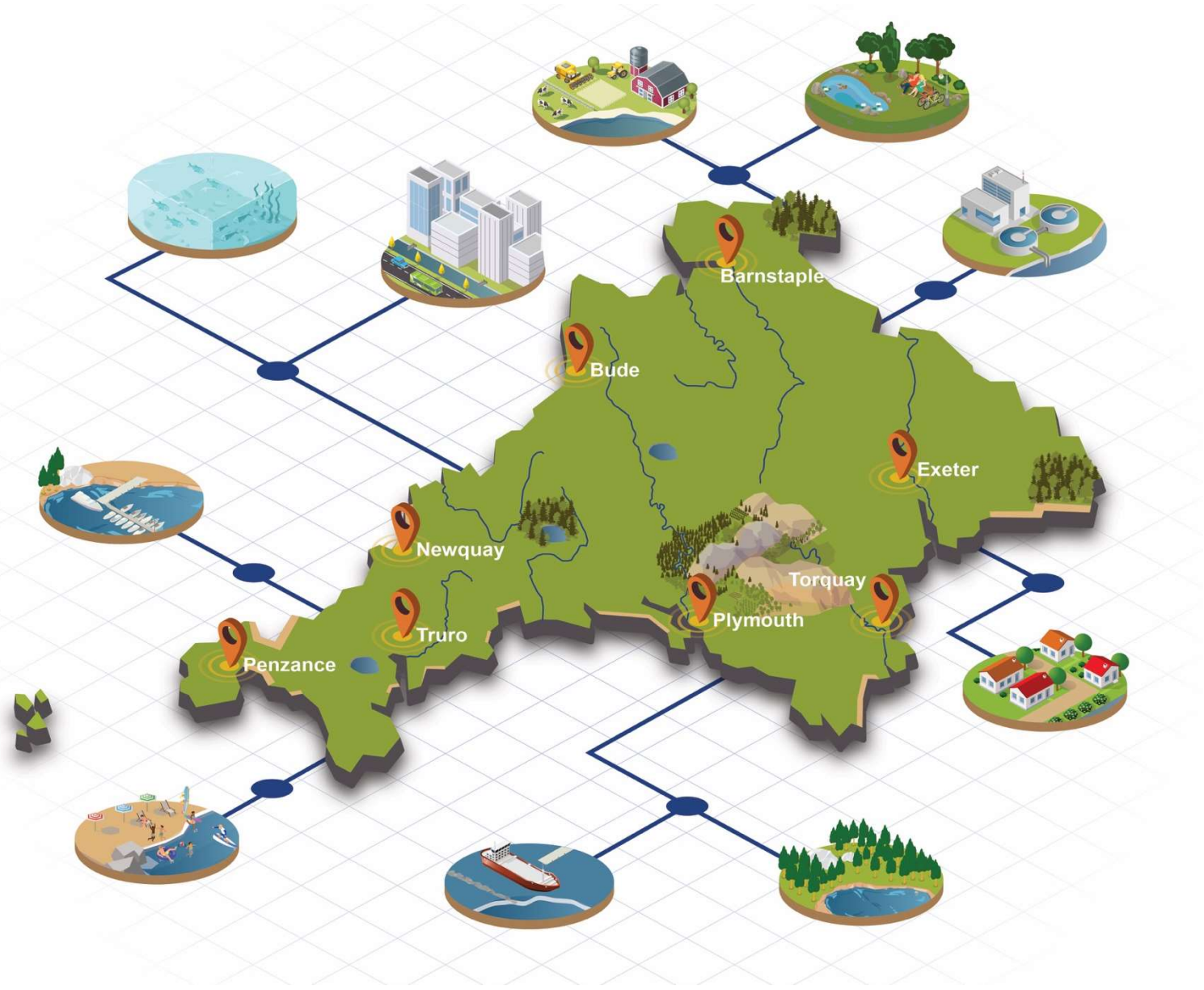
South West Water

Our draft Water Resources Management Plan

2:Our Region



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Document Purpose:

This section provides more information on the five water resource zones (WRZ). These zones cover South West Water, Bournemouth Water and the Isles of Scilly regions.

A WRZ provides a water company with a strategic framework for managing water resources, supply and demand management and investment.

Except for the newly added Isles of Scilly WRZ, our WRZ boundaries are unchanged from WRMP19.

The Annexure sets out our current WRZ Integrity Assessment, confirming that our WRZs from WRMP19 are still appropriate for use in dWRMP24.

