South West Water

Drainage and Wastewater Management Plan

Tamar exc Wider Plymouth

May 2023

Table of Contents

Status and update information

Version SWW_DWMP_2021/22_0_2023-05-31

This document provides asset, characteristic and performance data for Strategic Planning Areas (Level 2 catchments). Performance data for the time frame up to April 2023 has been utilised to populate these documents.

Production Statement

These documents are produced using an automated process. The process uses a mixture of standard data holdings such as records of assets within the Tamar exc Wider Plymouth catchment and documents that are produced as part of modelling and analysis undertaken as part of the DWMP. The decision has been made to leave in tables and figures even if no performance or asset data exists for the catchment to serve as confirmation that no records are held for that particular item.

Data Statement

This document contains asset, characteristic and performance data for Strategic Planning Areas (Level 2 catchments) and has been prepared by South West Water Limited for the purposes of providing area specific detail on assets, risks and proposed interventions for our drainage and wastewater plans. Data records shown in the document for various performance and other metrics may not completely align with Regulatory reported data. This is partly due to the catchment based summation of some data and minor differences in time frames over which DWMP data has been collated compared to the Regulatory reporting time frames.

Contact details

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Overview

Area Details

The Tamar exc Wider Plymouth catchment sits within the administrative districts of City of Plymouth (b), Cornwall, South Hams District, Torridge District and West Devon District (b). It covers the main settlements of Tavistock, Launceston, Torpoint, Gunnislake, Millbrook, Callington, Holsworthy, Horrabridge, St Ann's Chapel, Pensilva, Calstock, Yelverton, Mary Tavy, Bere Alston, Heathfield, Harrowbarrow, St Germans, Lifton, Lamerton, Kelly Bray, Halwill Junction, Crapstone, Dousland, North Petherwin, Lydford, Landrake, Withnoe, Clawton, Downgate and Treburley.

The population of the Tamar exc Wider Plymouth catchment in 2020 was 70,530 and is projected to grow to 81,818 by 2050, an increase of 16 %. The catchment is also impacted by the influx of tourists during the summer, with an increase of 6,547 or 9.3 % over the existing resident population.

The Tamar exc Wider Plymouth catchment contains 50 km of watercourses including 27 km of Main River as designated by the Environment Agency (EA). This includes the Abbery Water, Black Brook, Bolesbridge Water, Cholwell Brook, Cock's Lake, Lamberal Water, Lynher River, Milton Brook, Old Mill Leat, Penpont Water, River Carey, River Claw, River Deer, River Inny, River Kensey, River Lew, River Lumburn, River Lyd, River Lynher, River Meavy, River Ottery, River Plym, River Tamar, River Tavy, River Thrushel, River Tiddy, River Walkham, River Wallabrook, River Wolf, Small Brook and Tiddy Brook.

Discharges in the Tamar exc Wider Plymouth catchment may impact on the bathing waters of Portwrinkle Beach and the shellfish waters of Lynher.

Details about local geology and soil structure can be found on the **British Geological Survey** website.

Wastewater Network

The Tamar exc Wider Plymouth catchment area has approximately 557km of mapped sewers and 38 sewage pumping stations (SPS) to convey wastewater away from homes and businesses to 110 Sewage Treatment Works. It has both separate (foul or surface water) and combined (foul and surface water) networks.

During severe rainfall events, where sewers convey foul and storm water, sewer capacity can be exceeded and to prevent flooding of homes and businesses, storm overflows act as built-in pressure relief valves and allow flows above a certain level to be discharged to rivers and seas. Storm overflows are permitted by the EA.

There are 138 overflows of which none are emergency overflows in the Tamar exc Wider Plymouth catchment. There are 138 Event Duration Monitors (EDM's) installed to monitor spill frequency and spill duration.

A summary of the mapped wastewater network lengths is included in Table 1 below:

***Table 1**: Wastewater network lengths by system type*

Sewer Type	Length (km)
Combined	348.7
Foul	118.9
Surface	89.2

Area Overview

Table 2 summarises the number of critical assets within the Tamar exc Wider Plymouth catchment and a count of intersections with shellfisheries and bathing waters. The Level 3 (treatment works) catchments and neighbouring areas are shown in Figure 1.

***Table 2**: Count of key catchment environments/assets*

Shellfisheries	Bathing Waters	SPS	Storm Overflows	Emergency Overflows	Monitored Storm Overflows
1	1	38	138	0	138

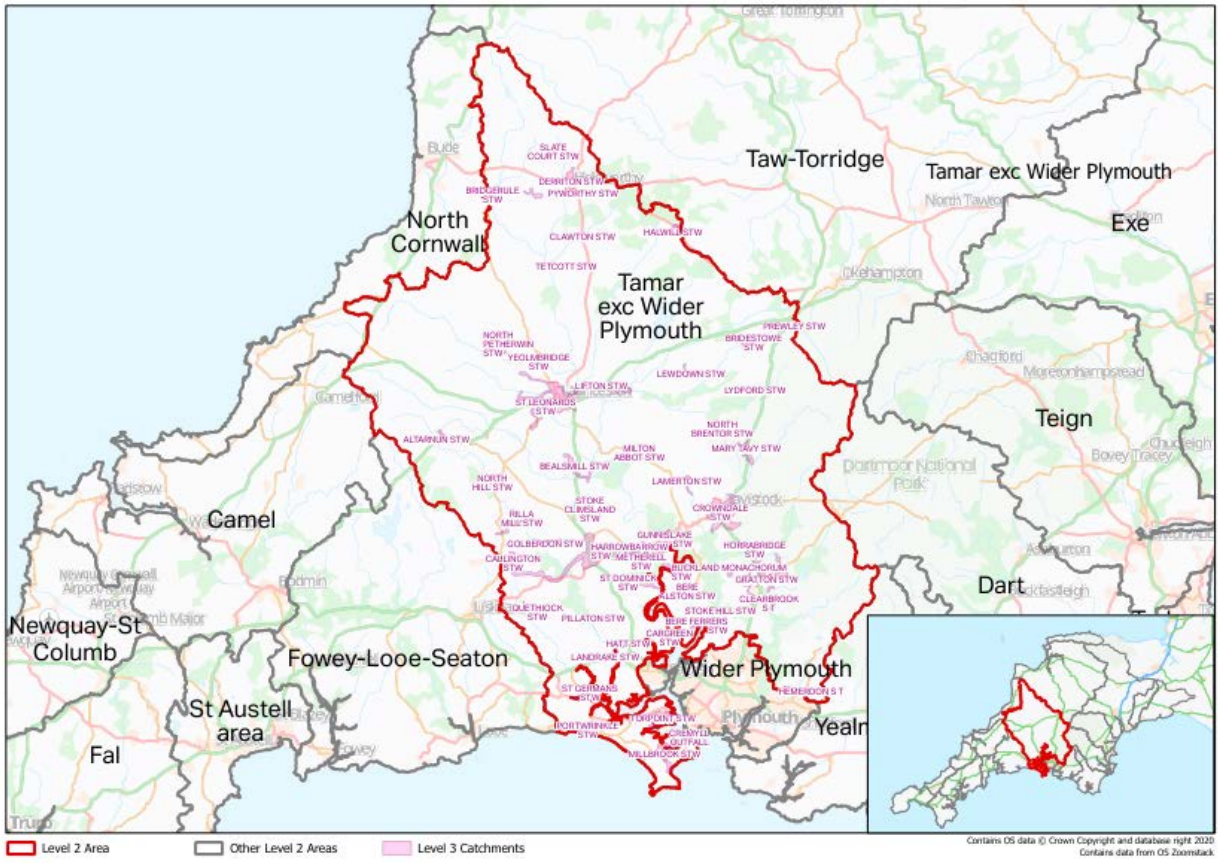

Figure 1: Catchment Overview

Designated Areas

Special Areas of Conservation

Special Areas of Conservation (SACs) are protected areas in the UK designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters)
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Under these regulations, the UK Government and devolved administrations are required to establish a network of important high-quality conservation sites that will make a significant contribution to conserving the habitats and species identified in Annexes I and II, respectively, of European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive.

Special Areas of Scientific Interest

Under the Wildlife and Countryside Act 1981 (amended 1985) government has a duty to notify as a Site of Special Scientific Interest (SSSI) any land which in its opinion is of special interest by reason of any of its flora, fauna, geological or physiographical features.

SSSIs are designated by Natural England. An SSSI is not necessarily owned by a conservation organisation or by the Government - in fact, they can be owned by anybody. The designation is primarily to identify those areas worthy of preservation. A SSSI is given certain protection against damaging operations, and any such operations must be authorised by the designating body. The status also affords a certain amount of planning protection, depending on the reasons for designation.

Marine Conservation Zones

A Marine Conservation Zone (MCZ) is a type of marine nature reserve in UK waters. They were established under the Marine and Coastal Access Act (2009) and are areas designated with the aim to protect nationally important, rare or threatened habitats and species.

If any of these designated areas are within the Tamar exc Wider Plymouth catchment they are shown in Figure 2 below.

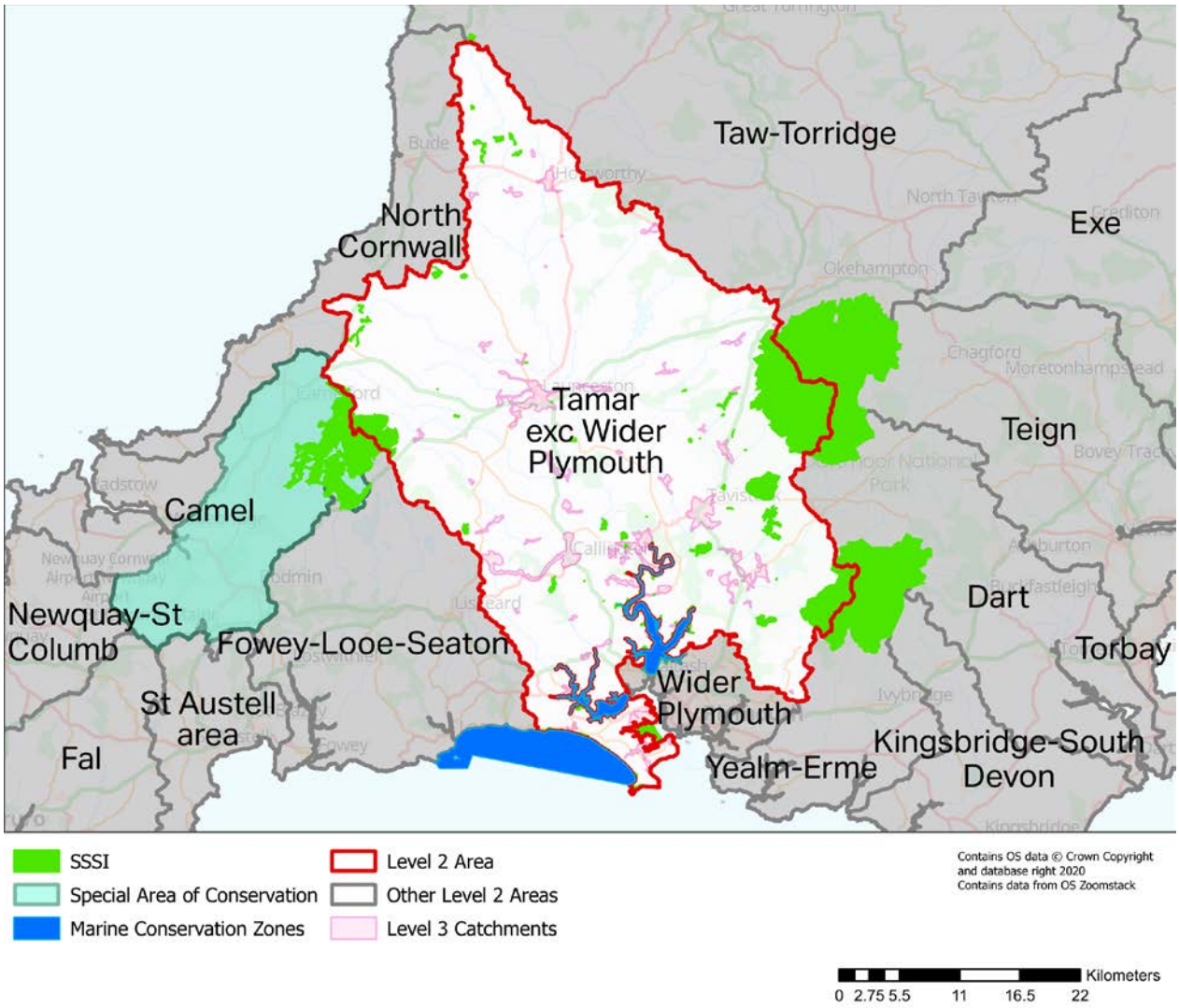

Figure 2: Designated Areas

Flooding Responsibilities

The Flood and Water Management Act, 2010 (FWMA), identified new responsibilities for flood and coastal erosion risk management authorities, of which Water and Sewerage Companies are one, together with a duty on all relevant authorities involved to co-operate and share data.

***Table 3**: FWMA Responsibilities*

Location	Description	Responsibility
Surface runoff/Land drainage	Landowners are responsible for their land drainage and must not cause problems for neighbours	• Lead Local Flood Authorities
		• Landowners
Highways	Highways Surface water on roads, highways and pavements, blocked road drains/gullies and overgrown verges	• Highways Authorities
		• Highways England/Welsh Government
		• Transport for London
Groundwater	Waterlogged ground when water pools on the surface	• Lead Local Flood Authorities
		• Landowners
Rivers and watercourses	Water draining into rivers and streams from nearby land	• Lead Local Flood Authorities
		• Environment Agency /Natural Resources Wales
		• Riparian Owners
		• Landowners
Coastal/Tidal	Rough seas, high tides or storm inundation on lower land	• Local Authorities
		• Environment Agency
		• Natural Resources Wales
Surface water sewers	Most properties drain rainfall to a public sewer, including flows from gutters/roads that end up in public sewers. Highway drainage is provided for rainfall onto the highway but also includes water from fields/other property that finds its way onto the highway	• Water and wastewater companies
		• Local Authorities
		• Housing Associations
		• Private landowners
		• Highway Authorities
Public sewers	Sewer flooding from manholes and covers	• Water and wastewater companies
Private sewers	Flooding from cesspits/septic tanks, toilets or internal drains	• Homeowners

South West Water needs clear long-term plans in order to engage with other Risk Management Authorities (RMAs) to produce joined-up approaches and deliver the best outcomes for customers and the environment.

Current Performance

For all performance measures, the average number of events in a catchment/ Special Protection Area (SPA), is calculated from performance data and normalised to sewer length, (e.g., floodings/km of sewer). This catchment average is then compared to the average number of events across all SPAs and, using the Jenks Natural Breaks Classification System, catchments are defined as average, above average or below average.

Sewer Flooding

Sewer flooding incidents may occur for a number of reasons, including network misuse, asset deterioration, asset failures (collectively referred to as "other causes") or hydraulic incapacity. Tables 4 and 5 provide a summary of internal and external flooding events respectively. Sewer flooding event locations are shown in Figure 3.

The rate (events/km) of internal sewer flooding in the Tamar exc Wider Plymouth catchment is average when compared to other Level 2 catchments.

***Table 4**: Count of Internal Flooding by location and cause*

Year	Flooding Location	Flooding Cause Category	Count/km
2019	Internal	Other	2
2020	Internal	Other	9
2021	Internal	Hydraulic Overload	1
2021	Internal	Other	4
2023	Internal	Other	2

The rate (events/km) of external sewer flooding in the Tamar exc Wider Plymouth catchment is above average when compared to other Level 2 catchments.

***Table 5**: Count of External Flooding by location and cause*

Year	Flooding Location	Flooding Cause Category	Count/km
2019	External	Hydraulic Overload	4
2019	External	Other	147
2020	External	Hydraulic Overload	18
2020	External	Other	97
2021	External	Hydraulic Overload	8
2021	External	Other	89
2022	External	Hydraulic Overload	4
2022	External	Other	78
2023	External	Hydraulic Overload	7
2023	External	Other	124

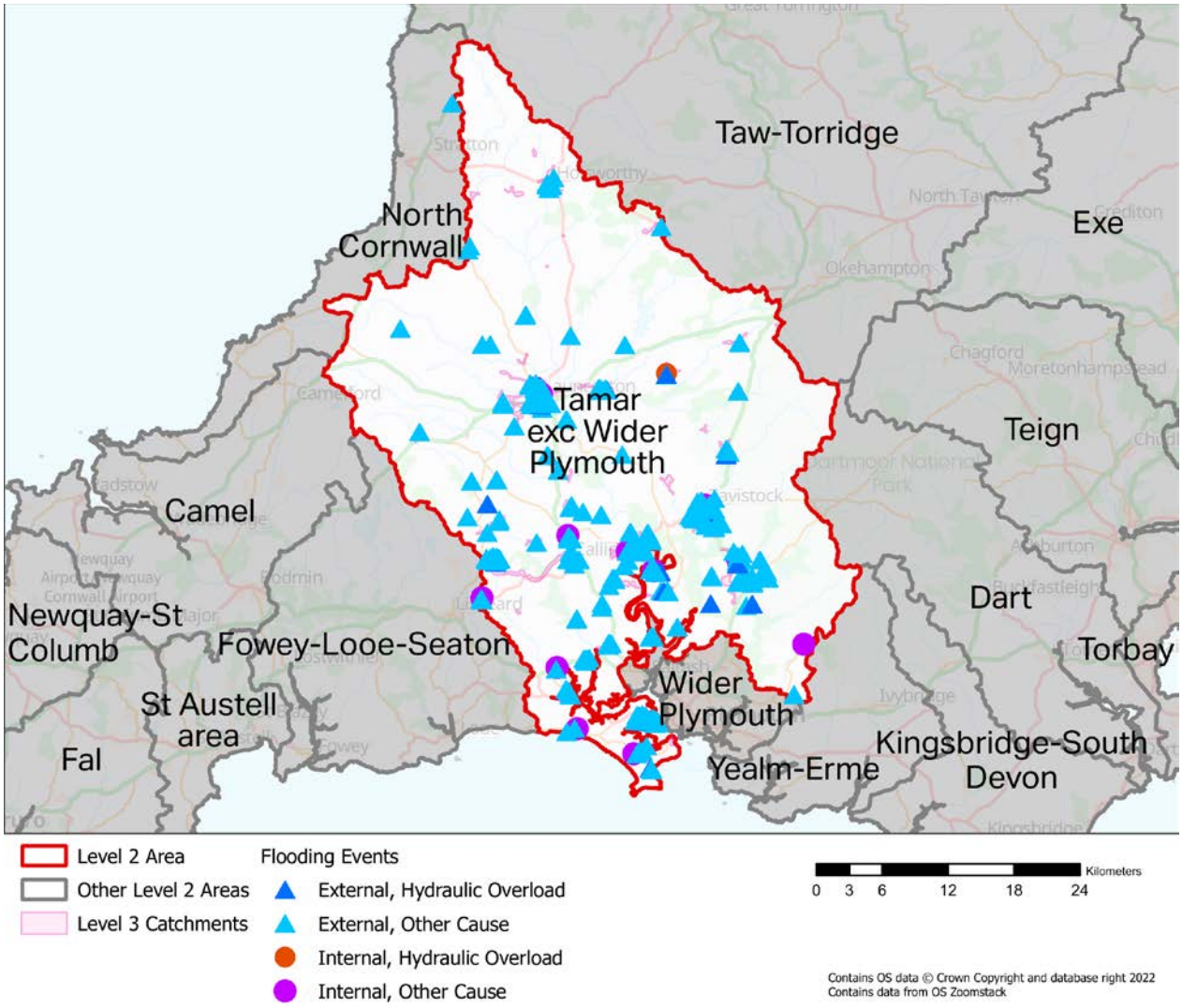

Figure 3: Sewer Flooding by location and cause

An assessment of future flooding risk has been carried out; the modelling approach is summarised further through this document in Table 22 (Future Flood Risk column).

Storm Overflows

Hydraulic overload is when the network cannot convey the runoff from heavy rainfall and can lead to sewer flooding and spills from overflows. It can be exacerbated by groundwater and surface water entering the sewerage system.

Figure 4 shows the approximate locations of all overflows. South West Water has a programme to monitor the current use and performance of storm overflows and 100% of the overflows are currently monitored. Table 6 below provides a summary of any available performance data for storm overflows in the catchment.

