

8.2: Interconnections Options



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Appendix 8.2: Reinforcement and Interconnection Schemes

Document Purpose:

This appendix sets out some of the network related reinforcement projects that are being developed and considered as part of our PR24 and WINEP24 plans. These projects do not directly increase our water available for use and, as such, do not appear as options in the dWRMP. They do however improve our ability to move water around our network, creating flexibility to balance our use of different sources of water. Schemes will also provide links between our water resource zones enabling further inter-zone support and paving the way for more bulk transfers across our region.

1 Introduction

This appendix sets out how we intend to support our management of existing water resources through the construction of new water transfer systems, which will improve resilience in our network.

To build system resilience, it is also important to continually review our ability to move the available water to where it is needed. SWW's network has good levels of interconnectivity, but there are still restrictions on how we move water through our region. These restrictions become critical in the event of a significant asset failure (e.g., a strategic main failing or an unplanned water treatment works outage), during periods of highest demand, or during drought when there is a greater requirement to optimise the balance between scarce water resources.

Work is ongoing as part of PR24 to look at areas where our network needs reinforcement to improve its ability to supply areas from multiple sources during resilience events. Schemes are at different stages of development and where possible we have quoted the expected scale of maximum transfer. Where work is ongoing, we have not provided a figure. Proposed schemes all have the potential to operate individually or in combination, through our PR24 optioneering process we will identify the best value combination. It is not envisaged that these schemes will run continuously but rather that they will provide resilience when required.

This document sets out a summary of some of the network resilience projects under consideration for inclusion in the PR24 plan/WINEP24. This investment is not part of the WRMP but is complementary to our long-term water resource vision. Not all schemes being considered will be proposed for AMP8. Full detail behind these schemes will be provided in our PR24 submission.

We are also undertaking scenario modelling work to better understand under what water resource scenarios these links could be used to manage drought risks. While customers within each of our water resource zones carry the same level of drought risk, the spatial variability of rainfall creates differences between available resources. In such cases, additional connections could allow reductions in abstraction at reservoirs that are at lower levels while taking more water from those with higher resource levels.

2 Summary by Water Resource Zone

2.1 Wimbleball WRZ

Four resilience schemes are being considered for the Wimbleball WRZ (Figure 1 and Table 1).