1 Our region: a summary

A land where nature in all her moods is given freedom of expression, from the wild Cornish coastline, proud in the face of the boiling Atlantic, to the sandy arcs of Bournemouth's pleasure beaches and the green dells of Dartmoor, our region is a national treasure. Three national parks are here to be explored, each encompassing a patchwork of unique natural habitats. It's a place where water has done so much to shape the map, and it continues to be a dynamic and sustaining force in the landscape, underpinning the economy and livelihoods of all who live here.

In its interior, the high ground captures rain from the clouds that roll in from the ocean. From this impermeable granite backbone that runs east-west through Somerset, Dorset, Devon, and Cornwall the water quickly runs into streams and stays close to the surface as it continues its journey. Contrastingly, in the south-east reaches of our regions, rare chalk streams draw from sparkling springs in the bedrock and provide haven to numerous threatened species.

The regions we serve are set apart within the UK. While many areas of the country are partly supplied with water brought in from elsewhere, in the South West all our water resources are home-grown: a source of life and something to be proud of.

2 Wimbleball

Information	Description
Extent of WRZ	Covers parts of north Devon, the whole of east Devon and extends into parts of Somerset and Dorset. The area includes Tiverton, Exeter, Exmouth and Crediton.
Key water sources	Wimbleball Reservoir is our third largest impounding reservoir, and we operate it conjunctively with our groundwater sources in the region.
Water Transfers from other zones	Wessex Water abstract water from Wimbleball Reservoir all year round. This zone can be supported by our Roadford zone. However in our dWRMP design drought we assume an export of 0.42 Ml/d to Roadford.
How we use our water sources	The reservoir is used to release water to the River Exe to support abstraction downstream. We can also supplement Wimbleball Reservoir storage by pumping from the River Exe over the winter months.

An overview of the Wimbleball WRZ is shown in Figure 1 below.

Figure 1: Wimbleball WRZ

3 Colliford

Information	Description
Extent of WRZ	Covers most of Cornwall except the north east of the county. The Colliford WRZ includes Penzance, Falmouth, Newquay, Truro and Bodmin.
Key water sources	Colliford Reservoir is our second largest impounding reservoir. This reservoir is operated conjunctively with our local impounding reservoirs, two groundwater fed lakes and several river intakes.
Water Transfers from other zones	A bulk transfer is available from our Roadford zone. In our dWRMP design drought we assume a net import of 2.55 Ml/d from Roadford.
How we use our water sources	Used to directly supply some water treatment works, or released into our local river systems to support abstraction further downstream.

An overview of the Colliford WRZ is shown in Figure 2 below.