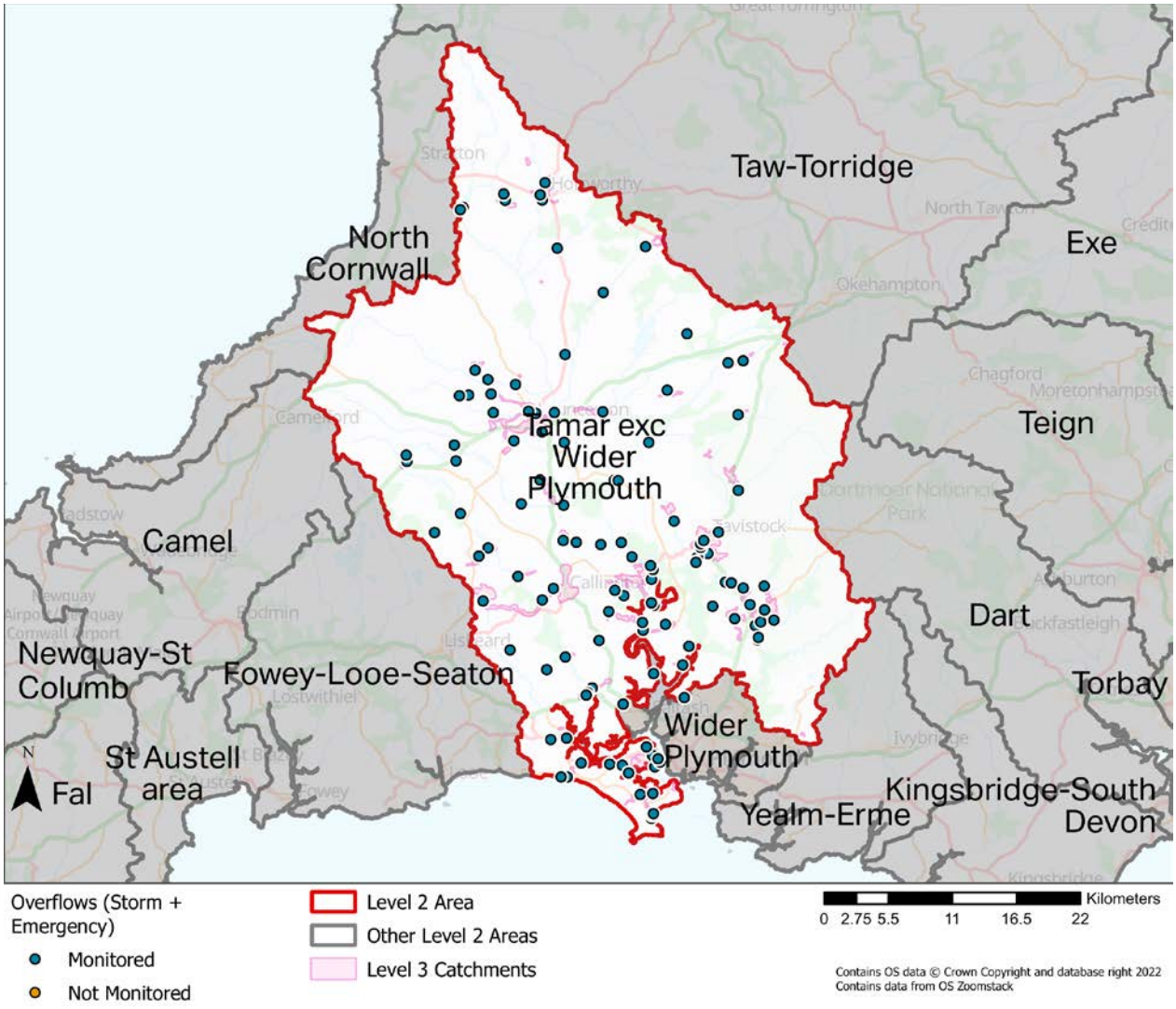

Figure 4: Overflow locations by monitoring status

***Table 6**: Storm Overflow Performance Summary*

Year	2019	2020	2021
No. Monitored	73	78	87
No. Spills	5660	7157	7402

Blockages

Blockages are caused by a variety of items, materials, substances and vegetation entering the network. In the case of vegetation, this may be root ingress from trees/shrubs that enter through damaged areas and joints. In other cases, silt and debris may be washed in through the surface water network and items such as wet wipes, fat or grease may be flushed into the network directly from homes and businesses.

Misuse of the network continues to be a significant issue across the region. Network misuse is defined as flushing anything other than the three Ps (Pee, Poo and toilet Paper) down

toilets. Wet wipes, nappies and sanitary products should not be flushed regardless of their labelling. Fats, oils and grease should not be poured down sinks in the kitchen as these can congeal in and eventually block the sewer (known as a 'Fatberg'). Sewer misuse can lead to blockages which can cause sewer flooding and pollution.

South West Water has a number of community based education programmes including **Love your Loo** and **Think Sink!** that aim to prevent sewer misuse and reduce associated sewer flooding problems.

The rate of blockages in the Tamar exc Wider Plymouth catchment is average when compared to other catchments in South West Water area. Blockages since the 2018/19 reporting year are shown below in Table 7 (split by the blockage cause code) and the locations indicated by the heat map in Figure 5. Please contact us if you require additional information on blockages in the Tamar exc Wider Plymouth catchment.

***Table 7**: Count of blockages by year and cause*

Year	Debris	Fat	Paper/Rag	Roots	Silt	Third Party Damage
2019	48	36	327	35	7	2
2020	44	20	311	24	11	1
2021	39	20	287	28	5	
2022	49	36	229	28	4	
2023	39	22	369	21	7	

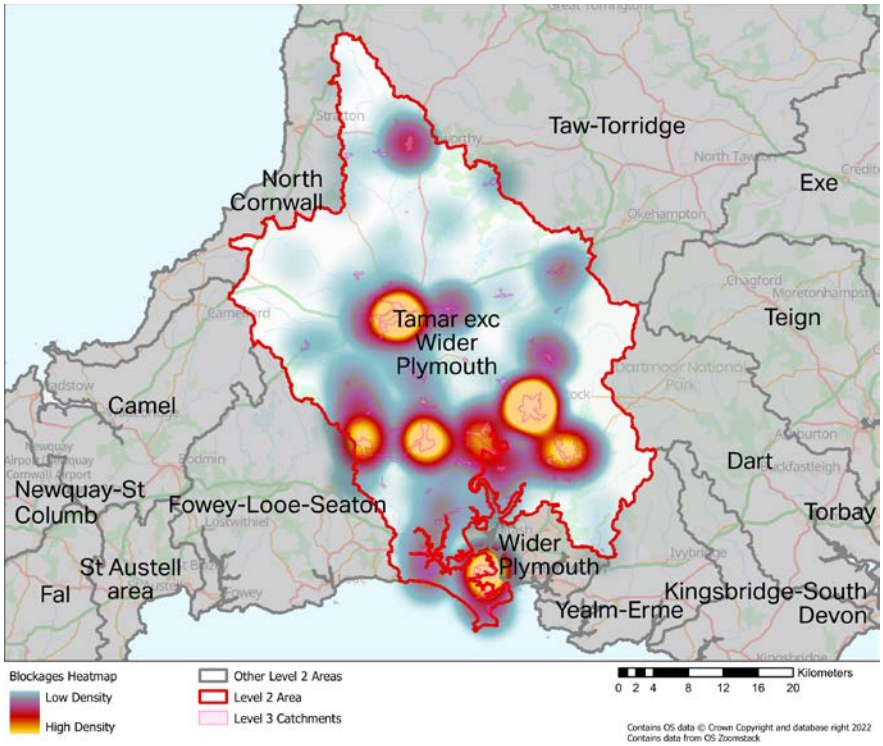

Figure 5: Blockage Event Heatmap

Asset Condition

Gravity Network

A programme of CCTV inspections is undertaken to determine the structural condition of sewers. A risk-based approach is applied, considering frequency of failure and consequence of failure. The sewers in most need of attention due to their condition are prioritised for more frequent inspection or rehabilitation.

The rate of collapses in the Tamar exc Wider Plymouth catchment is average when compared to other catchments in the region. A heatmap of sewer collapses since the 2018/19 reporting year is shown in Figure 6 below. Table 8 provides a count of collapse and partial collapse events since the 2018/19 reporting year.

***Table 8**: Count of sewer collapse by year*

Year	Collapse	Partial Collapse
2019	8	8
2020	12	4
2021	9	2
2022	3	4
2023	2	0

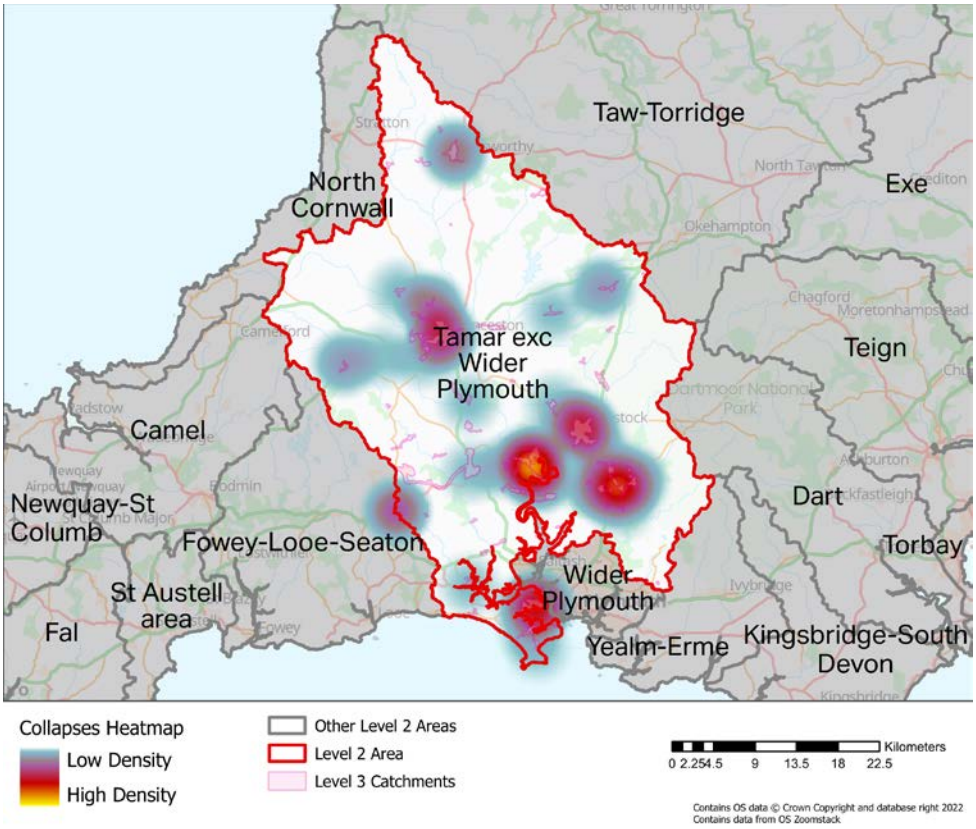

Figure 6: Sewer Collapse Heatmap

Pumped Network (Rising Mains)

South West Water continuously invests in sewage pumping stations (SPS) and rising mains. Rising main failures are repaired promptly by reactive teams, and if repeat failures are experienced or immediate works are identified, they are prioritised for replacement.

Table 9 provides a count of flooding events caused as a result of issues at pumping stations and Table 10 provides a count of rising main bursts since the 2018/19 reporting year. Flooding and burst locations are shown in Figure 7.

***Table 9**: Count of SPS flooding by year/cause*

Year	Feedback Cause	Count
2019	Pump Station Breakdown	2
2020	Pump Station Breakdown	1
2021	Hydraulic Overload Pumping Station	1
2022	Pump Station Breakdown	1

***Table 10**: Count of Rising Main bursts by year/cause*

Year	Feedback Cause	Count
2019	Collapse/Burst	4
2020	Collapse/Burst	6
2021	Collapse/Burst	12
2022	Collapse/Burst	4
2023	Collapse/Burst	3

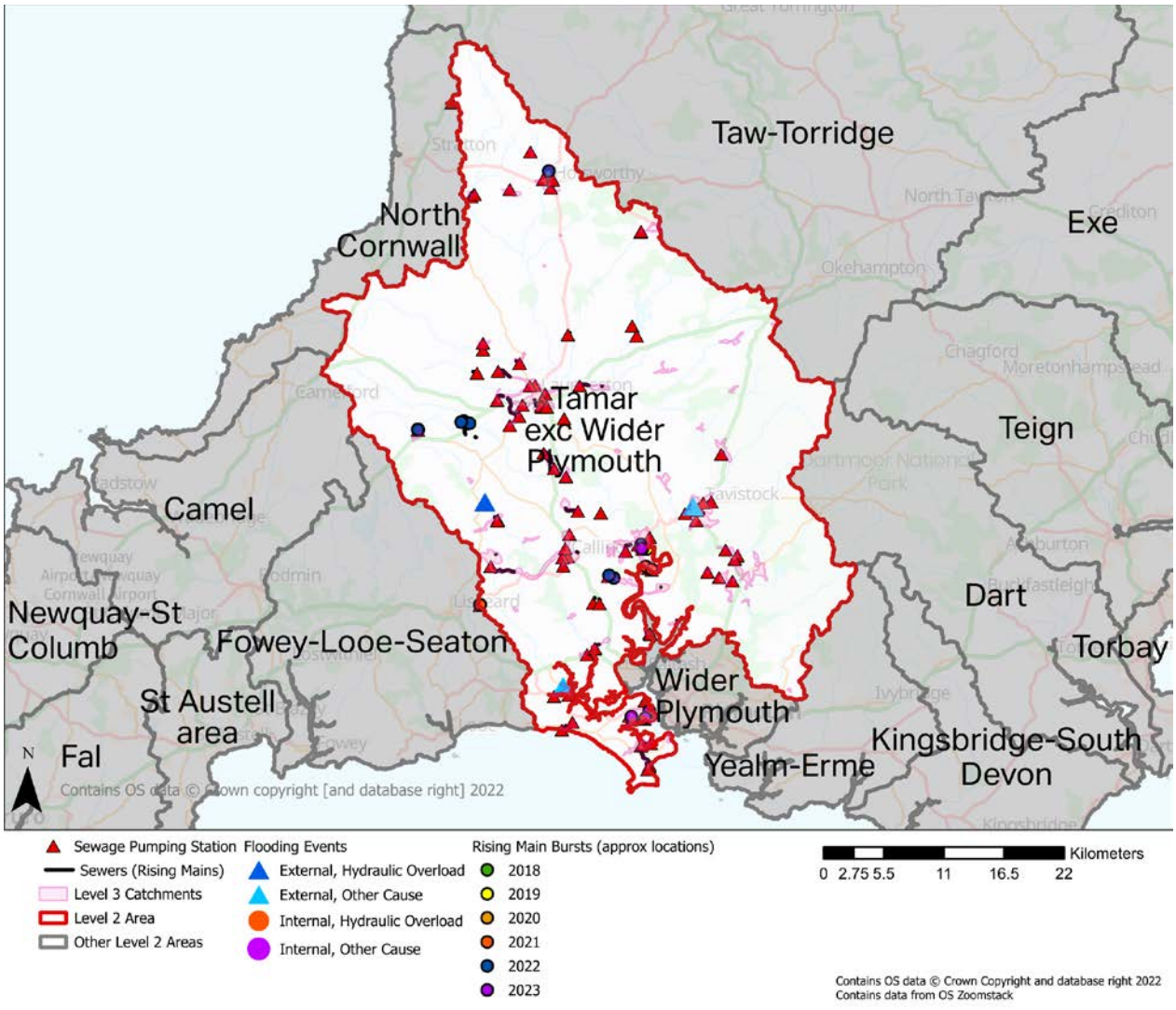

Figure 7: SPS/Rising Main flooding and burst events

Environmental Performance

Surface Water Flooding

South West Water is only responsible for sewer flooding. Areas prone to surface water flooding (due to rainfall and pooling at low points in the landscape) can be seen on the EA website. The responsibilities for other types of drainage and flooding are summarised in Table 3 earlier in this document.

Pollution

South West Water is continuing to strive to eliminate harmful pollution to the environment. This includes there being no Category 1 and 2 (the most harmful) pollution incidents. South West Water's vision for Environmental performance can be found on the website here.

There have been 36 Category 1 or 2 pollution incidents in the Tamar exc Wider Plymouth catchment from 2018-2022.

Table 11 provides a summary of pollution events by year and the category of environmental impact. The map in Figure 8 shows the location of pollution events. Clusters of pollution events are identified for further investigations and activities to reduce and/or remove the future risk of pollution events occurring.

***Table 11**: Count of pollution events by year and impact level*

Year	Water Env Category Level	Count
2019	3	12
2020	3	11
2021	2	2
2021	3	14
2022	3	7

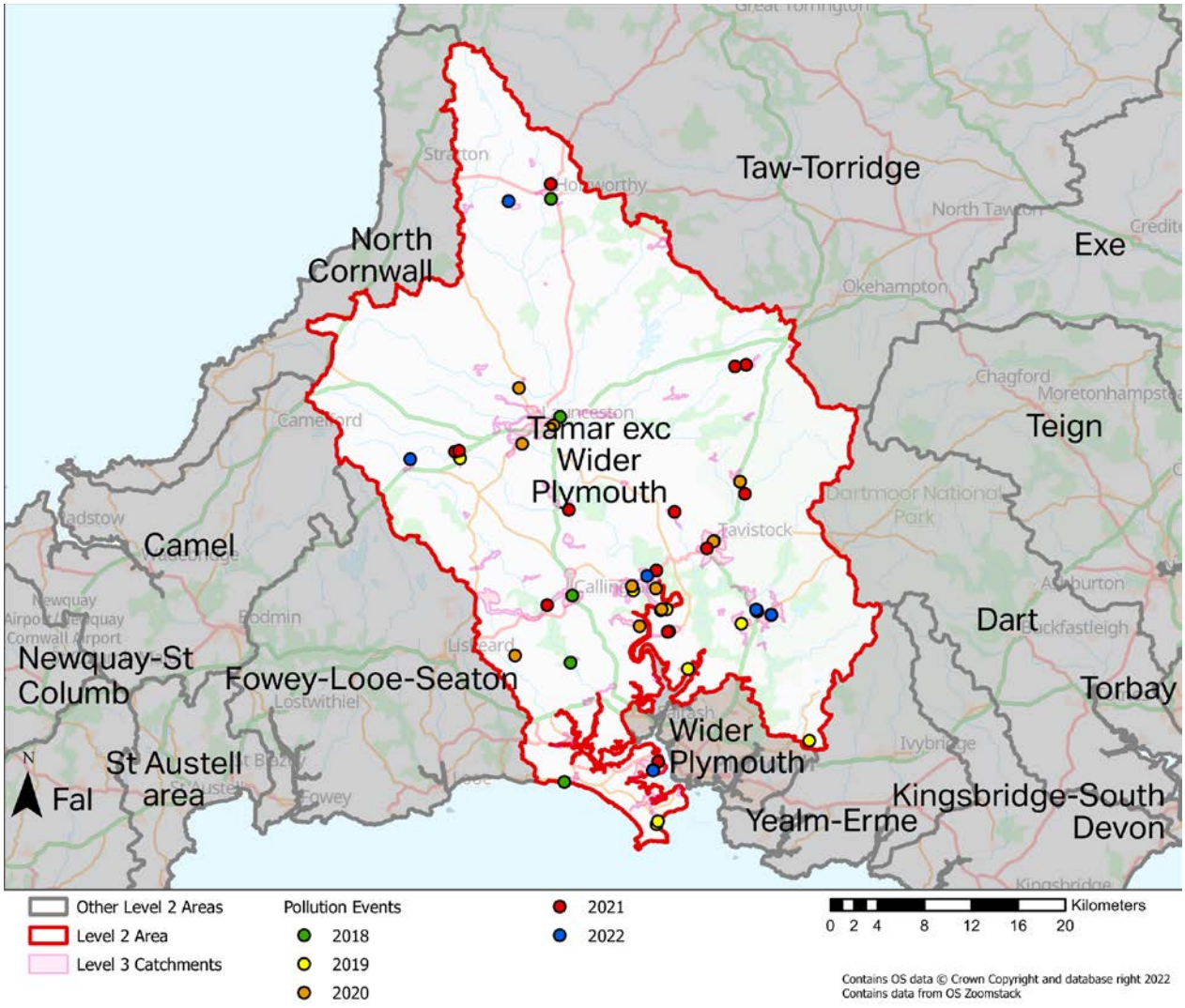

Figure 8: Pollution Events

Critical Drainage Areas

A Critical Drainage Area (CDA) is an area with critical drainage problems, which has been formally notified to the Local Authority by the Environment Agency. Within CDAs, proposed development may present risks of flooding on-site and/or off-site if the surface water runoff is not effectively managed.

The purpose of creating the CDA allocation is to reduce downstream flooding by controlling the accumulative impact of surface water runoff from multiple development sites in sensitive catchment areas. This means that any site discharging surface water to a watercourse or public sewer must attenuate the flow to mimic the green field runoff for a 1:10 year rain fall event. Where the surface water can be managed within the site for the "1:100+40%" condition (i.e., an allowance of 40% over and above the 1:100 event), there is no change to the standard surface water drainage requirement.

The Development Management Procedure Order requires that the EA is consulted on developments within Areas with Critical Drainage Problems (ACDPs). The map in Figure 9 shows the geographical coverage of ACDPs in the Tamar exc Wider Plymouth catchment.

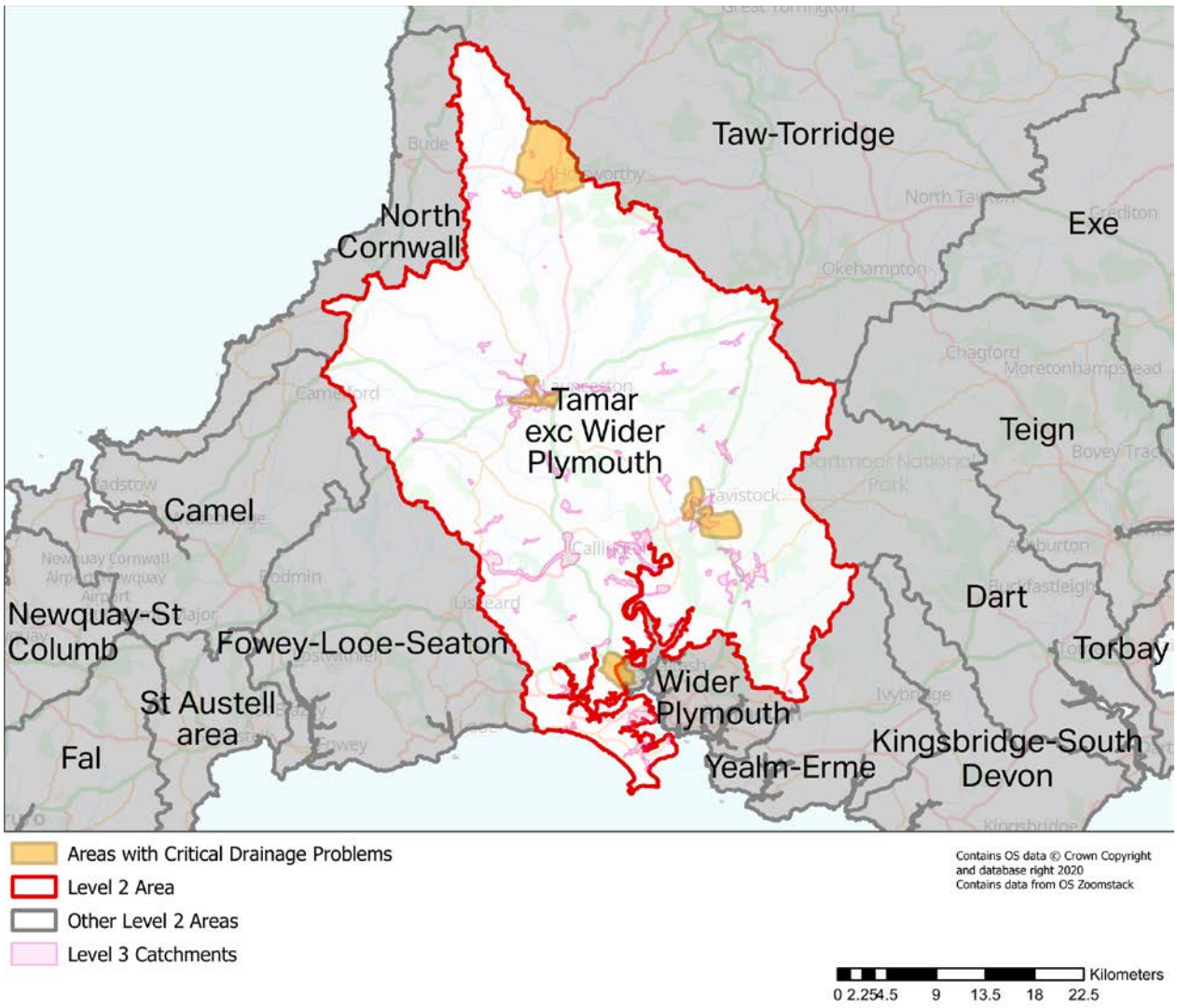

Figure 9: Critical Drainage Areas

Wastewater Treatment Compliance

Each Wastewater Treatment Works has a permit, as agreed with the EA, for the quantity and quality of the water that is discharged to the environment.