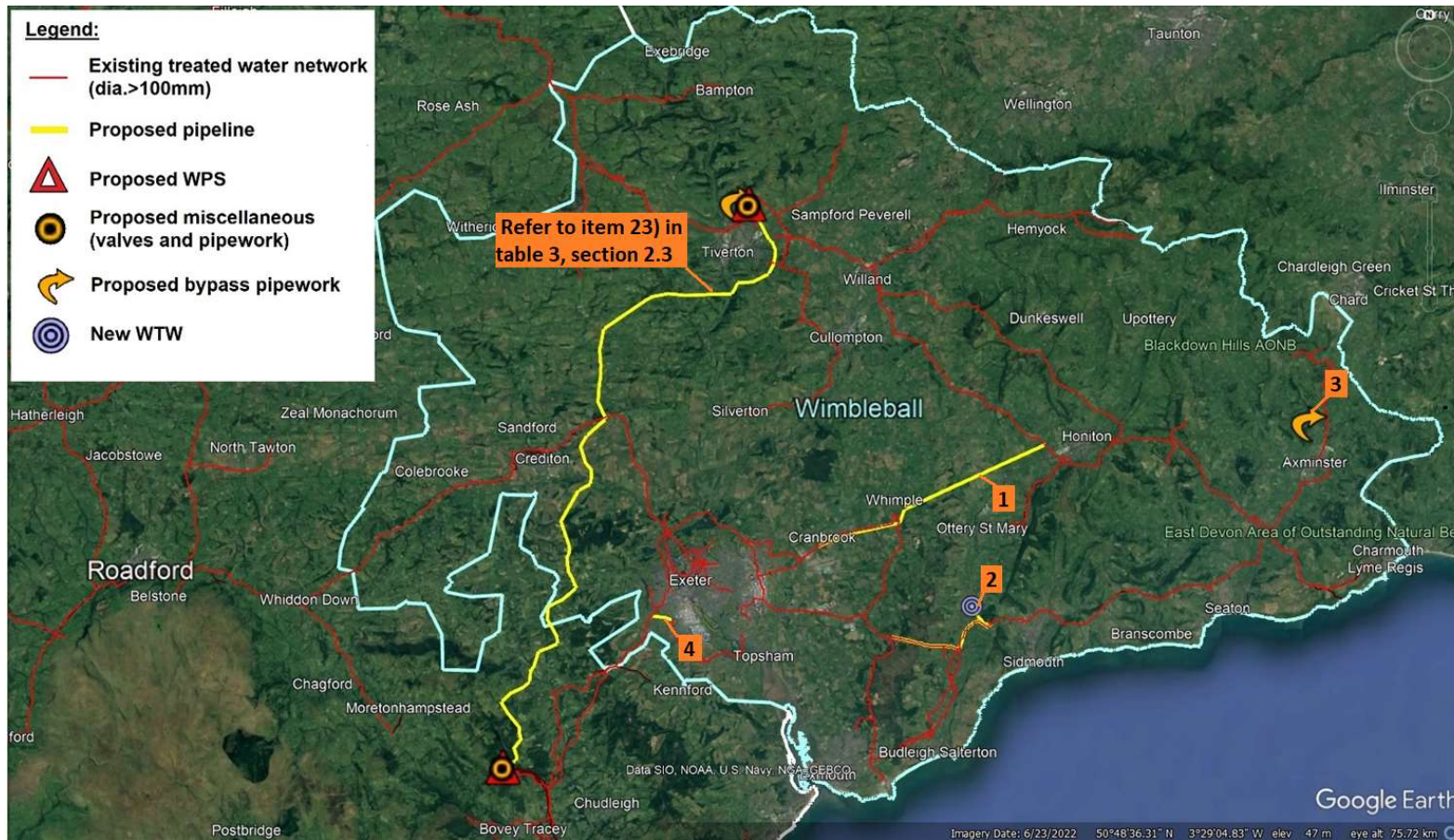


Figure 1: Diagram of Wimbleball showing view of possible network resilience projects (NB Roadford to Wimbleball transfer covered in Roadford section)

Table 1: Summary details of the possible network resilience projects in Wimbleball

Location / Project Name	Max Raw water / Treated Water	Purpose	Description	Allow transfers between WRZs?
1) Pynes to Allers	5MLD Treated Water	This scheme is to support Allers WTW by transferring an additional 5 MLD from Pynes WTW to the Allers zone. This enables support to Roodloft and Willand. Increases the resilience of the Allers network.	Installation of a new 800 mm diameter main, approx. 15.5 km long.	No
2) Harpford to Four Elms	4.5 MLD capacity to transfer treated water.	This scheme is to provide resilience for failure of the supply main between Dotton WTW and Four Elms Service Reservoir (SR), part of which runs through a flood plain. This will provide security of supply for part of the Dotton zone.	The scheme consists of uprating the existing pumps at Harpford (within the existing licence), installing UV disinfection and chlorine dose, and installing 1.5 km of a new 280 mm OD main to transfer to Four Elms SR.	No
3) Lyme Rd to Ten Acre Gate	Treated Water	This scheme is to provide resilience to the population served by Hook WTW, in the event of Hook WTW outage. This area currently has low resilience due to WTW outage. This will provide an alternate source supply for a vulnerable source that is serving a population of 9,000	Hardstanding and pipework connections to allow temporary pumps (HOG unit) to be installed and pump back to Ten Acre Gate SR.	No
4) Tottiford into Exeter ring main	Treated Water	This scheme is to develop a new link main from Tottiford system into Pynes system, to enable water to be fed from Tottiford directly into the Exeter ring main without needing to go via Dunsford Hill SR and Barley Lane SR.	Installation of a new 400mm diameter nominal bore main approximately 1.25km long.	Yes – Roadford to Wimbleball

2.2 Colliford WRZ

Fourteen resilience schemes are planned for the Colliford WRZ (Figure 2 and Table 2).