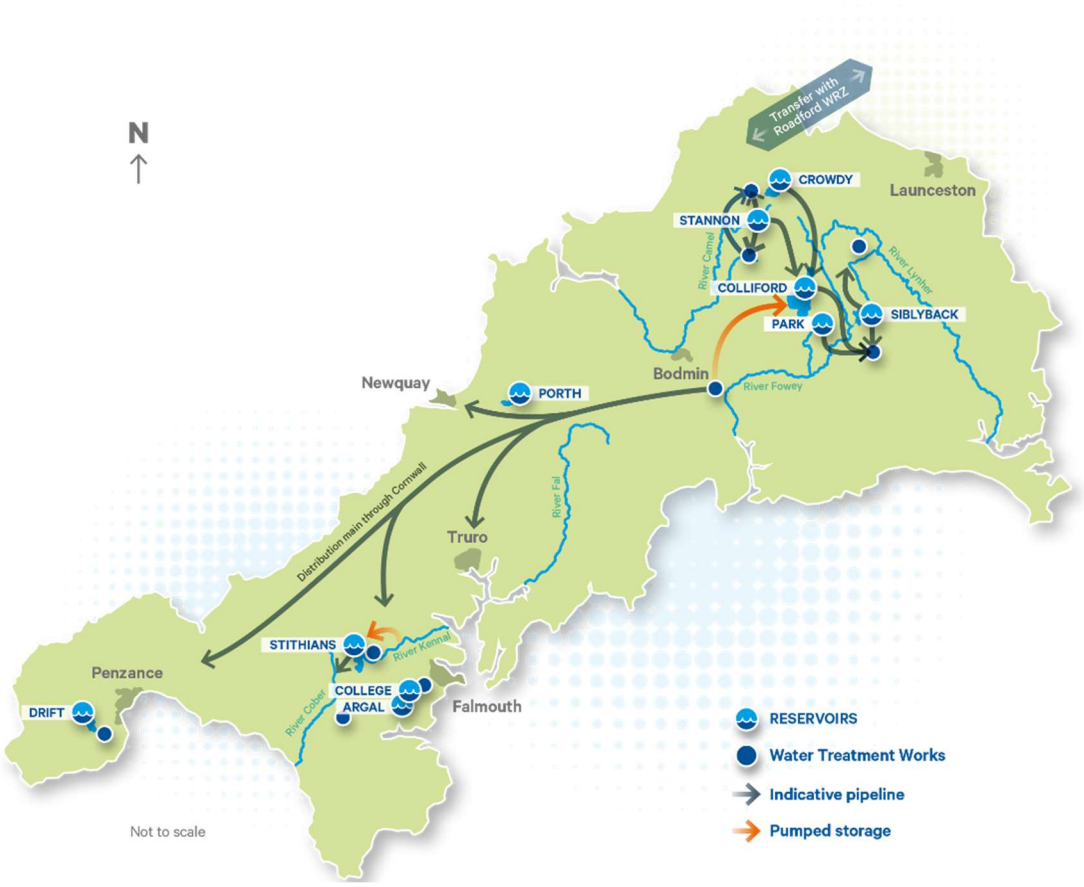

Figure 2: Colliford WRZ

4 Roadford

Information	Description
Extent of WRZ	Covers a large part of Devon, from Plymouth, the South Hams and Torbay in the south, to Bideford and Barnstaple in the north. It also includes parts of north east Cornwall.
Key water sources	Roadford Reservoir is our largest impounding reservoir. This reservoir is operated conjunctively with our local impounding reservoirs, groundwater sources and river intakes.
Water Transfers from other zones	The zone can be supported by transfers from both Colliford and Wimbleball zones. In our dWRMP we assume a 0.42 Ml/d import from Wimbleball and a 2.55 Ml/d net export to Colliford.
How we use our water sources	Used to directly supply some water treatment works, or released into our local river systems to support abstraction further downstream.

An overview of the Roadford WRZ is shown in Figure 3 below.

Figure 3: Roadford WRZ

5 Bournemouth

Information	Description
Extent of WRZ	Covers parts of Dorset, Hampshire and Wiltshire, supplying Bournemouth, Christchurch, Lymington and Fordingbridge.
Key water sources	The principal water sources are the Hampshire Avon and Dorset Stour. There are also two small lakes, which provide short term bankside storage. Groundwater abstractions provide water to the more rural parts of the WRZ.
Water Transfers from other zones	This zone is isolated from SWW other WRZ, but we do have a connection into the Wessex Water area which allows some flow balancing in both directions but with a net benefit of 0 Ml/d.
How we use our water sources	This zone does not have a strategic reservoir and as such we abstract water directly from river sources.

An overview of the Bournemouth WRZ is shown in Figure 4 below.