The Tamar exc Wider Plymouth catchment has not failed any quality compliance metrics since the 2018/19 reporting year. Table 12 illustrates that there are no compliance failures.

***Table 12**: Wastewater Treatment compliance failures*

Asset Name	Year	Q90 (m3/d)	Permitted DWF (m3/d)

Table 13 shows the Dry weather flow (DWF) performance of the treatment works in the Tamar exc Wider Plymouth catchment.

***Table 13**: Dry weather flow results and permits from 2018-2020*

Asset Name	Permitted (m3/d)	Comments
ALTARNUN_STW_ALTARNUN	94	Spare capacity available
BEALS MILL_STW_REZARE	169	Spare capacity available
BERE ALSTON_STW_BERE ALSTON	675	Spare capacity available
BERE FERRERS_STW_BERE FERRERS	77	Spare capacity available
BRIDESTOWE_STW_BRIDESTOWE	147	Spare capacity available
BRIDGERULE_STW_BRIDGERULE	79	Spare capacity available
BUCKLAND MONACHORUM_STW_BUCKLAND MONACHO	137	Spare capacity available
CALLINGTON_STW_CALLINGTON	2,225	Spare capacity available
CALSTOCK_STW_CALSTOCK	570	Spare capacity available
CARGREEN_STW_CARGREEN	100	Spare capacity available
CROWNDALE_STW_TAVISTOCK	3,767	Spare capacity

Asset Name	Permitted (m3/d)	Comments
		available
DERRITON_STW_HOLSWORTHY	750	Spare capacity available
GRATTON_STW_YELVERTON	297	Spare capacity available
GUNNISLAKE_STW_GUNNISLAKE	330	Spare capacity available
HALWILL_STW_HALWILL	147	Spare capacity available
HARROWBARROW_STW_CALLINGTON	166	Spare capacity available
HATT_STW_HATT	143	Spare capacity available
HORRABRIDGE_STW_HORRABRIDGE	945	Spare capacity available
LAMERTON_STW_LAMERTON	126	Spare capacity available
LANDRAKE_STW_LANDRAKE	204	Spare capacity available
LEWANNICK_STW_LEWANNICK	94	Spare capacity available
LIFTON_STW_LIFTON	300	Spare capacity available
LYDFORD_STW_LYDFORD	66	Spare capacity available
MARY TAVY_STW_MARY TAVY	155	Spare capacity available
METHERELL_STW_METHERELL	161	Approaching design capacity
MILLBROOK_STW_MILLBROOK	2,047	Spare capacity available
MILTON ABBOT_STW_MILTON ABBOT	98	Spare capacity available
NORTH PETHERWIN_STW_NORTH PETHERWIN	62	Approaching design capacity
PILLATON_STW_PILLATON	96	Spare capacity available
PORTWRINKLE_STW_TORPOINT	156	Spare capacity

Asset Name	Permitted (m3/d)	Comments
		available
PYWORTHY_STW_PYWORTHY	70	Approaching design capacity
QUETHIOCK_STW_QUETHIOCK	51	Spare capacity available
RILLA MILL_STW_RILLA MILL	127	Spare capacity available
ST DOMINICK_STW_CALLINGTON	185	Spare capacity available
ST GERMANS_STW_ST GERMANS	196	Spare capacity available
ST GILES ON THE HEATH_STW_ST GILES OTH	91	Spare capacity available
ST LEONARDS_STW_LAUNCESTON	2,510	Spare capacity available
ST MELLION_STW_ST MELLION	210	Spare capacity available
STOKE CLIMSLAND_STW_STOKE CLIMSLAND	169	Spare capacity available
STOKE HILL_STW_CRAPSTONE	241	Spare capacity available
TORPOINT_STW_TORPOINT	4,546	Spare capacity available
WALKHAMPTON_STW_WALKHAMPTON	156	Spare capacity available
WHITSTONE_STW_WHITSTONE		

Water Quality

When untreated/partially treated wastewater is discharged to a watercourse it may have potential to affect the downstream environment including river and coastal areas. This will be dependent on the duration of any discharge and the dilution offered by the receiving watercourse. This discharge could be from blockages in the sewerage network, wastewater spills or leaks, from misconnections (when wastewater from households is incorrectly connected to the surface water sewer) or from storm overflows. The EA has overall responsibility for water quality in water courses, although South West Water work in partnership to reduce and remove possible sources of pollution.

Our dedicated Upstream Thinking (UST) team engages with farmers and landowners to make changes in how land is managed, ensuring our drinking water sources are protected from diffuse pollution. Starting on the high moorlands and focusing on the land next to

rivers, we collaborate to make water management plans that protect streams and rivers while keeping farms productive.

The EA assesses why waterbodies do not achieve a "good" status. Table 14 below provides a summary of the significant water management issues and the associated activities identified as part of the analysis for the Tamar exc Wider Plymouth catchment.

***Table 14**: Reasons for not achieving 'Good' water quality status*

Significant water management issue (SWMI)	Activity	Count
Changes to the natural flow and levels of water	Land drainage	3
	Regulating Reservoir Flow Regime	2
	Surface water abstraction	3
Physical modifications	Barriers - ecological discontinuity	1
	Other (not in list, must add details in comments)	3
	Reservoir / Impoundment - non flow related	8
Pollution from abandoned mines	Abandoned mine	20
Pollution from rural areas	Farm/site infrastructure	12
	Land use - arable	1
	Poor Livestock Management	45
	Poor nutrient management	19
	Poor pesticide management	1
	Poor soil management	26
	Riparian/in-river activities (inc bankside erosion)	20
Pollution from towns, cities and transport	Private Sewage Treatment	1
	Quarry	4
	Trade/Industry discharge	5
Pollution from wastewater	Discharge	21
	Discharge (intermittent)	5
	Barriers - ecological discontinuity	4
	Drought	6
	Fish stocking	2

Significant water management issue (SWMI)	Activity	Count
	Internal nutrient load (lakes only)	6
	Natural conditions - other	15
	Natural mineralisation	6
	Not applicable	4
	Other (not in list, must add details in comments)	1

Future challenges in the catchment

Growth

New developments can cause an increase in the volume of wastewater requiring conveyance and treatment. Improvements to the foul sewerage system to support new development will be assessed by South West Water's New Developments Team and infrastructure charges paid by new developments will fund required upgrades to ensure sewer flooding risk is not increased. There are multiple sources of growth information for the region.

To understand where development and specific areas of growth can be expected, the local plans as published by the Local Planning Authority (LPA) are a reasonable source of information.

The LPA polygons showing areas earmarked for development can be found in Figure 10 at the end of this section.

Climate Change and Urban Creep

Climate change is likely to increase the intensity of rainfall leading to higher risk of flooding in the future; however, the magnitude and timing of this change is highly uncertain.

The potential increase in rainfall intensity could inundate the combined sewer networks and cause surface water and sewer flooding. Changing patterns of summer storms could affect the frequency and volume of spills from storm overflows and consequently impact on the river and bathing water quality downstream.

Urban creep can also pose a challenge for managing South West Water's drainage and wastewater networks. Urban creep occurs when minor extensions to homes are built or when existing permeable areas e.g., gardens are paved over to provide patios or for car parking. The result is an overall increase in impermeable area contributing directly to fast runoff to the urban drainage system and consequent increase in the risk of flooding

Future Challenges

106 potential development locations are recorded for this catchment. Table 15 summarises the different types of development planned in the catchment and Figure 10 shows the location and extent of land proposed for development that have been identified in local development plans at the time of writing. Please refer to the local authorities Local Plan for the most current information.

***Table 15**: Summary of Proposed Developments*

Development Type	Number in Catchment
Care Home / Assisted Living	1
Employment	10

Development Type	Number in Catchment
Hotel	1
Housing Development	106
Mixed Use Development	6
Tourist Accommodation	1
Tourist Park	1
Town Centre Core Area	1

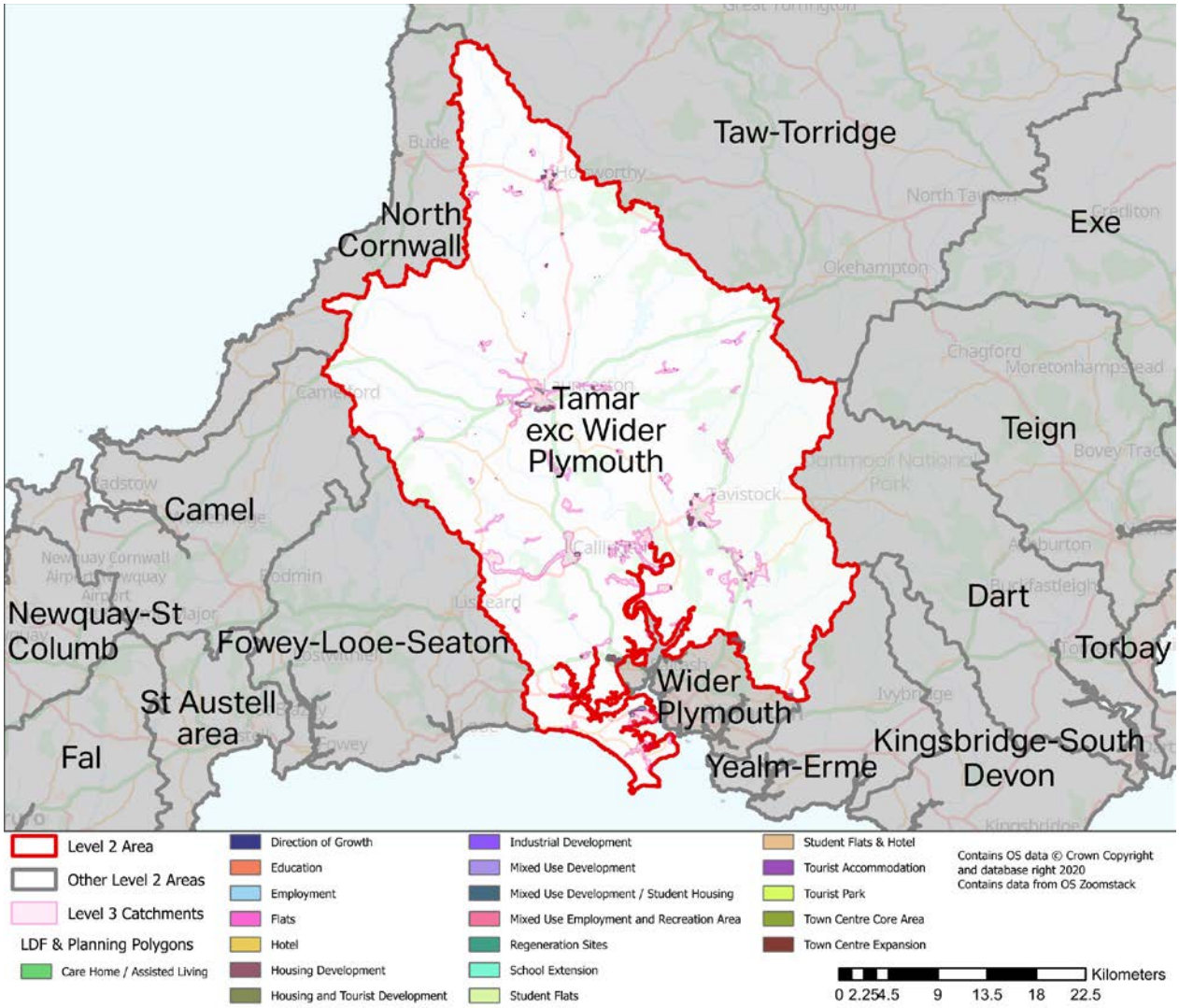

Figure 10: Local Development Framework Areas

Catchment Strategy

Partnership Working

South West Water is working in partnership with multiple organisations including the EA, local authorities and other stakeholders such as landowners, local residents and community groups. The purpose of this work is to understand the causes of drainage and wastewater issues and to progress joint projects to resolve them where appropriate. For example, partnership working opportunities may exist where properties are located within recognised flood zones (FZ2, FZ3 and/or Surface Water) which can be found here.

Investment Routes

Reactive Investment

Reactive investment needs are identified via investigations following reactive response to operational/customer issues and planned surveys that are targeted to detect and resolve problems before they have an impact on customers and the environment.

The investment needs are prioritised based on the risk to properties and the identification of repeat events. These needs then form a programme of targeted investments for delivery over the next 12 months. Details for any needs recorded for the Tamar exc Wider Plymouth catchment are summarised in Table 16.

Twenty-One investment needs are recorded for this catchment. Locations are shown in Figure 11.

***Table 16**: Summary of Reactive Investment Opportunities*

	Capital Maintenance	Health & Safety	Quality	Total
Completed	4	1		5
Confirm Scope	8		1	9
Programmed	1			1
Review Scope	2			2
Total	15	1	1	17

WINEP Investment

The Water Industry National Environment Programme (WINEP) is the programme of work where water companies work collaboratively with Environmental regulators and other stakeholders to investigate, identify and agree investment needs to deliver specific environmental improvements. Water companies in England then undertake to deliver this to meet their obligations from environmental legislation and UK government policy. The tables below indicate the WINEP investigation and implementation schemes for the Tamar exc Wider Plymouth catchment if present, with locations are shown in Figure 11.

There are currently 29 investigations planned in this catchment, as shown in Table 17.

***Table 17**: WINEP Investigations*

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Investigations Scope	Additional Comments
DCS00017	Penpont Water	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00081	Lower river inny	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00094	Plymouth Tamar	Transitional	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00157	Lew (Tamar)	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Investigations Scope	Additional Comments
						to measure PFF.
DCS00193	lower river tavy	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00219	Lower River Lynher	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00518	Carey	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00531	Cotehele Stream	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00542	Plymouth Tamar	Transitional	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00645	Lumburn	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Investigations Scope	Additional Comments
						to measure PFF.
DCS00687	Thrushel	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00728	Upper River Lyd	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00750	Upper River Tavy	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00762	Cotehele Stream	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00776	Lower River Tamar	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00804	Tiddy	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Investigations Scope	Additional Comments
						to measure PFF.
DCS00832	Bolesbridge Water	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS00965	Derril Water	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS01105	Plymouth Sound	Coastal	SSSI_INV	2022-03-31	The aim of the investigation is to understand the source of high N levels in St John's Lake, how this contributes to the presence of large algal mats (and unfavourable condition) and to suggest measures to address this in PR24 • The aim will be achieved by: o SWW undertaking localised sampling and source appointment work to establish where the nutrients are coming from: i.e. what proportion is from water company assets and therefore whether SWW needs to take action? o And through obtaining and assessing data on algal mat biomass and persistence.	Agreed with SWW
DCS01154	Lower River Tamar	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Investigations Scope	Additional Comments
DCS01161	PLYMOUTH TAMAR	Transitional	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS01218	PLYMOUTH TAMAR	Transitional	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
DCS01266	Walkham	River	U_INV2	2022-03-31	n/a	U_INV2 Investigation required as to suitability of existing inlet or outlet monitor to measure PFF.
CHM00192	Kensey	River	WFD_INV_CHEM14	2021-09-30	Investigation to be carried out in accordance with the requirements detailed in the current UKWIR CIP3 Technical Specification and Guidance	n/a
EDM00537	Lower River Tavy	River	U_INV	2022-03-31	Undertake full investigation following the Storm Overflow Assessment Framework to Stage 4 (Decision), including Environmental Impact Assessment and Cost Benefit Assessment of Options to determine an agreed (between WaSC and Environment Agency) outcome (Need for spill reduction scheme and detail of that scheme).	n/a
EDM00539	Kensey	River	U_INV	2022-03-31	Undertake full investigation following the Storm Overflow Assessment Framework to Stage 4 (Decision), including Environmental Impact Assessment and Cost Benefit Assessment of Options to determine an agreed (between WaSC	n/a

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Investigations Scope	Additional Comments
					and Environment Agency) outcome (Need for spill reduction scheme and detail of that scheme).	
EDM00544	Lower River Tavy	River	U_INV	2022-03-31	Undertake full investigation following the Storm Overflow Assessment Framework to Stage 4 (Decision), including Environmental Impact Assessment and Cost Benefit Assessment of Options to determine an agreed (between WaSC and Environment Agency) outcome (Need for spill reduction scheme and detail of that scheme).	n/a
EDM00547	Milton Stream	River	U_INV	2022-03-31	Undertake full investigation following the Storm Overflow Assessment Framework to Stage 4 (Decision), including Environmental Impact Assessment and Cost Benefit Assessment of Options to determine an agreed (between WaSC and Environment Agency) outcome (Need for spill reduction scheme and detail of that scheme).	n/a
EDM00554	Lynher (Tidal) and Hamoaze	River	U_INV	2024-03-31	Undertake full investigation following the Storm Overflow Assessment Framework to Stage 4 (Decision), including Environmental Impact Assessment and Cost Benefit Assessment of Options to determine an agreed (between WaSC and Environment Agency) outcome (Need for spill reduction scheme and detail of that scheme).	n/a

There are currently 20 implementations planned in this catchment, as shown in Table 18.

***Table 18**: WINEP Implementations*

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Implementation Scope	Additional Comments
DCS00019	Penpont Water	River	U_IMP6	2023-03-31	n/a	n/a
DCS00083	Lower river inny	River	U_IMP6	2023-03-31	n/a	n/a
DCS00091	Plymouth Tamar	Transitional	U_IMP5	2023-03-31	n/a	n/a
DCS00158	Lew (Tamar)	River	U_IMP5	2023-03-31	n/a	n/a
DCS00159	Lew (Tamar)	River	U_IMP6	2023-03-31	n/a	n/a
DCS00163	Tamar (Small Brook to River Deer)	River	WFD_IMPg	2024-12-22	n/a	n/a
DCS00497	Meavy	River	U_IMP6	2023-03-31	n/a	n/a
DCS00506	Lower River Tamar	River	U_IMP6	2023-03-31	n/a	n/a
DCS00519	Carey	River	U_IMP6	2024-03-31	n/a	n/a
DCS00585	Deer	River	WFD_IMPg	2024-12-22	n/a	n/a
DCS00596	Walkham	River	U_IMP5	2024-03-31	n/a	n/a
DCS00597	Walkham	River	U_IMP6	2024-03-31	n/a	n/a
DCS00689	Thrushel	River	U_IMP6	2024-03-31	n/a	n/a

WINEP ID	Name of Waterbody	Waterbody Type	Driver Code	Planned Completion Date	Implementation Scope	Additional Comments
DCS00777	Lower River Tamar	River	U_IMP6	2024-03-31	n/a	n/a
DCS00833	Bolesbridge Water	River	U_IMP6	2024-03-31	n/a	n/a
DCS00838	Taw (Source to Bullow Brook)	River	U_IMP6	2024-03-31	n/a	n/a
DCS01098	PLYMOUTH TAMAR	Transitional	U_IMP6	2025-03-31	n/a	n/a
DCS01104	Lynher (Tidal) and Hamoaze	River	U_IMP6	2025-03-31	n/a	n/a
DCS01220	PLYMOUTH TAMAR	Transitional	U_IMP6	2025-03-31	n/a	n/a
DCS01267	Walkham	River	U_IMP6	2025-03-31	n/a	n/a

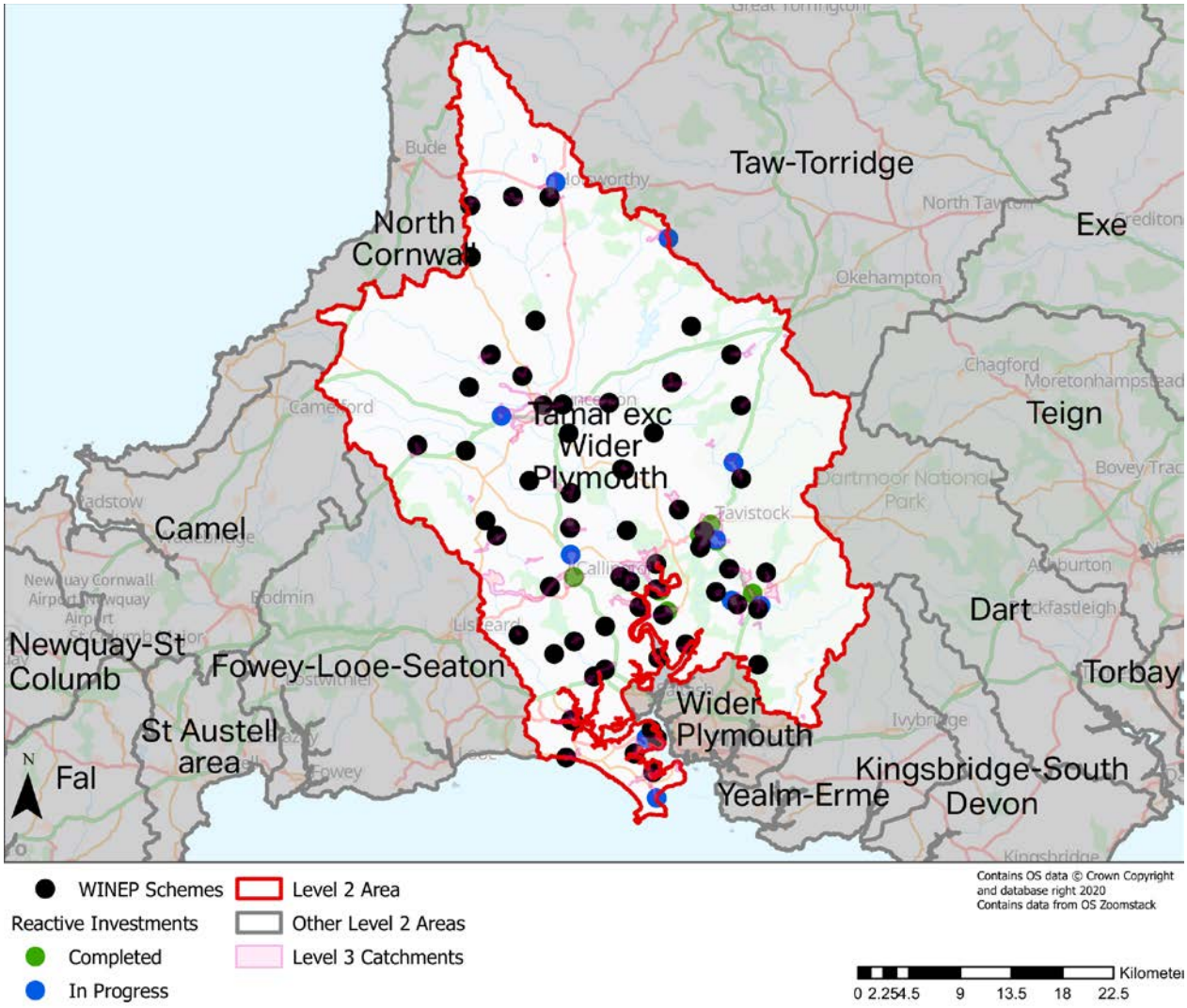

Figure 11: Reactive and WINEP Investment locations

Medium and Long-Term Plans

Overview

The following sections of this document outline South West Water's current analysis and medium to long-term proposals. In particular, they present the option developments and appraisals that will be used during the next price review and planning for future Asset Management Planning cycles (AMPs).