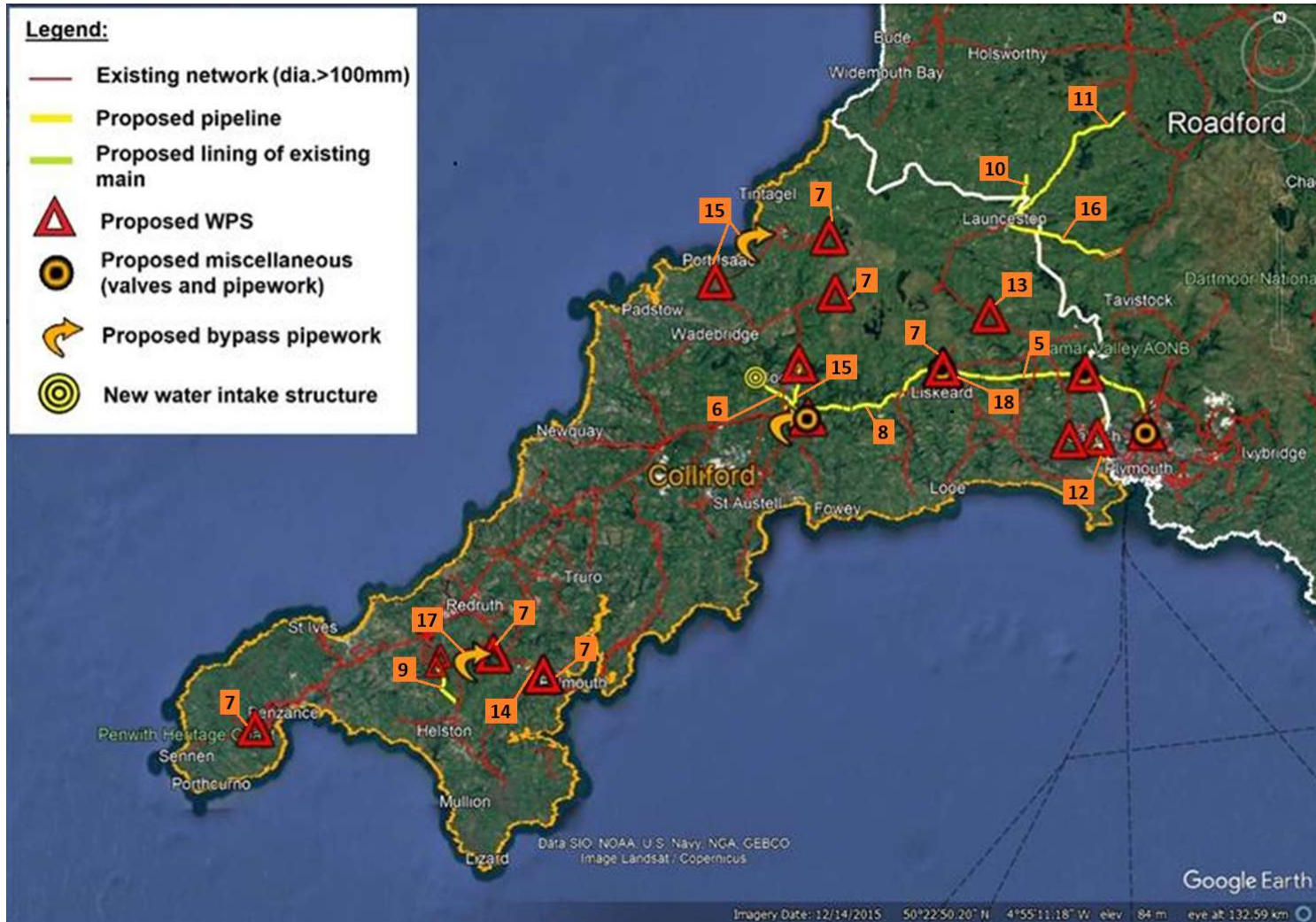


Figure 2: Diagram of Colliford showing view of possible network resilience projects