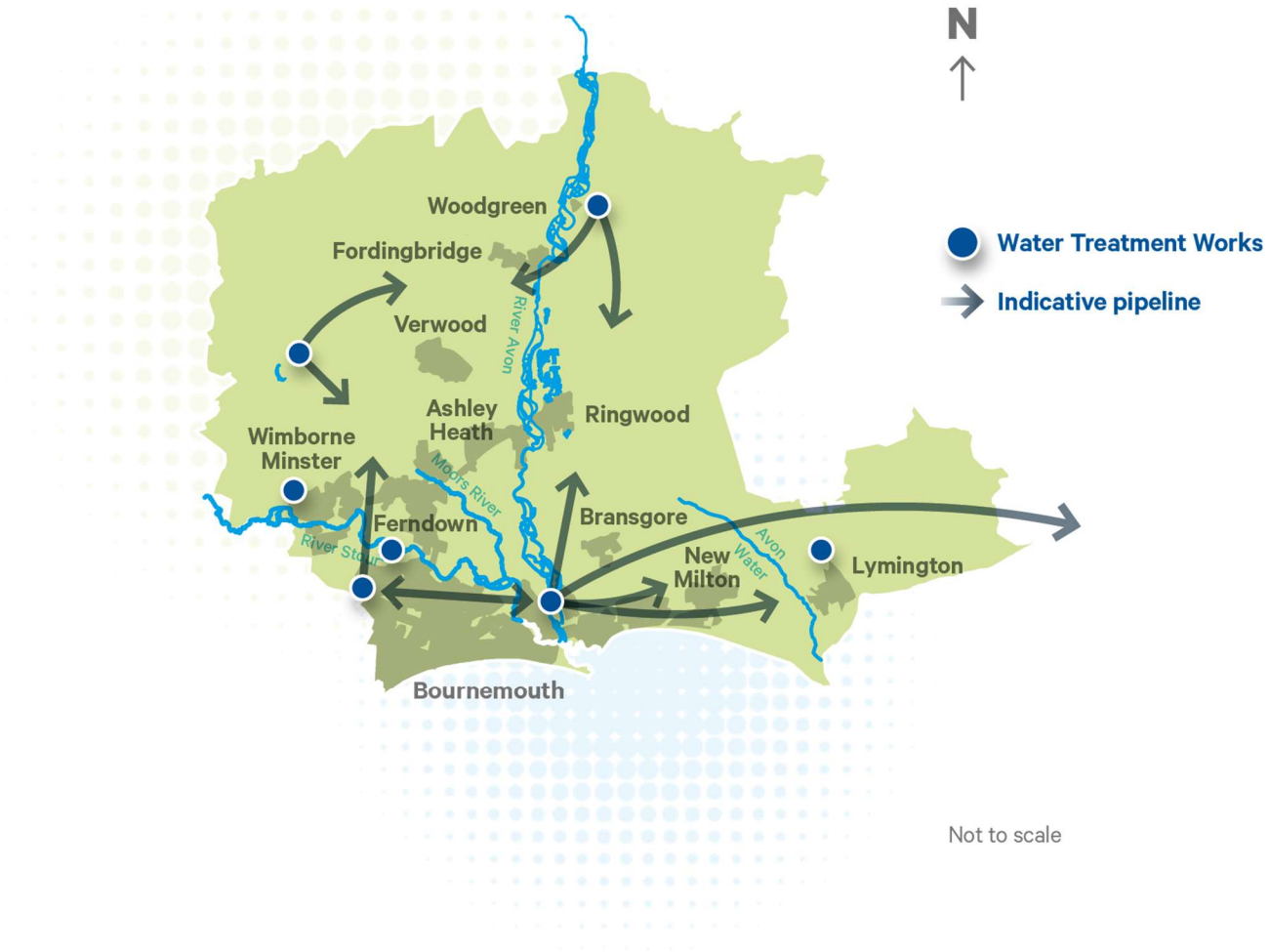

Figure 4: Bournemouth WRZ

6 Isles of Scilly

Information	Description
Extent of WRZ	Covers five inhabited islands: St Marys, Tresco, Bryher, St Agnes and St Martins
Key water sources	**St Marys** – approximately 40 % of total water comes from the desalination of seawater, abstracted from coastal boreholes, and in the summer months from a seasonal sea water intake. The remaining 60% of the total water supplied is through groundwater sources. **Tresco** - 100% of the water supplied is through groundwater. **St Agnes** - 100% of the water supplied is through groundwater. **St Martins** - 100% of the water supplied is through groundwater. **Bryher** - 100% of the water supplied is through groundwater. NB: The water supplies for each island are currently under review and will change over the next 3 years following investment to meet drinking water standards.
Water Transfers from other zones	The Isles of Scilly is not supported by any other zones.
How we use our water sources	The groundwater comes from either wells or boreholes. On St Marys the groundwater sources are located within the Higher and Lower Moors wetlands. On the other islands, the wells and boreholes abstract groundwater from an underground aquifer. The aquifers are recharged through rainfall and surface water entering granite fissures.

An overview of the Isles of Scilly WRZ is shown in Figure 5 below.