Outputs from the following DWMP process stages are summarised in the following sections and form the primary content for consultation:

- Risk-based catchment screening
- Baseline risk and vulnerability assessment
- Bespoke planning objectives
- Resilience scoring
- Problem characterisation
- Options appraisal

The DWMP will inform South West Water's future business plans based on the best available knowledge today. There is uncertainty in the future linked to finance, regulation/legislation, environmental and climate changes. This is a long-term, iterative process, so the plans may change in the future to reflect the future needs of the Tamar exc Wider Plymouth catchment.

Risk Based Catchment Screening

The Risk based Catchment Screening exercise (RBCS) was carried out across all of South West Water's 653 Level 3 Tactical Planning Units (TPUs), screening each one in order that the effort could be best focused where it was most appropriately needed. From this assessment exercise it was determined that 373 catchments were identified as being potentially 'at risk' of environmental or community impact deteriorating in the future and were to proceed to the Baseline Risk & Vulnerability Assessment (BRAVA) stage for assessment under those criteria. Each catchment was assessed against a range of indicators shown in Table 19, to identify the catchments that require a more detailed investigation. The information and data required for the assessment is readily available from company reporting systems and from stakeholders. Indicators have been classified into two tiers, which enables us to prioritise the indicators when assessing if further assessment is required. Only two indicators are Tier 2:

- Catchment characterisation
- Continuous or intermittent discharges impact upon sensitive receiving waters

All other indicators are Tier 1 indicators.

When a catchment or TPU is identified as needing further assessment, this is described as an "indicator breach" in the RBCS process. This is not a performance breach but rather a trigger to further evaluate or assess certain indicator/indicators in the next stage of the DWMP process.

The results for the Level 3 catchments within the Tamar exc Wider Plymouth catchment are in the RBCS Summary (Table 19) below.

***Table 19**: RBCS Summary Table*

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
52462	Initial	136.5	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
52464	Initial	423.9	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2	NO	YES
52466	Initial	8,906.5	NO	NO	NO	NO	YES	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	YES	3	NO	YES
52467	Initial	2,124.1	YES	NO	NO	NO	YES	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	YES	YES	5	NO	YES
52469	Initial	139.4	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52471	Initial	247.9	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52472	Initial	160.0	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2	NO	YES
52475	Initial	2,007.7	NO	NO	NO	NO	YES	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	YES	YES	3	NO	YES
52476	Initial	431.3	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52477	Initial	590.0	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52481	Initial	910.0	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52484	Initial	12,335.2	NO	NO	NO	NO	YES	NO	YES	YES	YES	NO	NO	YES	NO	YES	NO	YES	YES	6	NO	YES

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
52487	Initial	362.0	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2	NO	YES
52488	Initial	328.4	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	2	NO	YES
52491	Initial	217.5	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2	NO	YES
52492	Initial	276.0	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
52494	Initial	586.4	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52498	Initial	590.5	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	2	NO	YES
52501	Initial	489.5	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52503	Initial	8,180.1	YES	YES	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	YES	4	NO	YES
52511	Initial	207.4	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
52515	Initial	471.8	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52522	Initial	3,525.4	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	YES	NO	YES	NO	YES	YES	5	NO	YES
52523	Initial	280.3	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52529	Initial	2,259.2	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	3	NO	YES

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
52533	Initial	687.6	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	3	NO	YES
52540	Initial	1,380.6	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	YES	2	NO	YES
52542	Initial	2,927.5	YES	NO	NO	NO	YES	NO	YES	YES	YES	NO	NO	YES	NO	NO	NO	YES	YES	6	NO	YES
52547	Initial	1,084.9	YES	NO	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	3	NO	YES
52550	Initial	643.2	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
52558	Initial	13,553.7	YES	NO	NO	NO	YES	NO	YES	YES	YES	NO	NO	YES	NO	YES	NO	YES	YES	7	NO	YES
53581	Initial	244.0	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
53807	Initial	247.3	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	3	NO	YES
53859	Initial	3,261.4	YES	YES	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	YES	YES	5	NO	YES
53931	Initial	221.7	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
53960	Initial	885.1	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	YES	YES	NO	NO	NO	NO	YES	4	NO	YES
53786	Initial	93.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53809	Initial	70.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
52512	Initial	250.6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
53886	Initial	101.6	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	1	NO	NO
53932	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
10651506	Initial	27.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
53803	Initial	7.8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52486	Initial	692.8	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52549	Initial	240.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52555	Initial	52.4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52518	Initial	193.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52561	Initial	160.4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52489	Initial	15.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52332	Initial	187.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	0	NO	NO
53806	Initial	71.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
54093	Initial	595.9	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	2	NO	YES
52510	Initial	392.4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52504	Initial	92.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52470	Initial	163.4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52490	Initial	72.8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53801	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52507	Initial	97.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53812	Initial	50.4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52461	Initial	469.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
53798	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52544	Initial	505.6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	1	YES	YES
53804	Initial	34.0	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	1	YES	YES
52536	Initial	238.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
52524	Initial	391.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
54308	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52531	Initial	157.4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52508	Initial	217.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
10211889	Initial	34.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52485	Initial	140.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52299	Initial	44.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52502	Initial	43.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52519	Initial	136.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	YES	1	YES	YES
52468	Initial	275.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
10273655	Initial	232.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52525	Initial	424.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
11652707	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
53810	Initial	47.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	1	YES	YES
54311	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
20397	Initial	89.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52559	Initial	481.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	1	YES	YES
52499	Initial	758.5	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2	NO	YES
53933	Initial	14.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52516	Initial	599.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52465	Initial	256.7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52479	Initial	103.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
11482524	Initial	5.9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52554	Initial	69.8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53811	Initial	199.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52483	Initial	112.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
54260	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53888	Initial	137.6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52546	Initial	177.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
53934	Initial	2.6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52517	Initial	75.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
54203	Initial	49.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52474	Initial	378.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53805	Initial	9.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53785	Initial	44.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52463	Initial	103.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
54309	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52749	Initial	679.2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	1	YES	YES
52557	Initial	43.7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO

Level 3 Equipment Number	C21st Pipe Metric	Total Population Equivalent	Catchment Characterisation	Bathing or shellfish waters	Discharge to Sensitive Waters (Part A)	Discharge to Sensitive Receiving (Part B)	SOAF	CAF	Internal Sewer Flooding	External Sewer Flooding	Pollution Incidents	WwTW Q Compliance	WwTW DWF Compliance	Storm Overflows	Other RMA Systems	Planned Residential Development	WINEP	Sewer Collapses	Sewer Blockages	Number of Indicators Breached (Excl	Single Indicator Breach is Tier 1	Proceed to BRAVA?
53885	Initial	81.3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52497	Initial	66.0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52520	Initial	46.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
52514	Initial	186.6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
52534	Initial	0.5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	0	NO	NO
53808	Initial	6.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO
53802	Initial	6.1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO

Score/Colour	Definition
No	No breach
Yes - Tier 1	Tier 1 breach
Yes - Tier 2	Tier 2 breach

Figure 12: RBCS scoring legend

Baseline Risk & Vulnerability Assessment (BRAVA)

For those catchments that were captured by the RBCS as being 'at risk' South West Water then progressed them through to the BRAVA process.

Through the BRAVA process South West Water's understanding of the risks facing the catchments, and at what scale and complexity, has been improved. This included an assessment into how external changes in the future may impact upon South West Water's catchment vulnerabilities and how they may be impacted by risks such as Climate Change and Urban Creep. The outputs from this process are summarised below in Table 20. The planning objectives used for this exercise were:

- 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 WwTW Compliance Failure

***Table 20**: BRAVA output summary table*

Group	Description	Value
	L2_Area	Tamar exc Wider Plymouth
Physical Characteristics	Total Population Equivalent	79853
	Baseline sewer length (km)	951
Baseline Score 2020	Planning Objective - Internal Sewer Flooding Risk	0
	Planning Objective - Pollution Risk	0
	Planning Objective - Sewer Collapse Risk	0
	Planning Objective - Risk of Sewer Flooding in a 1 in 50-year storm...7	1
	Planning Objective - Storm Overflow performance...8	1
	Planning Objective - Risk of WwTW Compliance Failure...9	0
		2
	Planning Objective - Storm Overflow performance...11	1
	Planning Objective - Risk of WwTW Compliance Failure...12	0

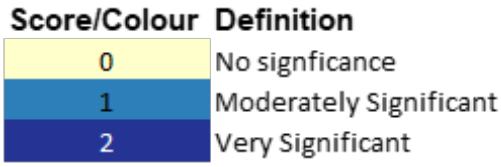

Figure 13: BRAVA scoring legend

BRAVA Risks were categorised from 0-2, with 0 being no significant risk identified, 1 for no immediate risk identified (although future risks may exist) and 2 showing that short- to medium-term risks of a significant nature having been recognised through the data analysis.

Bespoke Planning Objectives

In addition to the six common planning objectives identified within the DWMP Framework, South West Water has included three bespoke planning objectives that are tailored to the South West Region.

Problem Characterisation

Building on the outputs of the BRAVA process, South West Water examined the nature and complexity of the problems arising, how these relate to one another and what interventions could be put in place to mitigate them. The Problem Characterisation stage took the results from BRAVA and developed it further, providing insight into the risks around:

- Internal Sewer Flooding
- Pollution, dividing these between category 1 or category 2 & 3
- Sewer Collapse
- Sewer Flooding in a 1 in 50-year storm
- Sewer Flooding in a 1 in 10-year storm
- Storm Overflow performance
- WwTW Compliance Failure, including Dry Weather Flow scenarios

These ratings (shown in Table 21) were augmented with commentary (in Table 22) around how these risks have impacted the Tamar exc Wider Plymouth catchment previously, with Flooding Heat Maps providing visual indicators of the scale of some of the potential problems within each catchment.

***Table 21**: Problem Characterisation*

TPU2	F1: Internal sewer flooding	F2: Risk of sewer flooding in a 1 in 10 year event	F3: Risk of sewer flooding in a 1 in 50 year event	P1: Pollution incidents (CAT 1-3)	P2: Severe Pollutions (Cat 1-2)	P3: Storm overflow performance	P4: WwTW (NUMERIC) compliance failure	P5: WwTW (DWF) compliance failure	A1: Sewer collapse
BRIDGERULE_STW_BRIDGERULE	A	F	F	A	A	A	F	A	A
CLAWTON_STW_CLAWTON	A	F	F	A	A	A	A	A	A
DERRITON_STW_HOLSWORTHY	A	F	G	A	A	F	G	A	G
TPU 18: MARY TAVY_STW_MARY TAVY	G	A	A	A	A	A	A	A	A
TPU 8: BEALS MILL_STW_REZARE	A	F	F	A	A	F	A	A	A
TPU 1: BRIDESTOWE_STW_BRIDESTOWE	A	F	F	A	A	G	B	A	G
TPU 3: Gunnislake	A	F	F	A	A	A	F	A	G
TPU 4: Gratton	A	F	F	A	A	F	A	G	G
TPU 5: Landrake	A	A	A	A	A	G	G	A	A

TPU2	F1: Internal sewer flooding	F2: Risk of sewer flooding in a 1 in 10 year event	F3: Risk of sewer flooding in a 1 in 50 year event	P1: Pollution incidents (CAT 1-3)	P2: Severe Pollutions (Cat 1-2)	P3: Storm overflow performance	P4: WwTW (NUMERIC) compliance failure	P5: WwTW (DWF) compliance failure	A1: Sewer collapse
TPU 1: Horrabridge	F	G	G	G	A	G	A	A	A
TPU 21: Callington	A	F	F	A	A	F	A	A	A
TPU 17: ST LEONARDS_STW_LAUNCESTON	F	F	F	A	A	F	A	A	A
TPU 25: Crowndale	A	B	F	A	A	F	A	A	A
TPU 6: STOKE CLIMSLAND_STW_STOKE CLIMSLAND	A	F	F	A	A	G	G	A	A
TPU 7: ALTARNUN_STW_ALTARNUN	A	F	F	A	A	A	F	A	G
TPU 10: LEWDOWN_STW_LEWDOWN	A	F	F	A	A	F	C	A	G
TPU 11: LYDFORD_STW_LYDFORD	A	F	F	A	A	A	A	A	A

TPU2	F1: Internal sewer flooding	F2: Risk of sewer flooding in a 1 in 10 year event	F3: Risk of sewer flooding in a 1 in 50 year event	P1: Pollution incidents (CAT 1-3)	P2: Severe Pollutions (Cat 1-2)	P3: Storm overflow performance	P4: WwTW (NUMERIC) compliance failure	P5: WwTW (DWF) compliance failure	A1: Sewer collapse
TPU 24: Torpoint	A	F	G	A	A	F	B	A	G
TPU 3: LIFTON_STW_LIFTON	A	G	G	A	A	G	C	A	A
TPU 4: RILLA MILL_STW_RILLA MILL	A	F	F	A	A	G	A	A	A
TPU 2: Bere Alston	A	F	F	A	A	F	A	A	A
TPU 13: Harrow Barrow	A	A	A	A	A	F	B	A	G
TPU 15: Pillaton	A	A	A	A	A	G	A	A	A
TPU 16: Cargreen	A	F	F	A	A		B	A	A
TPU 17: Bere Ferrers	A	A	A	A	A	G	A	A	A
TPU 22: Millbrook	F	F	F	G	A	F	F	A	A
TPU 9: Portwrinkle	G	F	F	A	A	F	A	A	A
TPU 23: Calstock	F	G	G	G	A	F	A	A	G
TPU 7: St Germans	A	F	F	A	A	A	B	A	A

TPU2	F1: Internal sewer flooding	F2: Risk of sewer flooding in a 1 in 10 year event	F3: Risk of sewer flooding in a 1 in 50 year event	P1: Pollution incidents (CAT 1-3)	P2: Severe Pollutions (Cat 1-2)	P3: Storm overflow performance	P4: WwTW (NUMERIC) compliance failure	P5: WwTW (DWF) compliance failure	A1: Sewer collapse
TPU 2: MILTON ABBOT_STW_MILTON ABBOT	A	A	A	A	A	G	A	G	A
TPU 5: LAMERTON_STW_LAMERTON	A	B	B	A	A	A	A	A	A
TPU 9: NORTH PETHERWIN_STW_NORTH PETHERWIN	A	B	B	A	A	G	F	A	A
TPU 12: NORTH HILL_STW_NORTH HILL	A	C	C	A	A	G	F	A	A
TPU 13: QUETHIOCK_STW_QUETHIOCK	A	A	A	A	A	G	A	A	A
TPU 14: YEOLMBRIDGE_STW_YEOLMBRIDGE	A	A	A	A	A	A	A		G
TPU 15: GOLBERDON_STW_GOLBERDON	A	A	A	A	A	G	A	A	A

TPU2	F1: Internal sewer flooding	F2: Risk of sewer flooding in a 1 in 10 year event	F3: Risk of sewer flooding in a 1 in 50 year event	P1: Pollution incidents (CAT 1-3)	P2: Severe Pollutions (Cat 1-2)	P3: Storm overflow performance	P4: WwTW (NUMERIC) compliance failure	P5: WwTW (DWF) compliance failure	A1: Sewer collapse
TPU 16: NORTH BRENTOR_STW_NORTH BRENTOR	A	C	C	A	A	A	A		A
HALWILL_STW_HALWILL	A	B	B	A	A	A	G	A	A
PREWLEY_STW_OKEHAMPTON	A	A	A	A	A	A	A	A	A
PYWORTHY_STW_PYWORTHY	A	B	B	A	A	A	A	A	A
SLATE COURT_STW_CHILSWORTHY	A	C	C	A	A	A	A	A	A
TETCOTT_STW_HOLSWORTHY	A	C	C	A	A	A	G	G	A
TPU 6: Stoke Hill	A	F	F	A	A	G	A	A	A
TPU 8: Buckland Monochorum	A	A	A	A	A	G	A	G	G
TPU 10: St Dominick	A	F	F	A	A	G	B	A	A
TPU 11: Hatt	A	A	A	A	A	F	A	A	A

TPU2	F1: Internal sewer flooding	F2: Risk of sewer flooding in a 1 in 10 year event	F3: Risk of sewer flooding in a 1 in 50 year event	P1: Pollution incidents (CAT 1-3)	P2: Severe Pollutions (Cat 1-2)	P3: Storm overflow performance	P4: WwTW (NUMERIC) compliance failure	P5: WwTW (DWF) compliance failure	A1: Sewer collapse
TPU 12: Walkhampton	A	A	A	A	A		A	A	A
TPU 14: Metherell	A	B	B	A	A	G	G	A	A
TPU 18: Cremyll FSCN	A	A	A	A	A		A	A	A
TPU 19: Hemerdon ST	A	F	F	A	A		A	A	A
TPU 20: Clearbrook	A	A	A	A	A		A	A	G

RISK PATTERN	Assessment
A	No risks – system is resilient
B	Long term moderate risk
C	Long term high risk
D	Medium term moderate risk
E	Medium term high risk
F	Immediate moderate risk
G	Immediate high risk

Figure 14: Problem Characterisation legend

***Table 22**: Problem Characterisation Description*

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
BRIDESTOWE_STW_BRIDESTOWE	This catchment requires additional investment to make it resilient for the future.	There are 2 external flooding hotspots attributed to other causes in the catchment, located near; Fore Street, Bridestowe Launceston Road, Bridestowe	NON-MODELLED APPROACH	There are a total of 2 overflows in the catchment. They have been classified as follows Unsatisfactory - 1 - 50% Not Classified - 1 - 50%	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy.
MILTON ABBOT_STW_MILTON ABBOT	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 2 overflows in the catchment. They have been classified as follows Substandard (High) - 1 - 50% Not Classified - 1 - 50%	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
LIFTON_STW_LIFTON	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to hydraulic overload in the catchment, located near;	NON-MODELLED APPROACH	There are a total of 1 overflows in the catchment. They have been classified as follows Unsatisfactory - 1 -	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
		Tinhay There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Tinhay		100%	medium/long term strategy.
RILLA MILL_STW_RILLA MILL	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Rilla Mill	NON-MODELLED APPROACH	There are a total of 2 overflows in the catchment. They have been classified as follows Substandard (Medium) - 1 - 50% Unsatisfactory - 1 - 50%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
LAMERTON_STW_LAMERTON	This catchment is changing & requires a long-term strategy.	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 1 overflows in the catchment. They have been classified as follows Not Classified - 1 - 100%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
STOKE CLIMSLAND_STW_ST	This catchment requires additional	There are No external flooding	NON-MODELLED	There are a total of 2 overflows in the	We are monitoring performance at the

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
OKE CLIMSLAND	investment to make it resilient for the future.	hotspots in the catchment.	APPROACH	catchment. They have been classified as follows Substandard (Medium) - 1 - 50% Substandard (High) - 1 - 50%	treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
ALTARNUN_STW_ALTARNUN	This catchment is performing well and is resilient for the future.	There are No external flooding hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 5 overflows in the catchment. They have been classified as follows Not Classified - 5 - 100%	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
BEALS MILL_STW_REZARE	This catchment requires additional investment to make it resilient for the future.	There are 2 external flooding hotspots attributed to other causes in the catchment, located near; Treburley Lezant	NON-MODELLED APPROACH	There are a total of 5 overflows in the catchment. They have been classified as follows Substandard (Medium) - 2 - 40% Unsatisfactory - 2 - 40% Not Classified - 1 - 20%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
NORTH PETHERWIN_STW_N	This catchment requires additional	There were no substantial flooding	NON-MODELLED	There are a total of 2 overflows in the	We are monitoring performance at the

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
ORTH PETHERWIN	investment to make it resilient for the future.	or pollution hotspots in the catchment.	APPROACH	catchment. They have been classified as follows Unsatisfactory - 1 - 50% Not Classified - 1 - 50%	treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
LEWDOWN_STW_LEWDOWN	This catchment requires additional investment to make it resilient for the future.	There are No external flooding hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 2 overflows in the catchment. They have been classified as follows Substandard (High) - 2 - 100%	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy.
LYDFORD_STW_LYDFORD	This catchment is performing well and is resilient for the future.	There are No external flooding hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 1 overflows in the catchment. They have been classified as follows Not Classified - 1 - 100%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
NORTH HILL_STW_NORTH HILL	This catchment requires additional investment to make it resilient for the	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 1 overflows in the catchment. They have been classified as follows	We are monitoring performance at the treatment works and there may be a need to increase capacity

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
	future.			Unsatisfactory - 1 - 100%	as part of a short/medium term strategy.
QUETHIOCK_STW_QUETHIOCK	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 1 overflows in the catchment. They have been classified as follows Substandard (High) - 1 - 100%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
YEOLMBRIDGE_STW_YEOLMBRIDGE	This catchment is performing well and is resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 2 overflows in the catchment. They have been classified as follows Substandard (High) - 1 - 50% Not Classified - 1 - 50%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
GOLBERDON_STW_GOLBERDON	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	There are a total of 1 overflows in the catchment. They have been classified as follows Substandard (High) - 1 - 100%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
					now and 2050.
NORTH BRENTOR_STW_NORTH BRENTOR	This catchment is changing & requires a long-term strategy.	There were no substantial flooding or pollution hotspots in the catchment.	NON-MODELLED APPROACH	N/A	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
BRIDGERULE_STW_BRIDGERULE	This catchment is changing & requires a long-term strategy.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Littlebridge Meadow.	A non modelled approach was used to determine future flood risk.	There are a total of 2 overflows in the catchment. They have been classified as follows: Not classified - 100%.	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
CLAWTON_STW_CLAWTON	This catchment is changing & requires a long-term strategy.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Claw Park.	A non modelled approach was used to determine future flood risk.	There is a total of 1 overflow in the catchment. It has been classified as follows: Not classified - 100%.	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
DERRITON_STW_HOLSWORTHY	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Central Holsworthy.	7.5% of the total number of properties within the catchment that are predicted to be at risk of sewer flooding.	There are a total of 5 overflows in the catchment. They have been classified as follows: Sub-standard (High) - 40%; Not classified - 60%.	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
HALWILL_STW_HALWILL	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	A non modelled approach was used to determine future flood risk.	There are no overflows in this catchment.	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a short/medium term strategy.
PREWLEY_STW_OKEHAMPTON	This catchment is performing well and is resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	A non modelled approach was used to determine future flood risk.	There are no overflows in this catchment.	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
PYWORTHY_STW_PYWORTHY	This catchment is performing well and is resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	A non modelled approach was used to determine future flood risk.	There are a total of 2 overflows in the catchment. They have been classified as follows: Not classified - 100%.	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
SLATE COURT_STW_CHILSWORTHY	This catchment is performing well and is resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	A non modelled approach was used to determine future flood risk.	There are no overflows in this catchment.	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
TETCOTT_STW_HOLSWORTHY	This catchment is changing & requires a long-term strategy.	There were no substantial flooding or pollution hotspots in the catchment.	A non modelled approach was used to determine future flood risk.	There are no overflows in this catchment.	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a short/medium term strategy.