Table 2: Summary details of the possible network resilience projects in Colliford

Location / Project Name	Max Raw water / Treated Water	Purpose	Description	Allow transfers between WRZs?
5) Crownhill SR to St Cleer WTW	40MLD Treated Water	This scheme is to connect the Plymouth and St Cleer areas, moving 40MLD between Crownhill WTW and St Cleer WTW. This provides an increased resilience in the St Cleer area. Increases connectivity between resource zones.	Installation of a 30 km, 800 mm diameter main and building three pumping stations.	Yes – Roadford to Colliford
6) Colliford Pumped Storage Stage 2 - River Camel Abstraction (COL2)	90 MLD Raw Water	This scheme is to develop a new abstraction site on the River Camel at Nanstallon to transfer water (up to 90MLD in winter) via a new raw water intake structure and transfer it to Restormel WTW. This scheme shares a significant interface with the planned reversal of flow in the Restormel WTW to Colliford raw water pipeline scheme. This scheme does create WAFU and is also in the WRMP.	New intake and intake structure which will include, new power supply, eel compliant screens and INNS screening, raw WQ monitoring, 9 km pipeline to Restormel WTW intake.	No
7) Restormel support	28MLD Treated Water	This scheme involves a series of small pumping stations to support the Restormel system from adjacent zones where surplus water may be available. The availability of surplus treated water (period of the year and volumes) is still being confirmed. We are assessing whether this treated water scheme can be bi-directional, allowing nearby WTWs to support Restormel and vice-versa, based on water-availability.	Installation of 6x6MLD 100m Head 80kW pumps at multiple sites across the area.	No
8) St Cleer to Fox Park	40 MLD Treated Water	This scheme is to increase the resilience of Colliford WRZ by allowing the transfer of 40MLD water between Restormel WTW and St Cleer WTW.	This could be achieved by installing a 19 Km, 800mm diameter main and building two pumping stations.	No
9) Cargenwen to Wendron	9 MLD Raw Water	This scheme would provide an alternative raw water source at Wendron from Cargenwen reservoir, transferring up to 9MLD of raw water to Wendron.	An existing raw water main will be used to transfer water from Boswyn Reservoir to Cargenwen Reservoir. A new main (including a kiosk and four pumps capable of lifting raw water from Cargenwen Reservoir to Trenear Intake (Wendron WTW).	No

Location / Project Name	Max Raw water / Treated Water	Purpose	Description	Allow transfers between WRZs?
10) Ivyhouse - Launceston	Treated Water	This scheme is to provide resilience to Launceston. An additional benefit is that it connects Roadford and Colliford zones.	Install a new 5 km, 200 mm diameter PE main.	Yes – Colliford to Roadford
11) Northcombe to Launceston	Treated Water	This scheme is to connect Roadford and Colliford zones and will provide resilience to both zones.	Install a new 300mm diameter main, approximately 21 km long to connect Windmill Park SR and Northcombe WTW.	Yes – Colliford to Roadford
12) Saltash to Kit Hill	10 MLD Treated Water	St Cleer does not have an alternative supply; therefore, this scheme provides additional resilience through a supply from Kit Hill: a 10 MLD transfer from Mayflower system to St Cleer system.	Installation of approximately 3km of new pipework and upgrade of pumping stations at Saltash and Winstone Beacob	Yes – Colliford to Roadford
13) Kit Hill to Bastreet	Treated Water	This scheme is to provide resilience to Bastreet supply zone which cannot currently be supplied in the event of an outage at Bastreet WTW.	1 x 6MLD 100m Head 80kW pumps at Linkinhorne (Reinstate Linkinhorne Pumpstation both directions).	No
14) College to Roskrow	4 MLD Treated Water	This scheme would enable any surplus water at College to be transferred to support Stithians. Surplus water availability at College still being confirmed.	Reline 4km of pipework and upgrade pumping station at College.	No
15) Foxpark to De Lank	Treated Water	This scheme is to provide resilience to the De Lank area, which has limited option to resupply the zone in the event of an outage of the De Lank WTW. It would also provide some support for Lowermoor system.	Installing of approx. 6km of pipe and 4 additional pumps capable of delivering flows across the length of main.	No
16) Brent Tor to Launceston	Treated Water	This scheme is to duplicate the Bastreet supply to Launceston from Northcombe	New main: approximately 15 Km long.	Yes – Roadford to Colliford
17) Stithians – Chacewater	Treated Water	This scheme is to feed Chacewater flow back into Stithians to provide resilience and allow it to be shut down for maintenance.	Installation of new pipework around/to Clear Water Tank at Stithians WTW.	No
18) Bastreet supply system	Treated Water	This scheme provides an alternative treated water supply for a population of 21,000 which is currently only supported by a single source (Bastreet supply system is 95% single source). A new pumping station would allow resupply from the adjacent St Cleer system.	Installation of new water pumpstation 6 MLD 100m lift.	No