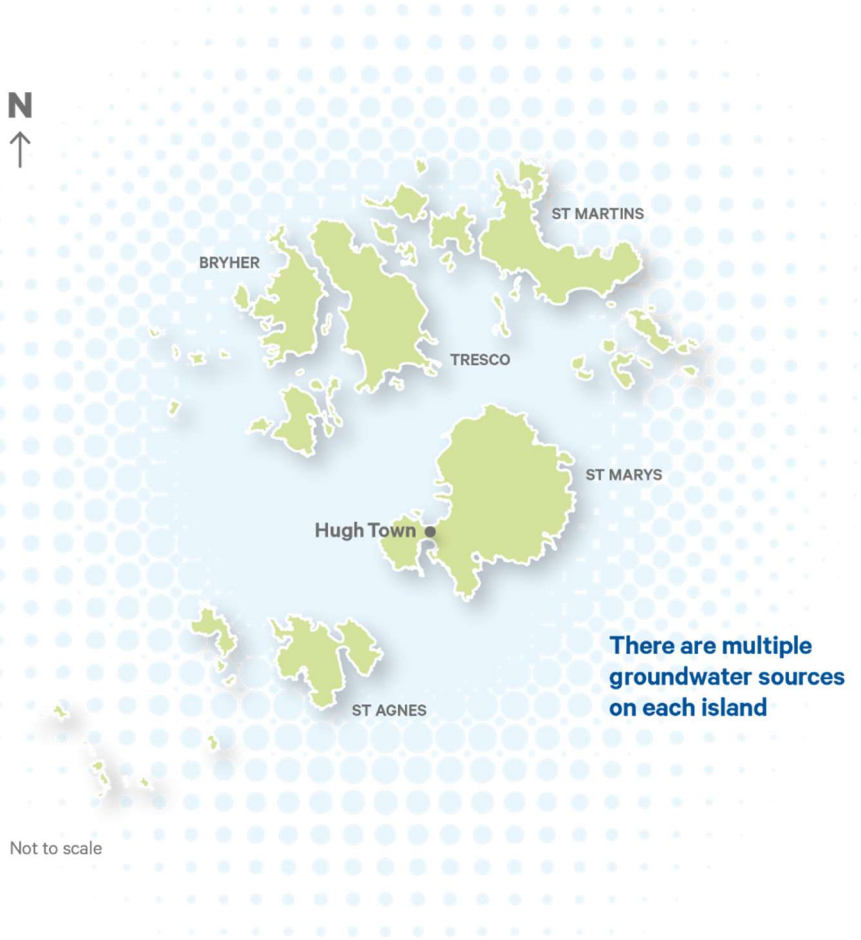

Figure 5: Isles of Scilly Map.

Annex A: Water Resource Zone Integrity Assessment

We keep the composition of our WRZs under review and consider this annually as part of our annual reporting process. There have been no changes to the inter- or intra-WRZ links since our 2019 WRMP and the assessments undertaken for that plan are still valid.

The Isles of Scilly water supply network consists of 5 isolated supply systems covering the 5 inhabited islands. There is not currently any water connection between any of the islands, but the 'Water resources planning guideline supplementary guidance – Water resource zone integrity' document published in March 2021 only applies to:

> "all WRZs where the population is greater than 5,000 and/or where over 1 Ml/d of Total Water Available for Use (WAFU) is supplied from your own sources"

The Isles of Scilly fall below both of these thresholds, so we have grouped them into a single WRZ.

We have completed the water resource zone integrity assessment for each of our WRZs, and these are shown below.

Colliford

Component	Issue	Response and justification
Scale	Is the WRZ the largest possible zone in which all resources can be distributed across the zone such that the overall risk to level of service is the same across the zone?	Yes The schematic diagram shown in Chapter 2, Section 3 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ.
	Does the WRZ represent a group of customers who receive the same risk of supply failure during dry-year conditions (annual average and/or critical period) because the customers depend on the same resources?	
	Is the WRZ built up from smaller water balance units?	Yes SWW resource zones are defined by a grouping of water into supply (WIS) zones. Those WIS zones are themselves defined by a grouping of district metered areas DMAs.
	Are there any isolated sources and demand centres that are not connected to the wider supply network? What is the estimated population of these demand centres? Can you serve all your customers within a WRZ under normal, dry year annual average or critical period conditions without recourse to tankering?	There are no isolated sources or demand centres that are not connected to the wider network, and we can supply all the customers within the WRZ without recourse to tankering. The schematic diagram shown in Chapter 2, Section 3 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ
Connectivity	How do the sources of supply (including transfers) link to the demand centres?	A summary of the source connectivity within the zone is shown in Chapter 2, Section 3 of this plan.
	Is the WRZ defined by distinct limits to infrastructure connectivity (for example end of pipe run, valves, meters)?	The majority of Colliford WRZ is surrounded by the sea, with the Tamar Valley forming a natural boundary with Roadford WRZ. A small transfer exists between Roadford and Colliford WRZs, but as can be seen from the planning tables included in this plan, the scale of this transfer is small compared to the deployable output of the WRZs.
	Are there distinct geographical, topological or other physical limits to infrastructure connectivity?	
	Are neighbouring WRZ defined by distinct limits of connectivity (geographical, topological or infrastructural)?	