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
HORRABRIDGE_STW _HORRABRIDGE	This catchment requires additional investment to make it resilient for the future.	There are 2 total internal flooding incidents in the catchment, this is 0.14% of the total number of properties within the catchment. There is 1 external flooding hotspot attributed to hydraulic overload in the catchment, located near; Plymouth Road There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Station Road There is 1 pollution hotspot in the catchment located near; Harrowbeer Lane (ID 23)	Non-Modelled approach	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (high)	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
BERE ALSTON_STW_BERE ALSTON	This catchment is changing & requires a long-term strategy.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; St Andrews Close There is 1 pollution hotspot in the catchment located near; Underways (ID 91)	Non-Modelled approach	There are a total of 3 overflows in the catchment. They have been classified as follows; Substandard (medium - 1) Substandard (high) - 1 Unsatisfactory - 1	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
GUNNISLAKE_STW_GUNNISLAKE	This catchment requires additional investment to make it resilient for the future.	There are 2 external flooding hotspots attributed to other causes in the catchment, located near; Woodland Way Cross SPS	Non-Modelled approach	N/A	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
GRATTON_STW_YELVERTON	This catchment requires additional investment to make it resilient for the future.	There are 2 external flooding hotspots attributed to other causes in the catchment, located near; Meavy Bourne Burrator Road	Non-Modelled approach	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (medium) – 1, Substandard (high) - 1	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
LANDRAKE_STW_LANDRAKE	This catchment requires additional investment to make it resilient for the future.	There are 2 external flooding hotspots attributed to other causes in the catchment, located near; School Road	N/A	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (medium) - 1 Substandard (high) – 1	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
STOKE HILL_STW_CRAPSTONE	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	Non-Modelled approach	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (high) - 1 Unsatisfactory - 1	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
ST GERMANS_STW_ST GERMANS	This catchment is changing & requires a long-term strategy.	There is 1 pollution hotspot in the catchment located near; Tregalister Gardens (ID 223)	Non-Modelled approach	N/A	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
BUCKLAND MONACHORUM_STW_BUCKLAND MONACHO	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	N/A	There is 1 overflows in the catchment. This hasbeen classified as follows; Unsatisfactory - 1	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
PORTWRINKLE_STW_TORPOINT	This catchment requires additional investment to make it resilient for the future.	There is 1 internal flooding incident in the catchment, this is 0.07% of the total number of properties within the catchment. There are 2 external flooding hotspots attributed to other causes in the catchment, located near; Whitsand Bay View West Lane	Non-Modelled approach	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (medium) Overflows in this catchment impact upon the following bathing beaches; Portwrinkle Beach	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
ST DOMINICK_STW_CALLINGTON	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	Non-Modelled approach	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (high)	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
HATT_STW_HATT	This catchment is changing & requires a long-term strategy.	There were no substantial flooding or pollution hotspots in the catchment.	N/A	There is 1 overflow in the catchment. This has been classified as follows; Substandard (high)	We are monitoring performance at the treatment works and we are not expecting any compliance

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
					issues due to lack of capacity between now and 2050
WALKHAMPTON_STW_WALKHAMPTON	This catchment is performing well and is resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	N/A	N/A	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
HARROW BARROW_STW_CALLINGTON	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Queens Terracee	N/A	There is 1 overflow in the catchment. This has been classified as follows; Substandard (high)	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
METHERELL_STW_METHERELL	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	N/A	There are a total of 2 overflows in the catchment. They have been classified as follows; Substandard (medium) - 1 Substandard (high) -	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
				1	
PILLATON_STW_PILLATON	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Hemerdon Lane	N/A	There is 1 overflow in the catchment. This has been classified as follows; Substandard (high)	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
CARGREEN_STW_CARGREEN	This catchment is changing & requires a long-term strategy.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Briars Ryn	Non-Modelled approach	N/A	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
BERE FERRERS_STW_BERE FERRERS	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Fore Street	N/A	There is 1 overflow in the catchment. This has been classified as follows; Unsatisfactory	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
CREMYLL_FINESCN_C	This catchment is performing well and	There were no substantial flooding	N/A	N/A	We are monitoring performance at the

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
REMYLL	is resilient for the future.	or pollution hotspots in the catchment.			treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
HEMERDON S T_SEPTNK_STOKE POINT	This catchment is changing & requires a long-term strategy.	There were no substantial flooding or pollution hotspots in the catchment.	Non-Modelled approach	N/A	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
CLEARBROOK S T_SEPTNK_CLEARBROOK	This catchment requires additional investment to make it resilient for the future.	There were no substantial flooding or pollution hotspots in the catchment.	N/A	N/A	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050
CALLINGTON_STW_CALLINGTON	This catchment is changing & requires a long-term strategy.	There are 4 external flooding hotspots attributed to other causes in the catchment, located near; Jubilee	Non-Modelled approach	There are a total of 3 overflows in the catchment. They have been classified as follows; Substandard	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
		Road Fore street Fountain Close SPS Stoke Road		(medium) - 1 Substandard (high) - 2	capacity between now and 2050
MILLBROOK_STW_MILLBROOK	This catchment requires additional investment to make it resilient for the future.	There is 1 internal flooding incident in the catchment, this is 0.06% of the total number of properties within the catchment. There is 1 external flooding hotspot attributed to hydraulic overload in the catchment, located near; New Park There is 1 external flooding hotspots attributed to other causes in the catchment, located near; Green Park There is 1 pollution hotspot in the catchment located near;	Non-Modelled approach	There are a total of 5 overflows in the catchment. They have been classified as follows; Substandard (medium) - 4 Substandard (high) - 1 Overflows in this catchment impact upon the following bathing beaches; Kingsand Beach	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
		The Square SPS (ID 61)			
CALSTOCK_STW_CALSTOCK	This catchment requires additional investment to make it resilient for the future.	There is 1 internal flooding incident in the catchment, this is 0.32% of the total number of properties within the catchment. There is 1 external flooding hotspot attributed to hydraulic overload in the catchment, located near; Harewood Road There is 1 external flooding hotspot attributed to other causes in the catchment, located near; Church Lane There are 2 pollution hotspots in the catchment located near; Honicombe Park Road (ID 92)	Non-Modelled approach	There is 1 overflow in the catchment. This has been classified as follows; Substandard (high)	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
		St Anns Chapel SPS (ID 65)			
TORPOINT_STW_TORPOINT	This catchment requires additional investment to make it resilient for the future.	There is 1 external flooding hotspot attributed to hydraulic overload in the catchment, located near; Trevorder Road There are 2 external flooding hotspots attributed to other causes in the catchment, located near; Trevithick Avenue Quarry Street There is 1 pollution hotspot in the catchment located near; Thankes Park SPS (ID 117)	10% of the total number of properties within the catchment that are predicted to be at risk of sewer flooding. There are 6 predicted future flooding hotspots in the catchment, located near; Thankes Park Anthony road (2) Macey Streey Carew Terrace Marine Terrace	There are a total of 6 overflows in the catchment. They have been classified as follows; Substandard (medium) - 3 Substandard (high) - 1 Unsatisfactory - 2 Overflows in this catchment impact upon the following shellfish waters; Lynher	We are monitoring performance at the treatment works and there may be a need to increase capacity as part of a medium/long term strategy
CROWNDALE_STW_TAVISTOCK	This catchment is changing & requires a long-term strategy.	There are 6 external flooding hotspots attributed to other causes in the catchment, located	3% of the total number of properties within the catchment that are predicted to be at risk of sewer	There are a total of 10 overflows in the catchment. They have been classified as follows;	We are monitoring performance at the treatment works and we are not expecting any compliance

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
		near; Drake Road Ford Street Pymouth Road Whitchurch Road St Davids Road Green Lane There is 1 pollution hotspot in the catchment located near; Abbey Bridge, Whitchurch Road (ID 120)	flooding. There are 3 predicted future flooding hotspots in the catchment, located near; West Street to Tavistock Viaduct The Wharf SPS Callington Road Plymouth Road	Satisfactory - 1 Substandard (medium) - 3 Substandard (high) - 1 Unsatisfactory - 5	issues due to lack of capacity between now and 2050
MARY TAVY_STW_MARY TAVY	Your catchment requires additional investment to make it resilient for the future.	There are 1 total internal flooding incidents in the catchment, this is 0.28% of the total number of properties within the catchment	N/A	There are a total of 1 overflows in the catchment. They have been classified as follows Substandard (High) - 1 - 100%	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of capacity between now and 2050.
ST LEONARDS_STW_LAUNCESTON	Your catchment requires additional investment to make it resilient for the future.	There are 5 total internal flooding incidents in the catchment, this is 0.08% of the total number of properties	NON-MODELLED APPROACH	There are a total of 8 overflows in the catchment. They have been classified as follows Substandard	We are monitoring performance at the treatment works and we are not expecting any compliance issues due to lack of

TPU	Conclusion Narrative	Historical Pollution and Flooding	Future Flood Risk	Overflows	WwTW
		within the catchment There are 3 external flooding hotspots attributed to other causes in the catchment, located near; Western Road, Launceston St. Stephen Tregadillet		(Medium) - 3 - 38% Substandard (High) - 1 - 12% Unsatisfactory - 2 - 25% Not Classified - 2 - 25%	capacity between now and 2050.

Resilience Assessment

Resilience is a statutory duty for Ofwat under the 2014 Water Industry Act, but more importantly for us it is the philosophy that allows us to consider how we best manage our services to customers in a changing and sometime challenging environment. Such challenges encompass a wide range of factors such as extreme weather conditions; drought and flooding; land use and catchment pressures; power supply and communications reliability; skills and organisational capacity; supply chain capability; as well as changing environmental and public health challenges to meet the needs of consumers now as well as in the longer term. The details below form part of the Operational Resilience assessment within the DWMP. Namely:

- Coastal Flood Inundation
- Coastal Erosion
- Fluvial Flooding (Response and Recovery Plans)
- Power Outage
- Operational Telemetry (OT)

Coastal flooding and Erosion

UK coastal flood and erosion risk is expected to increase over the 21st century due to the impact in sea level rise and climate change. Which means that we can expect to see both an increase in the frequency and magnitude of extreme water levels and weather events around the UK coastline. This is particularly significant for the SW region due to the extensive coastline and numerous coastal communities who rely on the safe and constant provision of clean and wastewater services. The South West's tourism economy is also dependent, to a large extent, on the extensive coastline, acknowledged by EA through improvements to coastal waters over decades of investment under the Bathing Water drivers. As a consequence, an assessment of the risks associated with present day and future projected coastal flood and erosion risk was undertaken utilising the latest available science.

Coastal Flooding

Coastal flood risk was modelled for three climate scenarios, the first representing present-day risk in 2022 and second, the future climate change scenarios (RCP2.5 and RCP8.6) representing the projected risk in 2035 and 2050. To fully assess future risk for each of the above climate change scenarios four return events were evaluated, these were:

- Highest Astronomical Tide (HAT) event - represents the maximum observed tide under average atmospheric conditions
- 1 in 5-year storm return period event - a high probability event with a 20% chance of happening in any one year
- 1 in 50-year storm return period event – a moderate probability event with a 2% chance of occurring in any one year
- 1 in 200-year storm return period event – a low probability event with a 0.5% chance of occurring in any one year The EA Coastal Flood Boundary data for the assessment of extreme sea level rise was also used

A total of 653[1] Sewage Treatment Works (STW), 1235 Sewage Pumping Stations (SPS) plus the associated wastewater infrastructure were assessed for coastal flood risk. Sites have been assessed based upon a number of different storm and flood scenarios considering the risks to the site, the defence of the site and wider EA flood defence work. The 1 in 200-year flood extent for the three time periods is indicated in Figure 15 below.

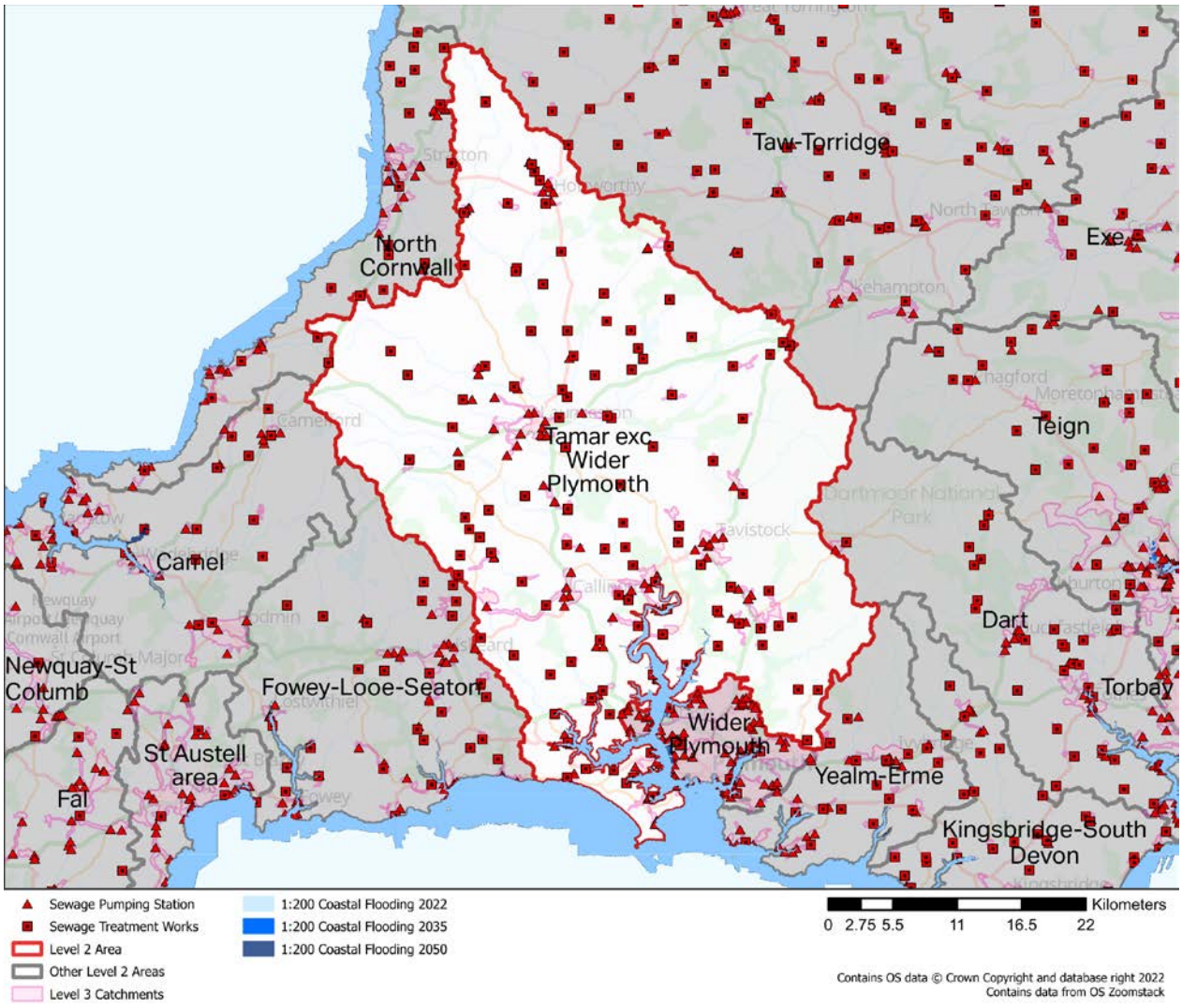

Figure 15: Extent of coastal flooding

Possible interventions to manage the risks have been identified as the provision of flood defences for the site, either as a SWW deliverable or as part of a wider programme of coastal defences working with EA and other RMAs. Thereby delivering greater benefit for coastal communities. An alternative intervention is to relocate the asset to a more secure location ensuring ability to continue to service local communities. This option is more likely to be part of a wider decision to relocate communities at risk and would be taken in close collaboration with the EA and responsible RMAs. The sewer infrastructure identified at risk

[1] Catchments are being continually reviewed as part of other workstreams and may be subject to change, Power Outage and OT defined in 'Our Regional Plan'

is associated with the hydrodynamic modelling outputs. This provides additional assurance for the network assessed as being at risk.

Coastal Erosion

A hazard assessment of coastal erosion susceptibility was undertaken with the aim of better understanding the risk posed to SWW assets and provide information whereby asset investment can be effectively prioritised allowing for a more targeted approach for future allocation of operational and capital expenditure. A detailed assessment of coastal erosion risk was assessed for all of our operational wastewater sites (653 STW's and co-located Sludge Treatment Centre [STC], 1235 SPS's plus associated infrastructure). All sites were only at risk from erosion and not from coastal flooding.
The assessment combines two approaches:

- A high-level screening to identify sites at coastal erosion risk by 2118
- A detailed site-by-site erosion analysis for the three epochs: 2022, 2035, and 2050

The high-level coastal erosion risk assessment is based on the NCERM (National Coastal Erosion Risk Mapping) dataset. The erosion risk was calculated based on the distance of the asset from the projected cliff edge with a geological scaling factor applied based on the erodibility of the underlying geology. Each site identified at risk had detailed erosion analysis undertaken. This included site-specific conditions that influence the rate of coastal erosion, such as geology, for the three time frames 2022, 2035, and 2050. This produced a ranked output highlighting assets at greatest risk of coastal erosion. The extent of coastal erosion in 2035 and 2050 is indicated in Figure 16 below.

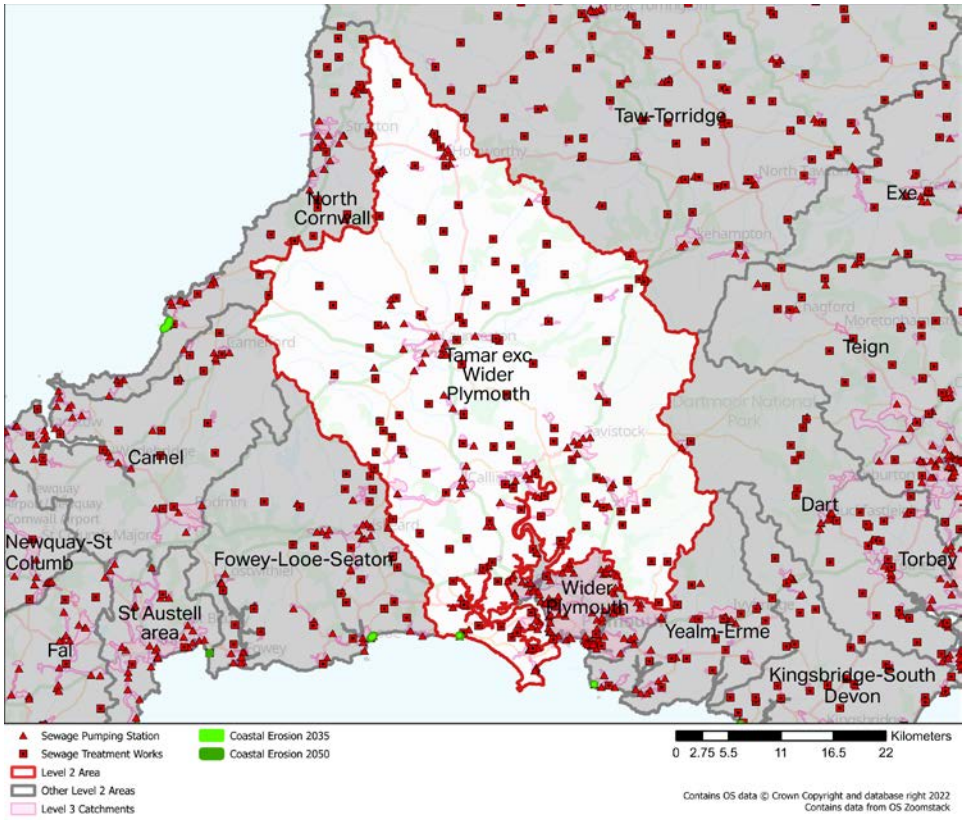

Figure 16: Extent of coastal erosion in 2035 and 2050

The EA have been allocated £2.5m capital funding to work with partners to deliver an update to the NCERM, across England by the end of 2023. The update to NCERM complements the dependent project to refresh the 20 Shoreline Management Plans (SMPs) across England, and other similar EA/DEFRA projects seeking to update flood and coastal erosion risk mapping, modelling and assessment. Combined, all of this activity will provide an essential body of data and evidence to underpin future adaptation and planning investment decisions of relevant coastal RMAs. This being the case the current strategy is to continue to evaluate the risks through AMP8 following the publication of the revised NCERM, working alongside other external agencies and key stakeholders including the relevant coastal risk management authorities to determine the level of risk, relevant SMP policy and therefore any subsequent required investment to mitigate coastal erosion impact.