2.3 Roadford WRZ

Eight resilience schemes are planned for the Roadford WRZ (Figure 3 and Table 3).

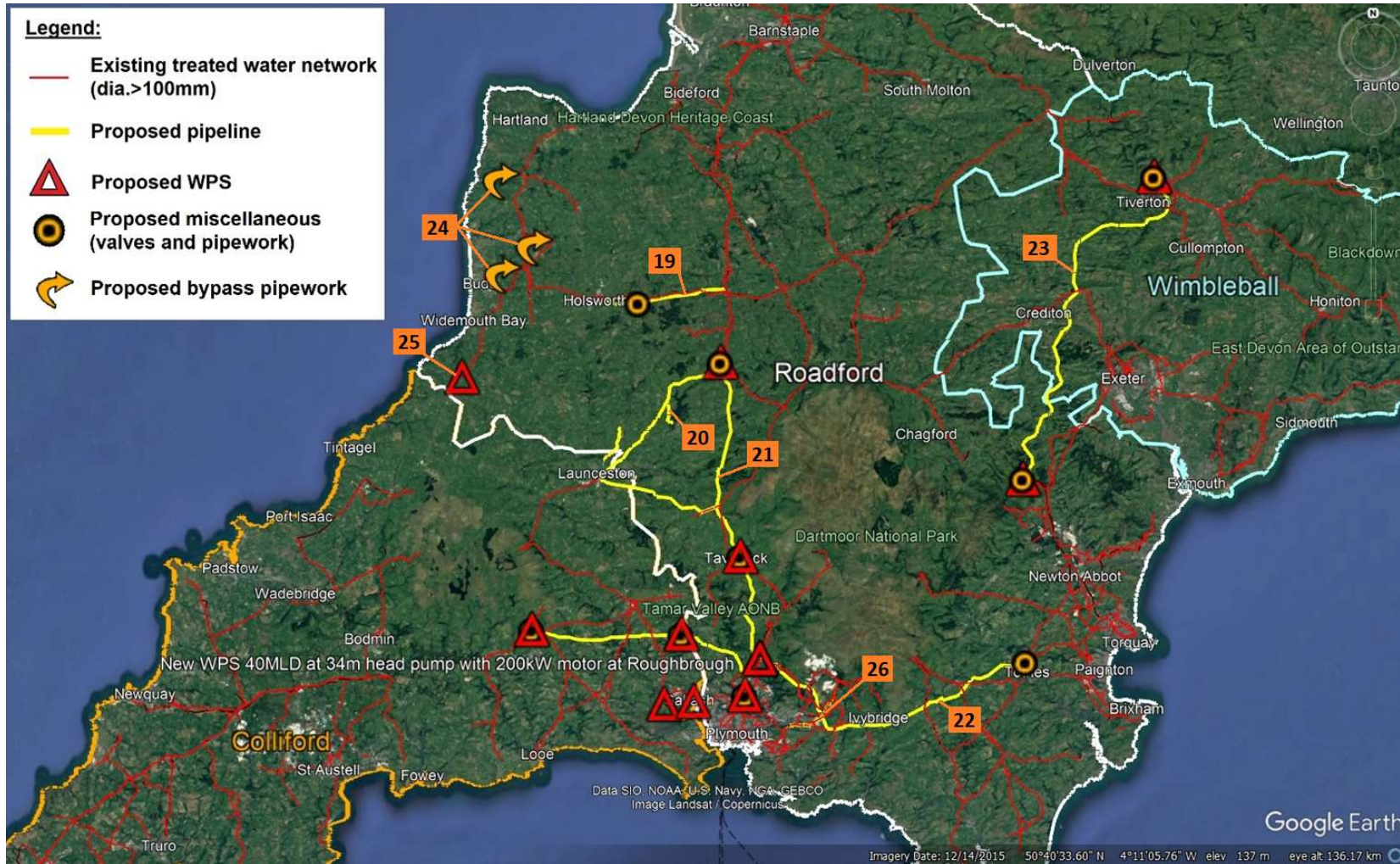


Figure 3: Diagram of Roadford showing view of possible network resilience projects

Table 3: Summary details of the possible network resilience project in Roadford

Location / Project Name	Max Raw water / Treated Water	Purpose	Description	Allow transfers between WRZs?
19) Highampton to Tamar	Treated Water	This scheme is to support the Tamar lake system by installing a new 500 mm PE main, approx. 14 km from Highampton to Holsworthy.	Installation of 500mm ID main. Duplicates existing supply	No
20) Roadford to Northcombe	Raw Water (resilience scheme)	This scheme is to provide resilience to Northcombe by duplicating the high-pressure section of the existing main.	12 km of a new main, diameter to be confirmed.	No
21) Mayflower WTW to Northcombe WTW	40 MLD Treated Water	This scheme is to provide resilience by connecting the Mayflower and Northcombe areas, moving 40MLD between Mayflower WTW and Northcombe WTW.	Install a 37 Km, 800 mm diameter main and building three pumping stations. Two PRVs would be required.	No
22) Roborough to Gallows Gate	40 MLD Treated Water	This scheme is to provide resilience by connecting the Mayflower and Totnes areas, transferring 40MLD between Mayflower WTW and Littlehempston WTW. This scheme is part of the Part of the Dartmoor ring main (NRP) considered in PR14.	Installation of approximately 38km of pipe and three pumping stations. One PRV will be required.	No
23) Tottiford to Allers	40 MLD Treated Water	This scheme is to provide resilience by connecting the Roadford and Wimbleball areas by enabling up to 40MLD of water to be transferred between Tottiford WTW and Allers WTW. This scheme is part of the Part of the Dartmoor ring main (NRP).	Installation of 48km of pipework and 3 pumping stations. Two PRVs will be required.	Yes – Roadford to Wimbleball