Component	Issue	Response and justification
	What constraints are there to supply (for example, peak demands, capacity of service reservoirs)? Where are the absolute infrastructure connectivity limits and what are the constraints (for example, end of pipe run)? How are these constraints managed (for example, tankering supplies into service reservoirs)?	The primary constraint in Colliford is reservoir storage, and the extent to which storage is depleted over multi-season droughts. The zone experiences large peak demands due to tourism over the summer.
	Are there any constraints to transfer within the WRZ and are these significant enough to warrant sub-dividing the WRZ?	There are no significant constraints within the WRZ that warrant sub-division.
	Are there groups of customers within the WRZ that could, given drought impacts/hydrological stress, be at a different supply risk compared to the rest of the WRZ? Where these groups exist, what is the difference and how significant is it to the risks of supply failure? What are the constraining factors that cause these differences?	No significant risk present.
Sources	Are sources that supply the WRZ readily identifiable, together with quantities, infrastructure links to demand centres and capacities?	Yes A summary of this connectivity is shown in Chapter 2, Section 3 of this plan.
	Generally, where there is more than one source and/or a strategic grid system in place, can supplies be effectively moved around to manage resource shortfalls?	The schematic diagram shown in Chapter 2, Section 3 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ
	Do all the sub-units used to create the zone have equal risks of supply failure?	
	Where stresses are known to occur (for example, licence, hydrological or environmental constraints), can supplies be augmented via infrastructure links from other sources, a strategic grid or imports?	
	What internal transfers of water take place within the WRZ?	
Transfers	Are transfers (except bulk transfers/shared strategic resources) across the WRZ boundary limited under normal or dry year (annual average or critical period) conditions?	A small transfer exists between Roadford and Colliford WRZs, but as can be seen from the planning tables included in this plan, the scale of this transfer is small compared to the deployable output of the WRZs.

Roadford

Component	Issue	Response and justification
Scale	Is the WRZ the largest possible zone in which all resources can be distributed across the zone such that the overall risk to level of service is the same across the zone?	Yes. Summer 2022 required a TUB to be implemented in the north of the zone usually supplied from Upper Tamar Lake due to increased risk in comparison to the rest of the zone. As part of our response to this situation we made improvements to the distribution system to allow additional water to be transferred into the area from Northcombe WTW, fed by Roadford Reservoir. This involved upgrading our pumping station at Brandis Corner, and new pumping at Beara Cross facilitating the import of an additional approx. 2 Ml/d into the area. This has restored the current integrity of the zone – had these assets been available at the start of the summer drawdown the TUB would not have been required. Further improvements may be required in the event of future growth in the area. The schematic diagram shown in Chapter 2, Section 4 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ.
	Does the WRZ represent a group of customers who receive the same risk of supply failure during dry year conditions (annual average and/or critical period) because the customers depend on the same resources?	
	Is the WRZ built up from smaller water balance units?	Yes - SWW resource zones are defined by a grouping of water into supply (WIS) zones. Those WIS zones are themselves defined by a grouping of district metered areas DMAs.
	Are there any isolated sources and demand centres that are not connected to the wider supply network? What is the estimated population of these demand centres? Can you serve all your customers within a WRZ under normal, dry year annual average or critical period conditions without recourse to tankering?	Yes, but see comment about Upper Tamar Lake supply area above. The schematic diagram shown in Chapter 2, Section 4 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ
Connectivity	How do the sources of supply (including transfers) link to the demand centres?	A summary of the source connectivity within the zone is shown in Chapter 2, Section 4 of this plan.
	Is the WRZ defined by distinct limits to infrastructure connectivity (for example end of pipe run, valves, meters)?	Roadford WRZ is surrounded to the North and South by the sea. The Tamar Valley forms a natural boundary with Colliford WRZ to the West. On the East it has a boundary with Wimbleball WRZ. Transfers exist between Roadford and both Colliford and Wimbleball WRZs, but as can be seen from the planning tables included in this plan, the scale of these transfers is small compared to the deployable output of the WRZs.
	Are there distinct geographical, topological or other physical limits to infrastructure connectivity?	
	Are neighbouring WRZ defined by distinct limits of connectivity (geographical, topological or infrastructural)?	