Fluvial and Pluvial Flooding

UK fluvial flood risk is expected to increase over the 21st century which means that we can expect to see both an increase in the frequency and magnitude of extreme water levels around the UK. As a consequence, an assessment of the risks associated with future fluvial flooding due to projected climate change has been evaluated using the latest available science, UKCP18. The UKCP (United Kingdom Climate Projections) is a suite of climate models developed by the UK Met Office (Meteorological Office) and the Centre for Ecology & Hydrology to provide projections of future climate change in the United Kingdom. The UKCP models use data from global climate models to provide regional and local-scale projections of temperature, precipitation, and other climate variables over the coming decades. The UKCP models have been used to inform policy and decision-making in the UK on issues related to climate change adaptation and mitigation. The UKCP model projections are based on scenarios of future greenhouse gas emissions and consider the most up-to-date scientific understanding of the physical processes that drive the climate system. A total of 653 STW's, 1235 SPS's plus the associated wastewater infrastructure were assessed.

There was a phase 1 screening to identify sites at risk and a high-level screening exercise was undertaken against existing known flood zone extents. This utilised EA flood zone data sets and Defra surface water flooding data sets. A further step was taken in refining the fluvial flood zone data to exclude coastal flooding from the dataset as this risk was appraised separately as part of a Coastal Flood Risk Assessment.

Following a review of outputs from Phase 1 the assessment of sites identified at risk are taken forward to a Phase 2 assessment. The detailed assessment includes both present day risk and two climate change scenarios (RCP2.6 and 8.5) to understand the changes in flood risk over time. The assessment considers both the area flooded and a range of modelled flood depth statistics. These enhanced flood metrics can then be combined with asset information and external factors to develop a more detailed assessment of the risk to each shortlisted asset. For these sites detailed Flood Assessment Reports (FARs) are produced. These reports are designed to be used as a preliminary form of flood risk assessment identifying the potential flood risk for a specified location.

Option Development and Appraisal

Future WINEP Investment

Earlier this year, we presented our WINEP investment programme for 2025 onwards to the EA. Our programme includes substantial investment to improve and protect the environment from our drainage and wastewater activities. The plan focuses on the period between 2025-2030 but also considers our, and the government's, longer term strategy for environmental improvements over the next 25 years. The wastewater investments included in the WINEP for 2025 to 2030 include:

- Investigating and reducing storm overflow discharges
- Investigating and improving bathing water and shellfish water quality, usually through a reduction in storm overflow discharges
- Investigating and protecting high priority sites such as SSSIs and SACs that are impacted by our drainage and wastewater treatment activities
- Investigating and reducing the impact of nutrients and chemicals from our WwTW discharges, especially Phosphorus, usually by increasing treatment capacity to meet more stringent permit levels
- Investments at WwTWs to meet more stringent requirements under the Urban Waste Water Treatment (England and Wales) Regulations 1994, driven by population growth and to provide increased treatment capacity at septic tanks
- Increased monitoring at WwTWs, SPSs, emergency overflows, and in rivers close to our storm overflow discharge points
- Investment in bio-resources
- Investigations into future potential improvements in the treatment of nitrogen and microplastics

In all cases, we have reviewed a number of different options for each investment and have taken into account the wider environmental and societal benefits, including impacts on embodied and operational carbon. We also spoke to our customers about the types of investments, as well as solutions, that they would prefer to see in our plan. All of this, combined with a long-term 30-year view of Total Expenditure (Totex) expenditure allowed us to present a preferred option to the EA for assessment. The investments in the WINEP programme have been produced in alignment with our DWMP. The final WINEP programme is expected to be agreed in July 2023 and hence is not presented here in detail.

ODA Prioritisation

The RBCS and BRAVA steps identified the Level 3 TPUs that were likely to need interventions to mitigate future risk. The PC step then assessed the severity and timing of these risks from 2020 to 2050. To further prioritise ODA effort and future interventions, ODA performance thresholds were applied to all TPUs as follows:

- Collapse Risk – < 10 collapses
- Pollution & Flooding Risk – incidents < 0.1% catchment total, external issues, hydraulic issues, hotspots present
- Future Flood Risk (FFR) – < 5% properties at risk of internal flooding in a 1 in 50 event

- Storm Overflow (SO) Risk – < 10 spills from any SO
- WWTW Compliance – Best judgement

Where no thresholds were met, risk was considered low and TPUs did not proceed to ODA. Performance will continue to be monitored through the DWMP process.

The TPUs that proceeded to ODA were then classed as Standard, Extended or Complex based on the total risk score and quality of hydraulic models, to determine our ODA approach taken in ODA. Standard TPUs are small (average population 756) with simpler problems and more straightforward interventions. Extended TPUs are larger (average population 9,553), have more risks and more complicated solutions. Complex TPUs are the largest (average population 23,132) with more complex systems and solutions, but better hydraulic models.

***Table 23**: Level 3 TPUs - Progression through DWMP stages and ODA class*

TPU	RBCS	BRAVA	ODA	TPU Class
ALTARNUN_STW_ALTARNUN	YES	YES	YES	Standard
BEALS MILL_STW_REZARE	YES	YES	NO	N/A
BERE ALSTON_STW_BERE ALSTON	YES	YES	YES	Standard
BERE FERRERS_STW_BERE FERRERS	YES	YES	NO	N/A
BRIDESTOWE_STW_BRIDESTOWE	YES	YES	YES	Extended
BRIDGERULE_STW_BRIDGERULE	YES	YES	YES	Standard
BUCKLAND MONACHORUM_STW_BUCKLAND MONACHO	YES	YES	YES	Standard
CALLINGTON_STW_CALLINGTON	YES	YES	YES	Extended
CALSTOCK_STW_CALSTOCK	YES	YES	YES	Extended
CARGREEN_STW_CARGREEN	YES	YES	YES	Standard
CLAWTON_STW_CLAWTON	YES	YES	NO	N/A
CLEARBROOK_STW_CLEARBROOK	YES	YES	NO	N/A
CREMYLL_FINESCN_CREMYLL	YES	YES	NO	N/A
CROWNDALE_STW_TAVISTOCK	YES	YES	YES	Extended
DERRITON_STW_HOLSWORTHY	YES	YES	YES	Extended
GOLBERDON_STW_GOLBERDON	YES	YES	NO	N/A
GRATTON_STW_YELVERTON	YES	YES	YES	Extended
GUNNISLAKE_STW_GUNNISLAKE	YES	YES	YES	Standard

TPU	RBCS	BRAVA	ODA	TPU Class
HALWILL_STW_HALWILL	YES	YES	YES	Standard
HARROWBARROW_STW_CALLINGTON	YES	YES	NO	N/A
HATT_STW_HATT	YES	YES	NO	N/A
HEMERDON S T_SEPTNK_STOKE POINT	YES	YES	NO	N/A
HORRABRIDGE_STW_HORRABRIDGE	YES	YES	YES	Extended
LAMERTON_STW_LAMERTON	YES	YES	NO	N/A
LANDRAKE_STW_LANDRAKE	YES	YES	YES	Standard
LEWDOWN_STW_LEWDOWN	YES	YES	YES	Extended
LIFTON_STW_LIFTON	YES	YES	YES	Standard
LYDFORD_STW_LYDFORD	YES	YES	NO	N/A
MARY TAVY_STW_MARY TAVY	YES	YES	YES	Standard
METHERELL_STW_METHERELL	YES	YES	YES	Standard
MILLBROOK_STW_MILLBROOK	YES	YES	YES	Extended
MILTON ABBOT_STW_MILTON ABBOT	YES	YES	YES	Standard
NORTH BRENTOR_STW_NORTH BRENTOR	YES	YES	NO	N/A
NORTH HILL_STW_NORTH HILL	YES	YES	YES	Standard
NORTH PETHERWIN_STW_NORTH PETHERWIN	YES	YES	YES	Standard
PILLATON_STW_PILLATON	YES	YES	NO	N/A
PORTWRINKLE_STW_TORPOINT	YES	YES	NO	N/A
PREWLEY_STW_OKEHAMPTON	YES	YES	NO	N/A
PYWORTHY_STW_PYWORTHY	YES	YES	NO	N/A
QUETHIOCK_STW_QUETHIOCK	YES	YES	NO	N/A
RILLA MILL_STW_RILLA MILL	YES	YES	NO	N/A
SLATE COURT_STW_CHILSWORTHY	YES	YES	NO	N/A
ST DOMINICK_STW_CALLINGTON	YES	YES	YES	Standard
ST GERMANS_STW_ST GERMANS	YES	YES	YES	Standard

TPU	RBCS	BRAVA	ODA	TPU Class
ST LEONARDS_STW_LAUNCESTON	YES	YES	YES	Extended
STOKE CLIMSLAND_STW_STOKE CLIMSLAND	YES	YES	YES	Standard
STOKE HILL_STW_CRAPSTONE	YES	YES	NO	N/A
TETCOTT_STW_HOLSWORTHY	YES	YES	YES	Standard
TORPOINT_STW_TORPOINT	YES	YES	YES	Complex
WALKHAMPTON_STW_WALKHAMPTON	YES	YES	NO	N/A
YEOLMBRIDGE_STW_YEOLMBRIDGE	YES	YES	NO	N/A
ANTONY S T_SEPTNK_ANTONY	YES	NO	NO	N/A
ASHWATER_STW_ASHWATER	YES	NO	NO	N/A
BATHPOOL_STW_BATHPOOL	YES	NO	NO	N/A
BLUNTS S T_STW_TIDEFORD	YES	NO	NO	N/A
BOYTON_STW_BOYTON	YES	NO	NO	N/A
BRATTON CLOVELLY_STW_BRATTON CLOVELLY	YES	NO	NO	N/A
BROADWOODWIDGER_STW_BROADWOODWIDGER	YES	NO	NO	N/A
BURRATOR S T_STW_SHEEPSTOR	YES	NO	NO	N/A
CANAL FARM_STW_CHILSWORTHY	YES	NO	NO	N/A
CHILLATON_STW_CHILLATON	YES	NO	NO	N/A
CHILSWORTHY_STW_GUNNISLAKE	YES	NO	NO	N/A
COADS GREEN_STW_COADS GREEN	YES	NO	NO	N/A
COLMANS COTS ST_STW_STGILES ON THE HEATH	YES	NO	NO	N/A
COLMANS CROSS S T_STW_LIFTON	YES	NO	NO	N/A
DUCHY TERRACE S T_STW_MINIONS	YES	NO	NO	N/A
EAST KITCHAM S T_STW_LIFTON	YES	NO	NO	N/A
EAST PANSON S T_SEPTNK_EAST PANSON S T	YES	NO	NO	N/A
EGLOSKERRY_STW_EGLOSKERRY	YES	NO	NO	N/A

TPU	RBCS	BRAVA	ODA	TPU Class
EWORTHY S T_STW_GERMANSWEEK	YES	NO	NO	N/A
GRIMSCOTT_STW_GRIMSCOTT	YES	NO	NO	N/A
HENWOOD_STW_LISKEARD	YES	NO	NO	N/A
JAYS CROSS S T_SEPTNK_JAYS CROSS	YES	NO	NO	N/A
LATCHLEY_STW_GUNNISLAKE	YES	NO	NO	N/A
LAWHITTON_STW_LAWHITTON	YES	NO	NO	N/A
LEE MOOR_STW_LEE MOOR	YES	NO	NO	N/A
LEWANNICK_STW_LEWANNICK	YES	NO	NO	N/A
LUCKETT_STW_CALLINGTON	YES	NO	NO	N/A
MEAVY S T_STW_DOUSLAND	YES	NO	NO	N/A
MERRYMEET_STW_LISKEARD	YES	NO	NO	N/A
MIDDLEWOOD_STW_HENWOOD	YES	NO	NO	N/A
MILL HILL S T_SEPTNK_MILLHILL	YES	NO	NO	N/A
MILTON COMBE_STW_MILTON COMBE	YES	NO	NO	N/A
MOOR VIEW S T_STW_BROADWOOD	YES	NO	NO	N/A
NEW COURT S T_STW_CHILSWORTHY	YES	NO	NO	N/A
PIPERS POOL_STW_PIPERS POOL	YES	NO	NO	N/A
RAGGOT HILL_STW_NORTH TAMERTON	YES	NO	NO	N/A
ROADFORD BOAT PARK_SEPTNK_ROADFORD	YES	NO	NO	N/A
ROADFORD CAFE_STW_ROADFORD	YES	NO	NO	N/A
SHEVIOCK S T_SEPTNK_SHEVIOCK	YES	NO	NO	N/A
SOURTON DOWN_STW_SOURTON DOWN	YES	NO	NO	N/A
SOURTON_STW_SOURTON	YES	NO	NO	N/A
SPLATT_STW_TRENEGLOS	YES	NO	NO	N/A
ST GILES ON THE HEATH_STW_ST GILES OTH	YES	NO	NO	N/A
ST JOHN S T_SEPTNK_ST JOHN	YES	NO	NO	N/A
ST MELLION_STW_ST MELLION	YES	NO	NO	N/A

TPU	RBCS	BRAVA	ODA	TPU Class
SYDENHAM DAMEREL_STW_SYDENHAM DAMEREL	YES	NO	NO	N/A
TAMAR LAKE LWR S T_SEPTNK_KILKHAMPTON	YES	NO	NO	N/A
THORNDON CROSS_STW_MELDON	YES	NO	NO	N/A
TIDEFORD S T_SEPTNK_TIDEFORD	YES	NO	NO	N/A
TORR VIEW_STW_VIRGINSTOW	YES	NO	NO	N/A
TREBULLETT_STW_TREBULLETT	YES	NO	NO	N/A
TREMATON S T_SEPTNK_TREMATON	YES	NO	NO	N/A
UPPER TAMAR_SEPTNK_KILKHAMPTON	YES	NO	NO	N/A
WAINHOUSE CORNER_STW_WAINHOUSE CORNER	YES	NO	NO	N/A
WARBSTOW_STW_WARBSTOW	YES	NO	NO	N/A
WELLS FARM_STW_NORTH TAMERTON	YES	NO	NO	N/A
WHITSTONE_STW_WHITSTONE	YES	NO	NO	N/A
WILCOVE_STW_TORPOINT	YES	NO	NO	N/A
WOTTER_STW_LEE MOOR	YES	NO	NO	N/A

Of the 110 TPUs in the Tamar exc Wider Plymouth catchment, 51 proceeded through RBCS to BRAVA (the 59 remaining catchments had 1 or no indicators breached, and if 1 indicator was breached it was not tier 1) and 29 proceeded to ODA. Of these, 18 were classed as Standard, 10 Extended and 1 Complex.

Intervention Selection and Assessment

Catchment area teams reviewed each TPU and assigned up to 3 interventions to address the specific catchment risks from the standard list in the DWMP guidance (Table 24 below).

***Table 24**: Generic Interventions*

Management Area/Option Type	Description	Generic option examples- Standard TPU's	Sub-option examples- Extended & Complex TPU's	Option ID
Customer side management options	Generic options to manage the use of water in and arising from customer properties	Water efficient appliances	Promote and make available water efficient appliances to reduce production of domestic wastewater	CE1
		Rainwater harvesting	Promote and make available rainwater harvesting systems	CE2
		Customer incentives	Promotion of incentives to reduce impermeable areas	CE3
		Domestic and business customer education (Targeted Customer Behaviours)	Love Your Loo, etc. Likely focus at L1; however, where location specific issues are identified activities could be targeted around what should and shouldn't be put down sewers	CE4
Surface water management - Pollution & Flooding, Overflows	Generic options within catchments to manage surface water flows entering the conveyance system	Surface water source control measures	Company installation of source control sustainable drainage systems (SuDS)	SWM1
		Surface water source control measures	SuDS partnerships with key stakeholders	SWM2
		Surface water source control measures	Upper Catchment Solution/Upstream Thinking	SWM3
		Surface water pathway measures	Separate surface water from combined systems by constructing new surface water networks (and/or	SWM4

Management Area/Option Type	Description	Generic option examples- Standard TPU's	Sub-option examples- Extended & Complex TPU's	Option ID
			modify existing)	
		Surface water pathway measures	Integrate surface water pathway measures into new and upgraded third party designs	SWM5
		Surface water infiltration measures	Develop a program to reduce Surface Water Infiltration	SWM6
Combined and foul sewer systems - Overflows, Pollution & Flooding Collapses	Generic options to manage flows within the conveyance system to minimise impacts on customers and the environment	Intelligent network operation	Implement widespread sewer/pumping station level monitoring, live network modelling linked to operational responses such as proactive jetting	CFS1
		Increase the capacity of existing foul/combined networks	Construct new stormwater storage systems	CFS2
		Increase the capacity of existing foul/combined networks	Replace or upgrade existing networks	CFS3
		Wastewater transfers	Inter-catchment network transfers	CFS4
		Wastewater transfers	inter-catchment WwTW transfers	CFS5
Wastewater treatment	Generic options to manage flows and loads at wastewater treatment works to minimise impacts on customers and the environment	Treat or pre-treat wastewater in the network	Treat or pre-treat flows at existing pumping stations or within sewer network	WWT1
		Increase treatment capacity	Upgrade existing works using more intensive processes	WWT2

Management Area/Option Type	Description	Generic option examples- Standard TPU's	Sub-option examples- Extended & Complex TPU's	Option ID
		Increase treatment capacity	Add additional process streams (increase plant capacity)	WWT3
		Treatment works rationalisation/ decentralisation	Replace existing treatment works with one large scale installation	WWT4
		Treatment works rationalisation/ decentralisation	Replace existing treatment works with several smaller scale installations	WWT5
		Modify consents and permits	Catchment consenting	WWT7
		Modify consents and permits	Adaptive consenting (e.g. "wet weather" relaxation)	WWT8
		Catchment management initiatives	Initiatives to address fertiliser use and application	WWT9

These initial selections were then subject the following checks and reviews:

- Internal review by Catchment Managers (all) and WwTW experts (WwTW)
- External review by key stakeholders (all)
- Internal hydraulic modelling of selected catchments and extrapolation of modelling results to non-modelled catchments (FFR and SO risk)
- Internal review of the above by DWMP team

Intervention Quantification and Costing

Preferred interventions were quantified using modelling and extrapolation. Up to 5 final interventions were selected, reflecting the need for a combination of solutions. Costs were provided by South West Water's cost consultants, using approved cost models based on South West Water data where possible, and from past South West Water scheme data or industry recognised estimates if not.

The approach was different for different risks:

Collapses – Quantification and costing not included in DWMP. Risks and interventions noted but plan already covered by wider programme of sewer rehabilitation and repairs.

Pollution & Flooding – Quantification and costing included in DWMP only where an enhancement over and above existing programmes of work were recommended.

Future Flood Risk (FFR) – 26 Complex catchments were hydraulically modelled to assess options to address risk. The results were used to extrapolate to non-modelled catchments. It was assumed at the outset that Nature Based solutions such as Sustainable drainage systems (SuDS) were a possibility wherever surface water separation (SWS) was suggested. Suitability of SuDS for surface water separation assessed at high level using Stantec's GIS based Surface Water Assessment Tool (SWAT) analysis.

Storm Overflows (SO) - 12 catchments (8 complex 4 extended) were selected for hydraulic modelling to give coverage of 233 SOs (c.20% of South West Water total) and a representative sample of receiving waters. Results were used to extrapolate to non-modelled DWMP TPUs. To meet the later DEFRA SO guidance, a separate top-down desktop model based on Event Duration Monitor (EDM) spill data was developed to assess total need for all TPUs.

WWTW Performance – Analyses of Biological Oxygen Demand (BOD) Capacity and DWF permit compared with future population and flow projections were used to assess sites at future risk of meeting permit requirements. The scale of upgrades needed was estimated using a calculation of the increase in population equivalent PE or additional capacity in cubic metres required at the works.

Results - Interventions

Table 25 below outlines the final interventions selected for the TPUs in the Tamar exc Wider Plymouth catchment, along with potential solutions involving partnership working or nature-based solutions. The intervention codes applied are defined in Table 24 above.

***Table 25**: TPU interventions selection and feedback*

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
ALTARNUN_STW_ALTARNUN	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	SWM6	WWT3				Wastewater treatment WWT4 removed alongside Surface water management intervention SWM4 and CFS2. WWT3 and SWM4 carried over.
BERE ALSTON_STW_BERE ALSTON	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6			Customer side management option CE4 removed alongide CFS1. Combined and foul sewer systems CFS2 carried over with Surface

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									water management interventions SWM4 and SWM6.
BRIDESTOWE_STW_BRIDESTOWE	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS						continue to monitor risk, no intervention needed
BRIDGERULE_STW_BRIDGERULE	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	WWT3					Wastewater treatment intervention WWT3 carried over but WWT2 removed, both Surface water management interventions removed, Combined and foul sewer systems CFS2 also removed
BUCKLAND MONACHORUM_STW_BUCK	Standard	SWW: Potential SUDS for SW	SWW: Potential	CFS2	SWM4	SWM6	WWT3		Wastewater treatment intervention

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
LAND MONACHO		separation	SUDS						WWT3 carried over but WWT2 removed. Combined and foul sewer systems CFS2 alongside SWM4 carried over and SWM6 added.
CALLINGTON_STW_CALLINGTON	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Combined and foul sewer systems CFS2 carried over with Surface water management SWM4 and SWM6. Wastewater treatment intervention WWT3 also added.
CALSTOCK_STW_CALSTOCK	Extended	SWW: Potential SUDS for SW	SWW: Potential SUDS	CFS2	SWM4	SWM6			Combined and foul sewer systems CFS2

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
		separation							carried over with Surface water management SWM4 and SWM6. Customer side management option CE4 and CFS1 removed.
CARGREEN_STW_CARGREEN	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS						continue to monitor risk, no intervention needed
CROWNDALE_STW_TAVISTOCK	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Surface water management SWM4 and SWM6 carried over, Combined and Foul Systems CSF2 carried over. Waste Water Treatment WWT3 added.