24) Tamar Lakes-Hersham-Welcombe	Treated Water	This scheme is to introduce local bypass(es) to increase flexibility.	Local bypasses allow pipe systems to be run in different ways, removing constraints to water transfer.	No

Location / Project Name	Max Raw water / Treated Water	Purpose	Description	Allow transfers between WRZs?
25) Jacobstow to Lowermoor	Treated Water (resilience scheme)	This scheme is to provide alternative supply to parts of the Lowermoor system which have low resilience. The water would be transferred from the Tamar Zone (Colliford) into Roadford. Levels of surplus in Tamar Zone being confirmed to inform feasibility / benefit of scheme.	Uprate pumps at Jacobstow / Wainhouse WPS to provide alternative supply from Tamar Lakes system into Northern Parishes area of Lowermoor system.	Yes – Colliford to Roadford
26) Houndall to Hardwick	Treated Water	This scheme is to provide resilience for the zone fed from Hardwick Service Reservoir. The current main is subject to failures (corrosive ground conditions) and supply-interruptions. A new duplicate main is proposed to provide additional resilience. A new main to link Houndall SR to Hardwick SR is proposed.	Installation of 3,750m of 450mm pipework for the new strategic main providing alternative supply to Hardwick SR (Dousland / Mayflower system via Houndall SR).	No



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South West Water Limited, Peninsula House, Rydon Lane, Exeter EX2 7HR, Registered in England No 02366665

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