Component	Issue	Response and justification
	What constraints are there to supply (for example, peak demands, capacity of service reservoirs)? Where are the absolute infrastructure connectivity limits and what are the constraints (for example, end of pipe run)? How are these constraints managed (for example, tankering supplies into service reservoirs)?	The primary constraint in Roadford is reservoir storage, and the extent to which storage is depleted over multi-season droughts. While not as extreme as those experienced in the Colliford WRZ, Roadford experiences tourism-driven peak demands, particularly in the coastal areas.
	Are there any constraints to transfer within the WRZ and are these significant enough to warrant sub-dividing the WRZ?	There are no significant constraints within the WRZ that warrant sub-division.
	Are there groups of customers within the WRZ that could, given drought impacts/hydrological stress be at a different supply risk compared to the rest of the WRZ? Where these groups exist, what is the difference and how significant is it to the risks of supply failure? What are the constraining factors that cause these differences?	The different risk experienced by residents of the Upper Tamar Lake supply area during Summer 2022 has been resolved by the additional connectivity introduced as part of our response to the drought. This will need to be monitored to ensure that future growth doesn't threaten WRZ integrity in the future.
Sources	Are sources that supply the WRZ readily identifiable, together with quantities, infrastructure links to demand centres and capacities?	Yes A summary of this connectivity is shown in Chapter 2, Section 4 of this plan.
	Generally, where there is more than one source and/or a strategic grid system in place, can supplies be effectively moved around to manage resource shortfalls?	The schematic diagram shown in Chapter 2, Section 4 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ. See above comments regarding the Upper Tamar Lake supply area.
	Do all the sub-units used to create the zone have equal risks of supply failure?	
	Where stresses are known to occur (for example, licence, hydrological or environmental constraints), can supplies be augmented via infrastructure links from other sources, a strategic grid or imports?	
	What internal transfers of water take place within the WRZ?	
Transfers	Are transfers (except bulk transfers/shared strategic resources) across the WRZ boundary limited under normal or dry year (annual average or critical period) conditions?	Transfers exist between Roadford and both Colliford and Wimbleball WRZs, but as can be seen from the planning tables included in this plan, the scale of these transfers is small compared to the deployable output of the WRZs.

Wimbleball

Component	Issue	Response and justification
Scale	Is the WRZ the largest possible zone in which all resources can be distributed across the zone such that the overall risk to level of service is the same across the zone?	Yes. The schematic diagram shown in Chapter 2, Section 2 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ.
	Does the WRZ represent a group of customers who receive the same risk of supply failure during dry year conditions (annual average and/or critical period) because the customers depend on the same resources?	
	Is the WRZ built up from smaller water balance units?	Yes SWW resource zones are defined by a grouping of water into supply (WIS) zones. Those WIS zones are themselves defined by a grouping of district metered areas DMAs.
	Are there any isolated sources and demand centres that are not connected to the wider supply network? What is the estimated population of these demand centres? Can you serve all your customers within a WRZ under normal, dry year annual average or critical period conditions without recourse to tankering?	The schematic diagram shown in Chapter 2, Section 2 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ
Connectivity	How do the sources of supply (including transfers) link to the demand centres?	A summary of the source connectivity within the zone is shown in Chapter 2, Section 2 of this plan.
	Is the WRZ defined by distinct limits to infrastructure connectivity (for example end of pipe run, valves, meters)?	Wimbleball WRZ is surrounded to the South by the sea, and borders Roadford WRZ to the West. It is adjacent to the Wessex Water supply area to the East. Transfers exists between Wimbleball and Roadford WRZ, and there are exports into the Wessex supply area, but as can be seen from the planning tables included in this plan, the scale of these transfers is small compared to the deployable output of the WRZs.
	Are there distinct geographical, topological or other physical limits to infrastructure connectivity?	
	Are neighbouring WRZ defined by distinct limits of connectivity (geographical, topological or infrastructural)?	
	What constraints are there to supply (for example, peak demands, capacity of service reservoirs)? Where are the absolute infrastructure connectivity limits and what are the constraints (for example, end of pipe run)? How are these constraints managed (for example, tankering supplies into service reservoirs)?	The primary constraint in Wimbleball is raw water reservoir storage, and the extent to which storage is depleted over a drought.