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
DERRITON_STW_HOLSWORTHY	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Surface water management intervention SWM4 & SWM6, Combined and foul sewer systems CFS2, Waste Water Treatment WWT3 carried over.
GRATTON_STW_YELVERTON	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Combined and foul sewer systems CFS2, Surface water management intervention SWM4 and SWM6 and WWT3 Wastewater treatment carried over.
GUNNISLAKE_STW_GUNNISLAKE	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Combined and foul sewer systems CFS2, Surface water

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									management intervention SWM4 and SWM6 and WWT3 Wastewater treatment carried over. WWT2 Wastewater treatment removed.
HALWILL_STW_HALWILL	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Surface water management intervention SWM4 and WWT3 Wastewater treatment carried over. Surface water management intervention SWM6 and Combined and foul sewer systems CFS2 added. WWT2

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									Wastewater treatment removed.
HARROW BARROW_STW _CALLINGTON	Standard	SWW: Assume no potential unless advised by WWTW team	SWW: Assume no potential	CFS2	SWM4	SWM6	WWT3		Surface water management intervention SWM6 and WWT3 Wastewater treatment carried over. Combined and foul sewer systems CFS2, Surface water management intervention SWM4 added. WWT2 Wastewater treatment removed
HORRABRIDGE _STW_HORRA BRIDGE	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Combined and foul Sewer systems CFS2, and Surface water management

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									SWM6 and SWM4 carried over. Customer side management options CE4 and Combined and foul Sewer systems CFS1 removed. Wastewater treatment WWT3 added in.
LANDRAKE_STW_LANDRAKE	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Wastewater treatment WWT3, Surface Water management SWM4 and SWM6 carried over. Wastewater Treatment WWT2 removed. Combined and Foul sewer systems CFS2

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									added in.
LEWDOWN_STW_LEWDOWN	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6			Combined and Foul sewer systems CFS2, Surface Water management SWM2 and SWM6 carried over.
LIFTON_STW_LIFTON	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	SWM6	WWT3				Combined and foul sewer systems CFS2, Wastewater treatment WWT4, Surface Water management SWM4 removed. Wastewater Treatment WWT3 and Surface Water Management SWM6 carried over.
MARY TAVY_STW_M	Standard	SWW: Potential	SWW: Potential	CFS2	SWM4	SWM6	WWT3		Surface water management

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
ARY TAVY		SUDS for SW separation identified	SUDS						SWM1 removed and Wastewater treatment intervention WWT3 added. Combined and foul sewer systems CFS2 and Surface water management SWM4 and SWM6 carried over
METHERELL_STW_METHERELL	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Wastewater treatment intervention WWT2 and Combined and foul sewer systems CFS5 removed and Surface water management SWM6 added. Combined and foul sewer systems CFS2

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									and Surface water management SWM4 carried over
MILLBROOK_STW_MILLBROOK	Extended	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	WWT3			Combined and foul sewer systems CFS2, Wastewater treatment intervention WWT3 and Surface water management SWM4 carried over. Surface water management SWM6 removed.
MILTON ABBOT_STW_MILTON ABBOT	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6			Wastewater treatment intervention WWT3 removed. Combined and foul sewer systems CFS2

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
									and Surface water management SWM4 and SWM6 carried over
NORTH HILL_STW_NORTH HILL	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Wastewater treatment intervention WWT4 and WWT2 removed, WWT3 carried over. Surface water management SWM6 added. Combined and foul sewer systems CFS2 and Surface water management SWM4 carried over.
NORTH PETHERWIN_STW_NORTH	Standard	SWW: Potential SUDS for SW	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		WWT4 removed and SWM4 and

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
PETHERWIN		separation							SWM6 added. Combined and foul sewer systems CFS2 and WWT3 retained.
ST DOMINICK_STW_CALLINGTON	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6			Wastewater treatment intervention WWT2 and WWT3 removed. Combined and foul sewer systems CFS2 and Surface water management SWM4 and SWM6 carried over.
ST GERMANS_STW_ST GERMANS	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS						continue to monitor risk, no intervention needed
ST LEONARDS_ST	Extended	SWW: Potential	SWW: Potential	CFS2	SWM4	SWM6	WWT3		Wastewater treatment

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
W_LAUNCESTON		SUDS for SW separation	SUDS						intervention WWT3 added. Combined and foul sewer systems CFS2 and Surface water management SWM4 and SWM6 carried over.
STOKE CLIMSLAND_STW_STOKE CLIMSLAND	Standard	SWW: Potential SUDS for SW separation	SWW: Potential SUDS	CFS2	SWM4	SWM6	WWT3		Wastewater treatment intervention WWT4 removed. Combined and foul sewer systems CFS2, Wastewater treatment intervention WWT3 and Surface water management SWM4 and SWM6 carried over

TPU	Class	Nature based solutions assessment Comments	Partnership working potential Comments	Final #1	Final #2	Final #3	Final #4	Final #5	Final DWMP ODA assessment summary
TETCOTT_STW_HOLSWORTHY	Standard	SWW: Potential SUDS for SW separation identified	SWW: Potential for SUDS, UST identified	WWT3					Wastewater treatment intervention WWT3 carried over but Surface water management SWM6 and SWM1 removed
TORPOINT_STW_TORPOINT	Complex	SWW: Potential SUDS for SW separation identified	SWW: Potential SUDS identified	CFS2	SWM4	SWM6	SWM2		Combined and foul sewer systems CFS2 and Surface water management SWM2, SWM4 & SWM6 carried over.

For the Tamar exc Wider Plymouth catchment, 29 TPUs progressed to ODA. Stakeholder feedback was received on 11 TPUs. The feedback was mainly on the need to:

- Consult the EA and partners on potential Surface Water Separation (SWS) plans
- Consider links to surface water, fluvial and sea flooding, planned schemes
- Consider coastal erosion risk

Potential Nature Based Solutions were identified for 12 catchments (largely SuDS for Surface Water Separation) and partnership opportunities were identified for 12 catchments (largely on SWS/SuDS).

Table 26 below summarises the final interventions selected now that the ODA stage is complete.

***Table 26**: Initial and Final Interventions selected by intervention type*

INTERVENTION	Total selected Final
CE1: Promote and make available water efficient appliances to reduce production of domestic wastewater	0
CE2: Promote and make available rainwater harvesting systems	0
CE3: Promotion of incentives to reduce impermeable areas	0
CE4: Love Your Loo, etc	0
SWM1: Company installation of source control sustainable drainage systems (SuDS)	0
SWM2: SuDS partnerships with key stakeholders	1
SWM3: Upper Catchment Solution/Up Stream Thinking	0
SWM4: Separate surface water from combined systems by constructing new surface water networks (and/or modify existing)	23
SWM5: Integrate surface water pathway measures into new and upgraded third party designs	0
SWM6: Develop a program to reduce infiltration	24
CFS1: Implement widespread sewer/pumping station level monitoring, live; network modelling linked to operational responses such as proactive jetting	0
CFS2: Construct new combined or foul storage systems	23
CFS3: Replace or upgrade existing networks	0
CFS4: Inter-catchment network transfers	0
CFS5: inter-catchment WwTW's transfers	0

INTERVENTION	Total selected Final
WWT1: Treat or pre-treat flows at existing pumping stations or within sewer network	0
WWT2: Upgrade existing works using more intensive processes	0
WWT3: Add additional process streams (increase plant capacity)	21
WWT4: Replace existing treatment works with one large scale installation	0
WWT5: Replace existing treatment works with several smaller scale installations	0
WWT7: Catchment consenting	0
WWT8: Adapative consenting (e.g. "wet weather" relaxation)	0
WWT9: Initiatives to address fertiliser use and application	0
Total	92

There were no interventions selected in the Tamar exc Wider Plymouth catchment for customer education, although education to promote water efficiency, rainwater harvesting, reducing impermeable areas and preventing sewer misuse will be delivered across the region as part of a company-wide initiative. There were no interventions selected for CFS1 monitoring to direct proactive jetting effort to manage flooding and pollution incidents due to blockages.

Construction of storage systems (CFS2) was recommended based on the results of modelling for storm overflow risk and the preferred solution being a combination of surface water separation and storage.

Where a strategic network or treatment intervention was selected (CFS4,5 WWT4,5) the selection was noted but not progressed under DWMP. These strategic decisions will lead to bespoke plans which will be revisited for PR24 and captured separately in the programme.

The ODA process led to a lot more Surface Water Management (SWM) interventions being selected. Infiltration (SWM6) was selected in all catchments, with the view that this would be the first task to help understand flows and identify opportunities for Surface Water Separation (SWM4), SuDS (SWM1,2) and other nature-based solutions such as Upstream Thinking and Natural Flood Management (SWM3). Our assumption is that unless specifically ruled out, Nature Based solutions such as SuDS will be possible, so they will be explored wherever surface water separation was selected.

Results – Quantities

Table 27 below outlines the quantities of interventions proposed by the DWMP for the Tamar exc Wider Plymouth catchment.

***Table 27**: Quantities for proposed interventions*

TPU	Storage (m3)	SWS (ha)	Network Enhancement (km)	No. WWTW for Capacity increase	No. WWTW for DWF increase	No. WWTW for Nutrient reduction
ALTARNUN_STW_ALTARNUN	0	0.00	2.25	1	0	0
ANTONY S T_SEPTNK_ANTONY	441	2.99	0.64	0	0	0
ASHWATER_STW_ASHWATER	0	0.00	0.00	0	0	0
BATHPOOL_STW_BATHPOOL	0	0.00	0.00	0	0	0
BEALS MILL_STW_REZARE	329	3.20	5.55	0	0	0
BERE ALSTON_STW_BERE ALSTON	5,084	8.36	9.36	0	0	0
BERE FERRERS_STW_BERE FERRERS	102	1.55	1.41	0	0	0
BLUNTS S T_STW_TIDEFORD	0	0.00	0.00	0	0	0
BOYTON_STW_BOYTON	0	0.00	0.00	0	0	0
BRATTON CLOVELLY_STW_BRATTON CLOVELLY	0	0.00	0.00	0	0	0
BRIDESTOWE_STW_BRIDESTOWE	0	0.00	0.00	0	0	0
BRIDGERULE_STW_BRIDGERULE	0	0.00	0.00	1	0	1
BROADWOODWIDGER_STW_BROADWOODWIDGER	0	0.00	0.00	0	0	0
BUCKLAND MONACHORUM_STW_BUCKLAND MONACHO	2,181	4.56	1.68	0	1	0
BURRATOR S T_STW_SHEEPSTOR	0	0.00	0.00	0	0	0
CALLINGTON_STW_CALLINGTON	638	6.05	34.87	1	0	1

TPU	Storage (m3)	SWS (ha)	Network Enhancement (km)	No. WWTW for Capacity increase	No. WWTW for DWF increase	No. WWTW for Nutrient reduction
CALSTOCK_STW_CALSTOCK	5,576	10.90	13.71	0	0	0
CANAL FARM_STW_CHILSWORTHY	0	0.00	0.00	0	0	0
CARGREEN_STW_CARGREEN	0	0.00	0.00	0	0	0
CHILLATON_STW_CHILLATON	0	0.00	0.00	0	0	1
CHILSWORTHY_STW_GUNNIS LAKE	5,000	7.00	1.14	0	0	0
CLAWTON_STW_CLAWTON	0	0.00	0.00	0	0	0
COADS GREEN_STW_COADS GREEN	0	0.00	0.00	0	0	0
CREMYLL_FINESCN_CREMYLL	0	0.00	0.00	0	0	0
CROWNDALE_STW_TAVISTOC K	2,932	17.94	46.37	0	0	1
DERRITON_STW_HOLSWORTH Y	1,990	9.69	15.30	1	1	1
DUCHY TERRACE S T_STW_MINIONS	0	0.00	0.00	0	0	0
EAST KITCHAM S T_STW_LIFTON	0	0.00	0.00	0	0	0
EAST PANSON S T_SEPTNK_EAST PANSON S T	0	0.00	0.00	0	0	0
EGLOSKERRY_STW_EGLOSKER RY	166	2.03	1.60	0	0	0
EWORTHY S T_STW_GERMANSWEEK	0	0.00	0.00	0	0	0
GOLBERDON_STW_GOLBERD ON	5,000	6.65	1.70	0	0	0
GRATTON_STW_YELVERTON	3,310	8.10	8.01	0	1	1
GRIMSCOTT_STW_GRIMSCOT T	0	0.00	0.00	0	0	0
GUNNISLAKE_STW_GUNNISLA KE	1,435	7.95	10.96	1	0	0
HALWILL_STW_HALWILL	3,765	5.09	2.71	1	1	1

TPU	Storage (m3)	SWS (ha)	Network Enhancement (km)	No. WWTW for Capacity increase	No. WWTW for DWF increase	No. WWTW for Nutrient reduction
HARROW BARROW_STW_CALLINGTON	139	1.86	2.66	0	0	1
HATT_STW_HATT	342	2.74	2.43	0	0	0
HEMERDON S T_SEPTNK_STOKE POINT	0	0.00	0.00	0	0	0
HENWOOD_STW_LISKEARD	0	0.00	0.00	0	0	0
HORRABRIDGE_STW_HORRAB RIDGE	9,400	11.22	12.28	0	0	1
JAYS CROSS S T_SEPTNK_JAYS CROSS	0	0.00	0.00	0	0	0
LAMERTON_STW_LAMERTON	1,794	4.37	3.64	0	0	0
LANDRAKE_STW_LANDRAKE	855	3.64	3.09	1	1	0
LATCHLEY_STW_GUNNISLAKE	0	0.00	0.53	0	0	0
LAWHITTON_STW_LAWHITTO N	0	0.00	0.00	0	0	0
LEE MOOR_STW_LEE MOOR	0	0.00	0.00	0	0	0
LEWANNICK_STW_LEWANNIC K	0	0.00	0.00	0	0	1
LEWDOWN_STW_LEWDOWN	881	5.97	2.75	0	0	0
LIFTON_STW_LIFTON	0	0.00	4.64	0	0	1
LUCKETT_STW_CALLINGTON	0	0.00	0.24	0	0	0
LYDFORD_STW_LYDFORD	2,017	4.48	1.19	0	0	0
MARY TAVY_STW_MARY TAVY	7,820	6.60	11.21	0	0	1
MEAVY S T_STW_DOUSLAND	0	0.00	0.00	0	0	0
MERRYMEET_STW_LISKEARD	0	0.00	0.00	0	0	0
METHERELL_STW_METHERELL	99	1.69	2.01	1	0	0
MIDDLEWOOD_STW_HENWO OD	0	0.00	0.00	0	0	0
MILL HILL S T_SEPTNK_MILLHILL	0	0.00	0.00	0	0	0

TPU	Storage (m3)	SWS (ha)	Network Enhancement (km)	No. WWTW for Capacity increase	No. WWTW for DWF increase	No. WWTW for Nutrient reduction
MILLBROOK_STW_MILLBROOK	287	4.69	0.00	1	0	0
MILTON ABBOT_STW_MILTON ABBOT	3,221	4.94	1.61	0	0	0
MILTON COMBE_STW_MILTON COMBE	0	0.00	0.00	0	0	0
MOOR VIEW ST_STW_BROADWOOD	0	0.00	0.00	0	0	0
NEW COURT ST_STW_CHILSWORTHY	0	0.00	0.00	0	0	0
NORTH BRENTOR_STW_NORTH BRENTOR	0	0.00	0.00	0	0	0
NORTH HILL_STW_NORTH HILL	5,453	5.46	0.99	1	0	0
NORTH PETHERWIN_STW_NORTH PETHERWIN	451	6.87	2.25	1	1	0
PILLATON_STW_PILLATON	1,124	3.91	0.75	0	0	0
PIPERS POOL_STW_PIPERS POOL	0	0.00	0.00	0	0	0
PORTWRINKLE_STW_TORPOINT	0	0.00	0.00	0	0	0
PREWLEY_STW_OKEHAMPTON	0	0.00	0.00	0	0	0
PYWORTHY_STW_PYWORTHY	5,000	7.00	2.33	0	1	1
QUETHIOCK_STW_QUETHIOCK	5,000	7.00	0.62	0	0	0
RAGGOT HILL_STW_NORTH TAMERTON	0	0.00	0.00	0	0	0
RILLA MILL_STW_RILLA MILL	5,000	7.00	4.39	0	0	0
ROADFORD BOAT PARK_SEPTNK_ROADFORD	0	0.00	0.00	0	0	0

TPU	Storage (m3)	SWS (ha)	Network Enhancement (km)	No. WWTW for Capacity increase	No. WWTW for DWF increase	No. WWTW for Nutrient reduction
SHEVIOCK S T_SEPTNK_SHEVIOCK	59	0.65	0.77	0	0	0
SLATE COURT_STW_CHILSWORTHY	0	0.00	0.00	0	0	0
SOURTON DOWN_STW_SOURTON DOWN	0	0.00	0.00	0	0	0
SOURTON_STW_SOURTON	0	0.00	0.00	0	0	0
SPLATT_STW_TRENEGLOS	0	0.00	0.00	0	0	0
ST DOMINICK_STW_CALLINGTON	2,922	4.84	5.12	0	0	0
ST GERMANS_STW_ST GERMANS	0	0.00	0.00	0	0	0
ST GILES ON THE HEATH_STW_ST GILES OTH	0	0.00	0.00	0	0	0
ST JOHN S T_SEPTNK_ST JOHN	0	0.00	0.00	0	0	0
ST LEONARDS_STW_LAUNCESTON	652	8.62	47.07	0	0	1
ST MELLION_STW_ST MELLION	0	0.00	0.00	0	0	1
STOKE CLIMSLAND_STW_STOKE CLIMSLAND	807	3.58	3.08	1	1	1
STOKE HILL_STW_CRAPSTONE	7,820	7.00	7.88	0	0	0
SYDENHAM DAMEREL_STW_SYDENHAM DAMEREL	0	0.00	0.00	0	0	0
TAMAR LAKE LWR S T_SEPTNK_KILKHAMPTON	0	0.00	0.00	0	0	0
TETCOTT_STW_HOLSWORTHY	0	0.00	0.00	0	1	0
TIDEFORD S T_SEPTNK_TIDEFORD	0	0.00	0.00	0	0	0
TORPOINT_STW_TORPOINT	1,446	9.89	23.94	0	0	0

TPU	Storage (m3)	SWS (ha)	Network Enhancement (km)	No. WWTW for Capacity increase	No. WWTW for DWF increase	No. WWTW for Nutrient reduction
TORR VIEW_STW_VIRGINSTOW	0	0.00	0.00	0	0	0
TREBULLETT_STW_TREBULLETT	0	0.00	0.00	0	0	0
TREMATON ST_SEPTNK_TREMATON	0	0.00	0.00	0	0	0
UPPER TAMAR_SEPTNK_KILKHAMPTON	0	0.00	0.00	0	0	0
WAINHOUSE CORNER_STW_WAINHOUSE CORNER	0	0.00	0.00	0	0	0
WALKHAMPTON_STW_WALKHAMPTON	0	0.00	3.05	0	0	0
WARBSTOW_STW_WARBSTOW	0	0.00	0.00	0	0	0
WELLS FARM_STW_NORTH TAMERTON	0	0.00	0.00	0	0	0
WHITSTONE_STW_WHITSTONE	0	0.00	0.00	0	0	0
WILCOVE_STW_TORPOINT	0	0.00	0.00	0	0	0
WOTTER_STW_LEE MOOR	0	0.00	0.00	0	0	0
YEOLMBRIDGE_STW_YEOLMBRIDGE	1,124	3.91	1.86	0	0	0

Our proposals for the Tamar exc Wider Plymouth catchment include approximately 229ha of SWS by conventional or SUDS solutions, 101,662m^3 of storage, 309km of network enhancement, work to improve DWF compliance at 9 treatment sites, upgrading of capacity at 12 treatment sites and work to reduce nutrients at 16 treatment sites. [2]

[2] Please note that these are high level strategic planning proposals and do not represent a commitment. The plans and overall programme need to be assessed against other risks and against the wider South West Water programme for risk and affordability.

Surface Water Separation and SuDS Assessment

To explore opportunities for SWS and SuDS, Stantec's GIS based Surface Water Assessment Tool (SWAT) was applied to the 26 Complex TPUs that were hydraulically modelled for future flood risk (FFR). The tool plots impermeable area, green space, existing networks, buildings, roads and watercourses. It plots existing foul combined and surface water networks and identifies where surface water sewers join combined sewers as potential points for disconnection. It identifies potential land and road space as well as residential and commercial properties for different interventions. Appendix F outlines the approach.

The high-level results indicate that on average it is estimated that SuDS might be suitable for delivering approximately 55% of the SWS required to mitigate the future flood risk in modelled catchments. This ranged from 0% where there was limited space, impermeable land, and no water courses present to discharge to, to 100% in some TPUs. We intend to develop the tool and process in more detail in the future as we progress the first DWMP interventions through feasibility.

Upstream Thinking and Natural Flood Management

Appendix G shows the coverage of current UST projects in the SWW region where upper catchment solutions are being successfully explored and the intention is to expand this approach. South West Water's infiltration and site surveys may identify opportunities for Natural Flood Management and Upstream Thinking interventions in the Tamar exc Wider Plymouth catchment. South West Water intend to collaborate with the EA and take a similar GIS based approach to assessing Natural Flood Management options where tackling shared surface water flooding issues.

