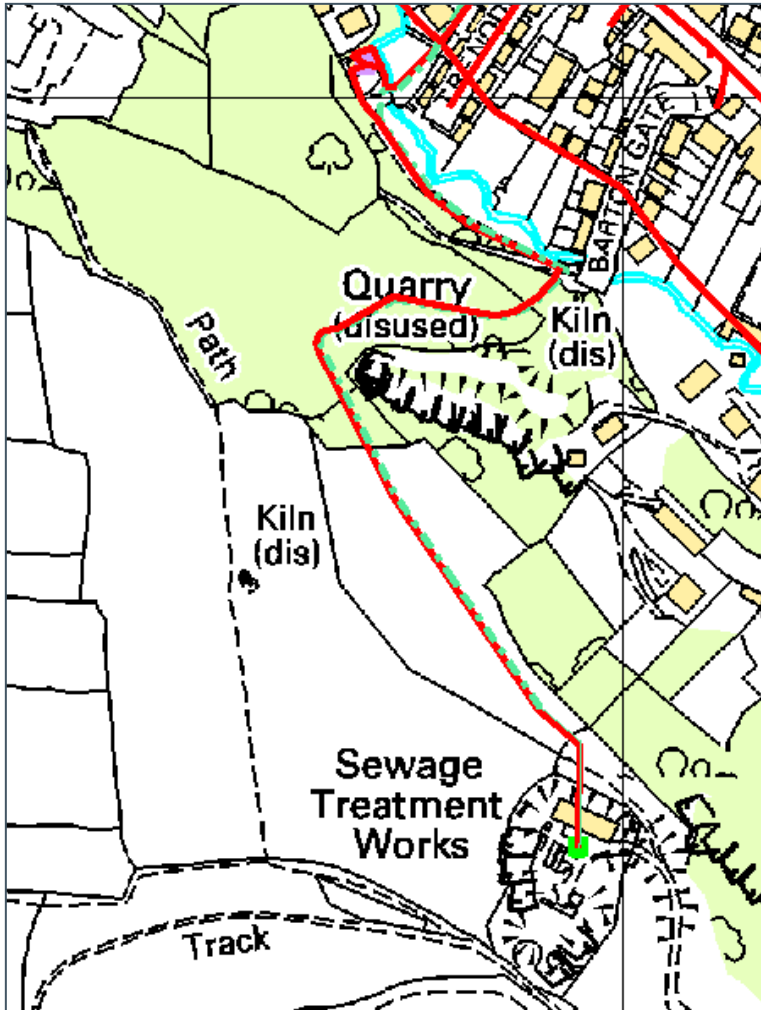
# Improving bathing water quality: SWW Investment



- Optimising storm storage:
  - New sewer inlet control valve at Lorna Irwin SPS
  - Installed Oct 2019
  - c. £30K
  - Storage optimisation March/April 2019
- Preventing river back-flow:
  - Install tide-flex valve on Lorna Irwin SPS CSO outfall
  - target date end Feb 2020
  - c. £7K



# Improving bathing water quality: SWW Investment

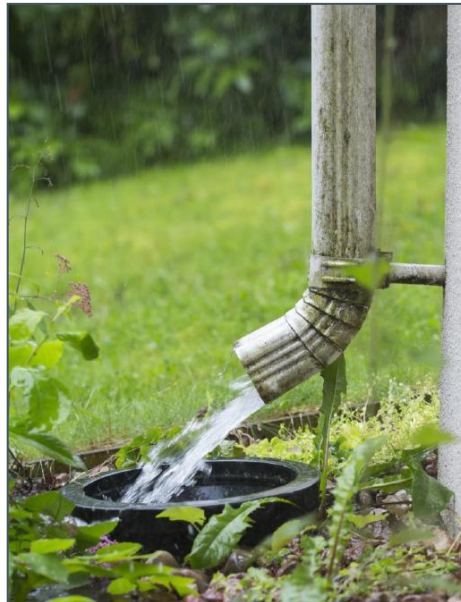


- Lorna Irwin rising main:
  - air valve replacement
  - partial cleanse
  - timing dependant on flows and access permissions
  - c. £20K

# Improving bathing water quality: SWW Investment

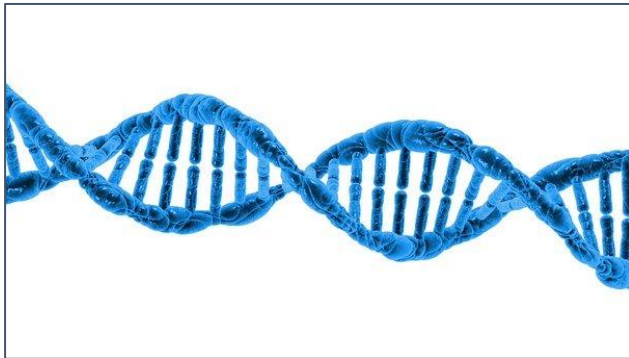
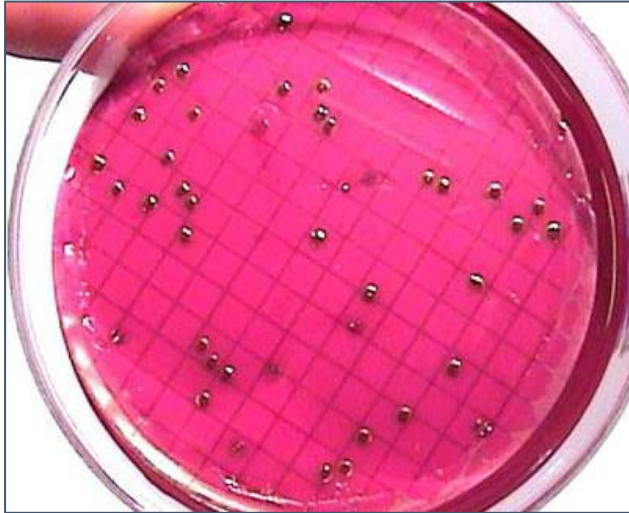


- Improving rainwater management:
  - OTA Water smart rain butt pilot
  - soft launch December 2019
  - target c. 20-30 properties
  - 10% positive response from community
  - c. £40K
  - 3 - 6 months monitoring benefits
  - project extension subject benefits and funding





# Improving bathing water quality: SWW Investment



Supporting EA investigations:

- Microbial Source Tracking
  - c. £7K
  - further targeted water quality sampling proposed for 2020 season
- Misconnections surveys
  - Wet Lane
  - Rosea Bridge Lane



# Summary



- Bathing water quality has improved
- The CSO improvement scheme has reduced spills in the bathing season
- CSOs are not a significant risk to bathing water compliance
- Winter CSO performance is driven by surface and ground water infiltration
- SWW is committed to improving CSO performance through targeted investment

# Summary



SWW fully supports:

- a collaborative approach with all parties
- in order to make progress on all fronts
- to help secure sustainable improvements of Combe Martin's bathing water quality