Component	Issue	Response and justification
	Are there any constraints to transfer within the WRZ and are these significant enough to warrant sub-dividing the WRZ?	There are no significant constraints within the WRZ that warrant sub-division.
	Are there groups of customers within the WRZ that could, given drought impacts/hydrological stress be at a different supply risk compared to the rest of the WRZ? Where these groups exist, what is the difference and how significant is it to the risks of supply failure? What are the constraining factors that cause these differences?	No significant risk present.
Sources	Are sources that supply the WRZ readily identifiable, together with quantities, infrastructure links to demand centres and capacities?	Yes A summary of this connectivity is shown in Chapter 2, Section 2 of this plan.
	Generally, where there is more than one source and/or a strategic grid system in place, can supplies be effectively moved around to manage resource shortfalls?	The schematic diagram shown in Chapter 2, Section 2 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ.
	Do all the sub-units used to create the zone have equal risks of supply failure?	
	Where stresses are known to occur (for example, licence, hydrological or environmental constraints), can supplies be augmented via infrastructure links from other sources, a strategic grid or imports?	
	What internal transfers of water take place within the WRZ?	
Transfers	Are transfers (except bulk transfers/shared strategic resources) across the WRZ boundary limited under normal or dry year (annual average or critical period) conditions?	Transfers exists between Wimbleball and Roadford WRZ, and there are exports into the Wessex supply area, but as can be seen from the planning tables included in this plan, the scale of these transfers is small compared to the deployable output of the WRZs.

Bournemouth

Component	Issue	Response and justification
Scale	Is the WRZ the largest possible zone in which all resources can be distributed across the zone such that the overall risk to level of service is the same across the zone?	Yes

Component	Issue	Response and justification
	Does the WRZ represent a group of customers who receive the same risk of supply failure during dry year conditions (annual average and/or critical period) because the customers depend on the same resources?	The schematic diagram shown in Chapter 2, Section 5 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ.
	Is the WRZ built up from smaller water balance units?	Yes The WRZ is defined by a grouping of water into supply (WIS) zones. Those WIS zones are themselves defined by a grouping of district metered areas DMAs.
	Are there any isolated sources and demand centres that are not connected to the wider supply network? What is the estimated population of these demand centres? Can you serve all your customers within a WRZ under normal, dry year annual average or critical period conditions without recourse to tankering?	Yes The schematic diagram shown in Chapter 2, Section 5 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ
Connectivity	How do the sources of supply (including transfers) link to the demand centres?	A summary of the source connectivity within the zone is shown in Chapter 2, Section 5 of this plan.
	Is the WRZ defined by distinct limits to infrastructure connectivity (for example end of pipe run, valves, meters)?	The Bournemouth WRZ is bounded by the sea to the south, by Wessex Water on the West, and Southern Water in the East.
	Are there distinct geographical, topological or other physical limits to infrastructure connectivity?	
	Are neighbouring WRZ defined by distinct limits of connectivity (geographical, topological or infrastructural)?	
	What constraints are there to supply (for example, peak demands, capacity of service reservoirs)? Where are the absolute infrastructure connectivity limits and what are the constraints (for example, end of pipe run)? How are these constraints managed (for example, tankering supplies into service reservoirs)?	The primary constraint is the Bournemouth peak demand.
	Are there any constraints to transfer within the WRZ and are these significant enough to warrant sub-dividing the WRZ?	There are no significant constraints within the WRZ that warrant sub-division.
	Are there groups of customers within the WRZ that could, given drought impacts/hydrological stress be at a different supply risk compared to the rest of the WRZ?	No significant risk present.

Component	Issue	Response and justification
	Where these groups exist, what is the difference and how significant is it to the risks of supply failure? What are the constraining factors that cause these differences?	
Sources	Are sources that supply the WRZ readily identifiable, together with quantities, infrastructure links to demand centres and capacities?	Yes A summary of this connectivity is shown in Chapter 2, Section 5 of this plan.
	Generally, where there is more than one source and/or a strategic grid system in place, can supplies be effectively moved around to manage resource shortfalls?	The schematic diagram shown in Chapter 2, Section 5 of this plan shows that there is a good degree of strategic interconnectivity within the WRZ
	Do all the sub-units used to create the zone have equal risks of supply failure?	
	Where stresses are known to occur (for example, licence, hydrological or environmental constraints), can supplies be augmented via infrastructure links from other sources, a strategic grid or imports?	
	What internal transfers of water take place within the WRZ?	
Transfers	Are transfers (except bulk transfers/shared strategic resources) across the WRZ boundary limited under normal or dry year (annual average or critical period) conditions?	The only external links are bulk supplies with Wessex Water.

South West Water

Bournemouth Water

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