Next Steps

A cornerstone of the DWMP framework and process is collaboration between water companies and key stakeholders. To be successful in developing an effective plan that provides innovative solutions and better value for customers, while protecting our environment and ensuring we meet the future pressure on our drainage systems, we need to work together, and we rely on the active participation of our stakeholders to engage with us in the concept, planning and delivery of this plan.

APPENDICES

APPENDIX A: SEWER OVERFLOW DETAILS

South West Water has a programme to monitor the use and performance of storm overflows and the number of monitors is planned to increase. The table below provides a summary of any available performance data for storm overflows in the catchment.

***Table 28**: Storm Overflow Performance Metrics*

CD_Number	Waterbody	2019 Reportable	2019 Nr. Spills	2020 Reportable	2020 Nr. Spills	2021 Reportable	2021 Nr. Spills
CD514430	Lower River Inny	Y	364	Y	366	Y	361
CD404230	Tamar	Y	366	Y	366	Y	355
CD401060	Lower River Tamar	Y	123	Y	333	Y	316
CD404160	Tiddy	Y	110	Y	278	Y	310
CD403660	Bolesbridge Water	Y	210	Y	255	Y	104
CD400600	Tamar	Y	260	Y	194	Y	293
CD203170	Tamar	N	n/a	Y	192	Y	133
CD204970	Tamar	Y	132	Y	183	Y	145
CD200260	Tamar	Y	201	Y	181	Y	179
CD404970	Tamar	Y	26	Y	172	Y	190
CD400260	Tamar	Y	141	Y	171	Y	174
CD202450	Deer	Y	144	Y	168	Y	135
CD508310	Tamar	Y	38	Y	162	Y	0
CD403000	Tamar	Y	151	Y	157	Y	97
CD403320	Lower River Tamar	Y	148	Y	155	Y	90

CD_Number	Waterbody	2019 Reportable	2019 Nr. Spills	2020 Reportable	2020 Nr. Spills	2021 Reportable	2021 Nr. Spills
CD403630	Tamar	Y	155	Y	153	Y	132
CD202500	Walkham	Y	131	Y	152	Y	126
CD401980	Tamar	Y	165	Y	151	Y	168
CD513110	Tamar	Y	74	Y	151	Y	175
CD508970	Walkham	Y	48	Y	138	Y	114
CD200741	Tamar	Y	246	Y	134	Y	98
CD514420	Lower River Inny	Y	170	Y	132	Y	93
CD404710	Tamar	Y	121	Y	129	Y	122
CD203270	Cotehele Stream	Y	116	Y	122	Y	166
CD203920	Tamar	N	n/a	Y	119	Y	85
CD402830	Tamar	Y	129	Y	111	Y	79
CD513720	Kensey	Y	103	Y	110	Y	139
CD201410	Tamar	Y	92	Y	105	Y	66
CD513580	Lower River Tamar	Y	0	Y	100	Y	103
CD404950	Lower River Tamar	Y	88	Y	98	Y	75
CD715550	Tamar	N	n/a	Y	97	Y	107
CD518920	Tamar	Y	74	Y	86	Y	53
CD202920	Tamar	Y	56	Y	85	Y	29

CD_Number	Waterbody	2019 Reportable	2019 Nr. Spills	2020 Reportable	2020 Nr. Spills	2021 Reportable	2021 Nr. Spills
CD713130	Tamar	Y	145	Y	84	Y	75
CD402450	Deer	Y	86	Y	82	Y	76
CD700270	n/a	Y	101	Y	81	Y	90
CD402990	Tamar	Y	40	Y	78	Y	78
CD514330	Tamar	Y	78	Y	76	Y	76
CD507510	Tamar	Y	63	Y	75	Y	42
CD200870	Tamar	Y	72	Y	73	Y	65
CD503830	Tamar	Y	39	Y	72	Y	60
CD202230	Tamar	Y	65	Y	68	Y	63
CD519870	Tamar	Y	76	Y	66	Y	55
CD714400	Tamar	Y	50	Y	64	Y	60
CD202990	Tamar	Y	39	Y	62	Y	65
CD400070	Tamar	Y	0	Y	55	Y	101
CD514370	Tamar	Y	42	Y	54	Y	66
CD402920	Tamar	Y	35	Y	53	Y	32
CD402170	Cotehele Stream	Y	37	Y	47	Y	50
CD718340	PLYMOUTH TAMAR	Y	38	Y	46	Y	47
CD706260	Tamar	Y	25	Y	44	Y	29

CD_Number	Waterbody	2019 Reportable	2019 Nr. Spills	2020 Reportable	2020 Nr. Spills	2021 Reportable	2021 Nr. Spills
CD514390	Tamar	Y	35	Y	41	Y	47
CD714210	Cotehele Stream	Y	55	Y	39	Y	34
CD719340	Tamar	Y	23	Y	38	Y	42
CD513140	Tamar	Y	23	Y	38	Y	31
CD405160	Tamar	Y	29	Y	36	Y	43
CD202050	Meavy	Y	22	Y	33	Y	120
CD403270	Cotehele Stream	Y	59	Y	30	Y	14
CD404740	Tamar	Y	5	Y	30	Y	68
CD512900	Tamar	Y	0	Y	28	Y	43
CD717910	Tiddy	Y	17	Y	28	Y	18
CD713770	Kensey	N	n/a	Y	26	Y	5
CD713681	Tamar	Y	8	Y	25	Y	21
CD514310	Tamar	Y	20	Y	23	Y	26
CD203310	Tamar	Y	103	Y	19	Y	59
CD714350	Tamar	Y	12	Y	10	Y	3
CD404770	Tamar	Y	10	Y	7	Y	4
CD513760	Kensey	Y	1	Y	6	Y	5
CD713680	Tamar	Y	19	Y	4	Y	21

CD_Number	Waterbody	2019 Reportable	2019 Nr. Spills	2020 Reportable	2020 Nr. Spills	2021 Reportable	2021 Nr. Spills
CD514340	Tamar	Y	3	Y	4	Y	6
CD713590	Lower River Tamar	Y	0	Y	2	Y	0
CD514380	Tamar	Y	2	Y	2	Y	7
CD706240	Tamar	Y	1	Y	2	Y	5
CD400221	Lower River Inny	Y	0	Y	0	Y	7
CD514360	Tamar	Y	0	Y	0	Y	0
CD513970	Tamar	Y	0	Y	0	Y	0
CD404430	Tamar	Y	0	Y	0	Y	17
CD514450	Tamar	N	n/a	Y	0	Y	0
n/a	n/a	n/a	n/a	n/a	n/a	Y	155
n/a	n/a	n/a	n/a	n/a	n/a	Y	0
n/a	n/a	n/a	n/a	n/a	n/a	Y	0
n/a	n/a	n/a	n/a	n/a	n/a	Y	238
n/a	n/a	n/a	n/a	n/a	n/a	Y	133
n/a	n/a	n/a	n/a	n/a	n/a	Y	111
n/a	n/a	n/a	n/a	n/a	n/a	Y	109
n/a	n/a	n/a	n/a	n/a	n/a	Y	68
n/a	n/a	n/a	n/a	n/a	n/a	Y	0

APPENDIX B: STORM OVERFLOW ASSESSMENT FRAMEWORK (SOAF) DETAILS

Storm overflows which do not affect Bathing Waters or Shellfish Waters, but may impact on amenity watercourses, are managed in accordance with the Storm Overflow Assessment Framework (SOAF) industry guidance. The following table shows the SOAF information for each storm overflow in the catchment

***Table 29**: SOAF triggered investigation sites*

Site Name	CD Number
ANTONY S T SEPTNK_SO_ANTONY	CD400070
BEALS MILL NO 1_CSO_TREBURLEY	CD514420
BEALS MILL NO 2_CSO_TREBURLEY	CD514430
BEDFORD BRIDGE_CSO_HORRABRIDGE	CD508970
BERE ALSTON STW_SO_BERE ALSTON	CD400260
BERE ALSTON STW_SSO_BERE ALSTON	CD200260
BERE FERRERS SPST_PSCSOEO_BERE FERRERS	CD700270
BRIDESTOWE STW_SO_BRIDESTOWE	CD400600
BUCKLAND MONACHORUM STW_SSO_BUCKLAND MON	CD200741
CALLINGTON STW_SSO_CALLINGTON	CD200870
CHAPELDOWN SPST_PSCSOEO_TORPOINT	CD718340
CHILSWORTHY STW_SO_GUNNISLAKE	CD401060
CLINIC_CSO_TAVISTOCK	CD507510
CROWNDALE STW_SSO_TAVISTOCK	CD201410
CROWNDALE_CSO_TAVISTOCK	CD514330
DERRITON STW_SO_HOLSWORTHY	CD402450
DERRITON STW_SSO_HOLSWORTHY	CD202450
EGLOSKERRY SPS_PSCSOEO_LAUNCESTON	CD719750
GOLBERDON STW_SO_GOLBERDON	CD401980
GRATTON_CSO_YELVERTON	CD514510

Site Name	CD Number
GUNNISLAKE NO. 2_CSO_GUNNISLAKE	CD513580
HAREWOOD RD_CSO_CALSTOCK	CD513110
HARROW BARROW STW_SO_CALLINGTON	CD402170
HATT STW_SSO_HATT	CD202230
HAYE ROAD_CSO_CALLINGTON	CD503830
HORRABRIDGE STW_SSO_HORRABRIDGE	CD202500
LANDRAKE STW_SO_LANDRAKE	CD402830
LEWDOWN STW_SO_LEWDOWN	CD402990
LEWDOWN STW_SSO_LEWDOWN	CD202990
LIFTON STW_SO_LIFTON	CD403000
MACEY STEPS_CSO_TORPOINT	CD514370
MARY TAVY STW_SSO_MARY TAVY	CD203170
METHERELL STW_SSO_METHERELL	CD203270
MILTON ABBOT STW_SO_MILTON ABBOT	CD403320
NEWPORT_CSO_LAUNCESTON	CD513720
NORTH HILL STW_SO_NORTH HILL	CD403630
NORTH PETHERWIN STW_SO_NORTH PETHERWIN	CD403660
PILLATON STW_SSO_PILLATON	CD203920
PILLATON STW_SSO_PILLATON	CD203920
PIXON LN_CSO_TAVISTOCK	CD508310
PLAYING FIELD_CSO_TAVISTOCK	CD518920
PLAYING FIELDS_PSCSOEO_CALSTOCK	CD713130
QUETHIOCK STW_SO_QUETHIOCK	CD404160
RILLA MILL STW_SO_RILLA MILL	CD404230
ROWING CLUB NO2_CSO_TORPOINT	CD514390

Site Name	CD Number
ST DOMINICK STW_SO_CALLINGTON	CD404710
ST LEONARDS STW_SO_LAUNCESTON	CD402920
ST LEONARDS STW_SSO_LAUNCESTON	CD202920
STOKE CLIMSLAND STW_SO_STOKE CLIMSLAND	CD404950
STOKE HILL STW_SO_CRAPSTONE	CD404970
STOKE HILL STW_SSO_CRAPSTONE	CD204970
THANKES PARK SPST_PSCSOEO_TORPOINT	CD714400
THE SQUARE CAWSAND_PSCSOEO_CAWSAND	CD706260
WESTBRIDGE COTTS_CSO_TAVISTOCK	CD519870
YEOLMBRIDGE SPST_PSCSOEO_YEOLMBRIDGE	CD715550

APPENDIX C: RESPONSIVE INVESTMENT OPTIMISATION

Reactive investment needs are identified via investigations following reactive response to operational/customer issues and planned surveys that are targeted to detect and resolve problems before they have an impact on customers and the environment.

The investment needs are prioritised based on the risk to properties and the identification of repeat events. These needs then form a programme of works for delivery over the next 12 months. Details for any needs recorded for the Tamar exc Wider Plymouth catchment are also shown in Table below.

***Table 30**: Reactive investment opportunities*

IM Number	Driver	Route	Stage	Status	Stage No
N93517	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Review Scope	In Progress	Stage 6
N93316	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Review Scope	In Progress	Stage 6
N91024	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Confirm Scope	In Progress	Stage 7
N85416	Quality	Rapid Investment - WWS-Networks (Flooding)	Confirm Scope	In Progress	Stage 7
N85316	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Confirm Scope	In Progress	Stage 7
N80666	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Confirm Scope	In Progress	Stage 7
N82517	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Confirm Scope	In Progress	Stage 7
N79716	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Confirm Scope	In Progress	Stage 7
N67323	Capital Maintenance	Rapid Investment - WWS-Networks (Flooding)	Confirm Scope	In Progress	Stage 7
N78967	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Confirm Scope	In Progress	Stage 7

IM Number	Driver	Route	Stage	Status	Stage No
N82516	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Confirm Scope	In Progress	Stage 7
N85916	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Programmed	In Progress	Stage 8
N82467	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Completed	Completed	Stage 9
N80166	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Completed	Completed	Stage 9
N80018	Health & Safety	Rapid Investment - WWS-Networks (Flooding)	Completed	Completed	Stage 9
N77466	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Completed	Completed	Stage 9
N78921	Capital Maintenance	Rapid Investment - WWS-Networks (Pollution)	Completed	Completed	Stage 9

APPENDIX D: SURFACE WATER SEPARATION AND SuDS APPROACH

To explore opportunities for SWS and SuDS, Stantec's GIS based Surface Water Assessment Tool (SWAT) was applied to the 26 Complex TPUs that were hydraulically modelled for future flood risk (FFR). The tool plots impermeable areas, green space, existing networks, buildings, roads and watercourses. It plots existing foul combined and surface water networks and identifies where surface water sewers join combined sewers as potential points for disconnection. It identifies potential land and road space as well as residential and commercial properties for different interventions.

Using this insight our approach for surface water separation and SuDS is to find an alternative pathway for surface water, where we identify surface water contributing to risks in our networks. Surface water can originate from buildings, roads/highways and paved areas. Surface water collection may also exist but be connected to the foul network at some point. In this case we would consider options to provide an alternative pathway for the surface water such a swale or other watercourse or SuDS solution where space and natural topography support this approach. This would include conveying the surface water to an appropriate location. Further modelling and investigations are required to ensure this will not generate a surface water flooding risk elsewhere.

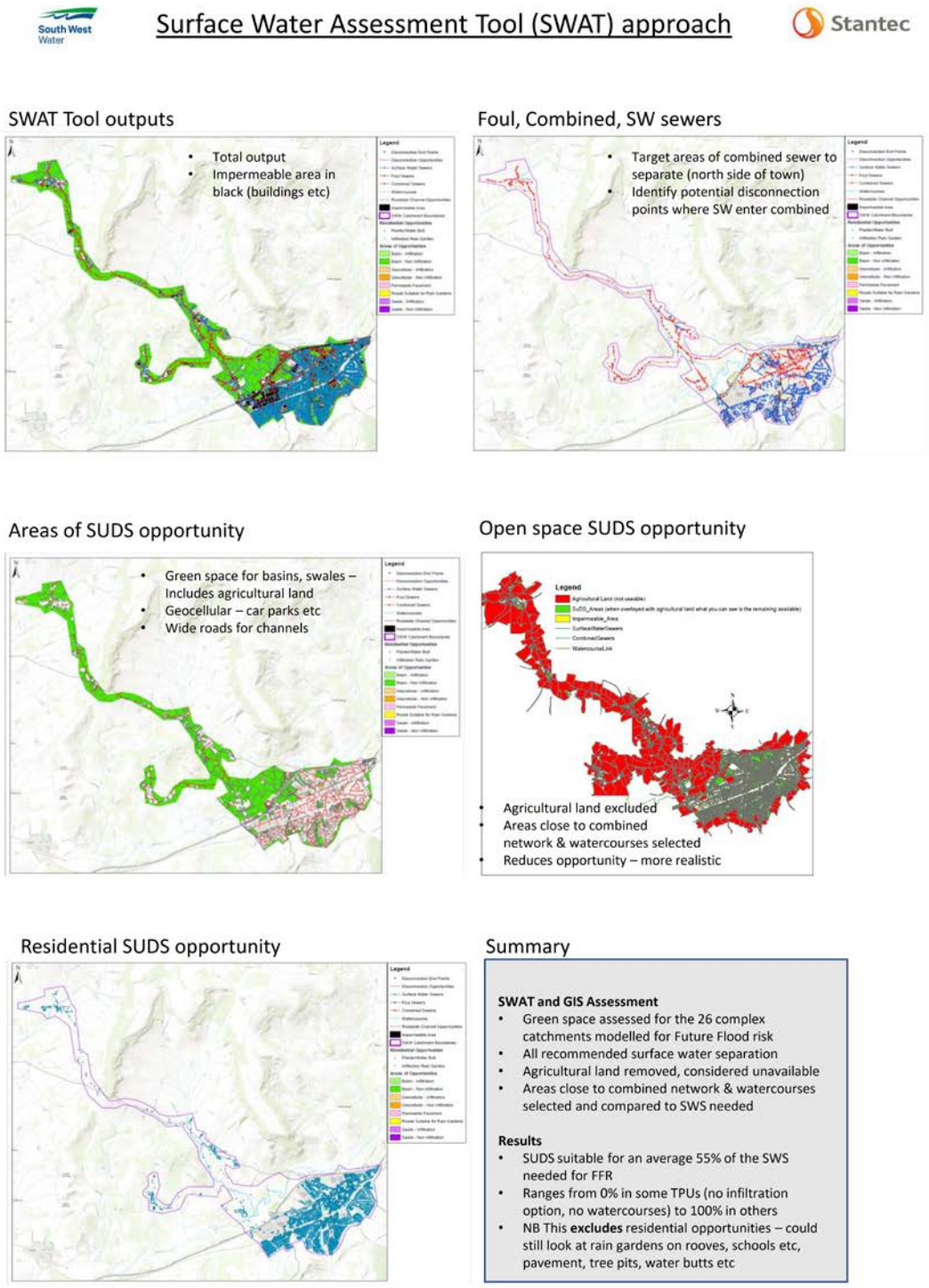

Figure 17: Approach to assessing opportunity for SuDS solutions for Surface Water Separation

APPENDIX E: CURRENT AND PLANNED UPSTREAM THINKING (UST) PROJECTS

South West Water's infiltration and site surveys may identify opportunities for Natural Flood Management and Upstream Thinking interventions in the Tamar exc Wider Plymouth catchment. South West Water intend to collaborate with the EA and take a similar GIS based approach to assessing Natural Flood Management options where tackling shared surface water flooding issues. The figure below shows the coverage of current upstream thinking (UST) projects in the vicinity of the Tamar exc Wider Plymouth catchment where upper catchment solutions are being explored; the intention is to expand this approach.

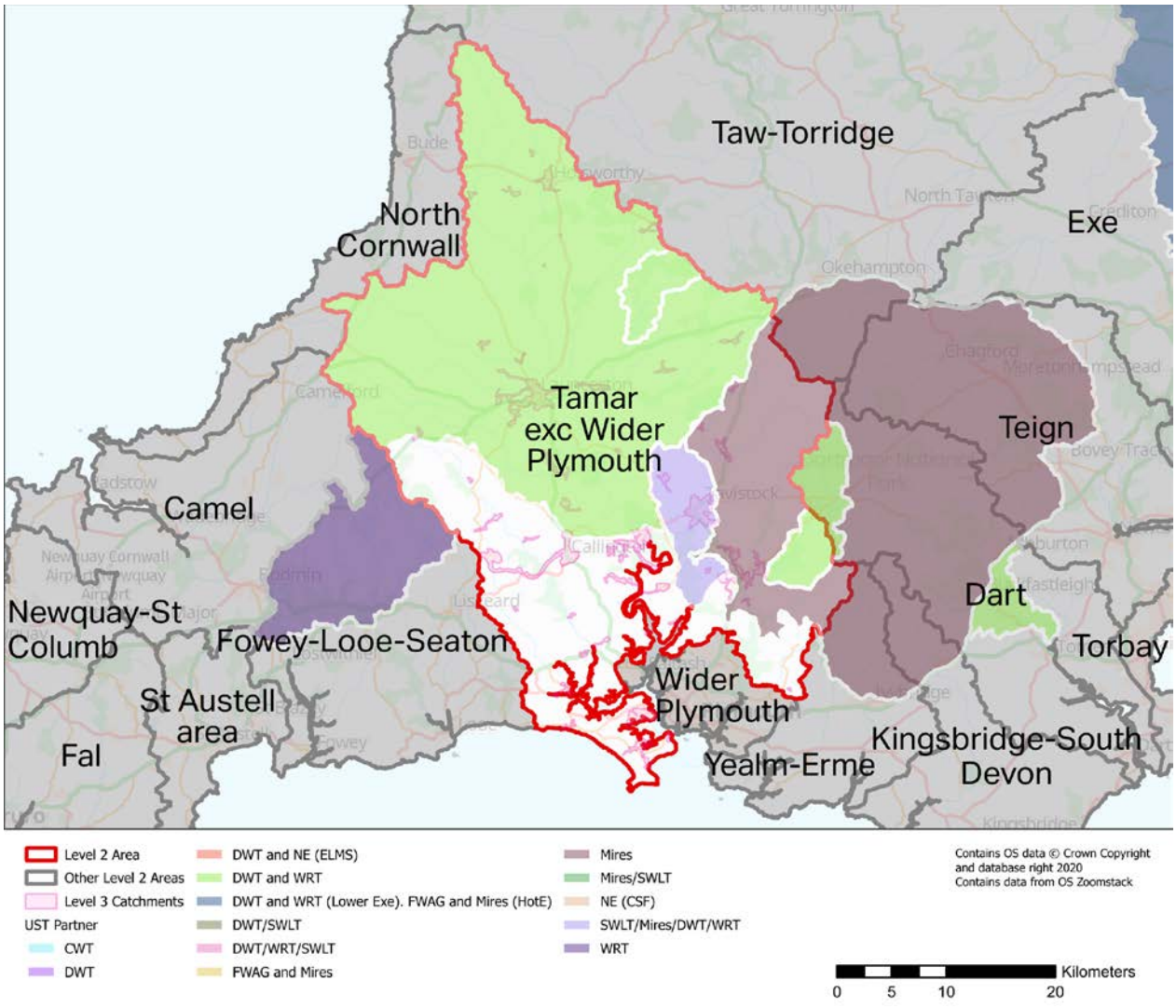

Figure 18: Catchments with Upstream Thinking Programmes