Title: How Affinity Water identify, manage and address Single Point of Failures in its distribution network

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Affinity Water is the UK's largest water only supplier, providing more than 950 million litres of water each day to a population of more than 3.8 million people. It serves communities with some of the highest demand for water in the country. However, like all water networks, Affinity's infrastructure possesses inherent weaknesses and pinch points. A burst in these critical areas can lead to significant customer disruptions, especially when the system lacks the necessary connectivity for immediate resupply.

While there is a low number of Single Points of Failure (SPoFs) within Affinity Water distribution network., their potential consequences can have a significant impact. This goes beyond simple service interruptions. While certain SPoFs can be more effectively managed based on their location and through restoration techniques, others may require extensive repair time, leaving thousands of people without water. Additionally, some of our SPoF trunk mains are located under or cross key national infrastructures, such as major motorways or railway links. This means a failure can have repercussions not only for our customers but also for the broader community.

This paper will delineate the strategies and methodologies Affinity Water employs to identify, manage, and plan against these risks. Addressing SPoFs occasionally involves laying expansive trunk mains that might, under standard operations, remain unused. It's pivotal to strike an equilibrium in allocating funds to ensure these vulnerabilities are addressed without superfluous network expenditure.

Furthermore, alignment and collaboration across different work programs — such as growth initiatives, strategic reinforcements, and storage management — are crucial. Such coordinated efforts ensure that we neither inadvertently introduce new SPoFs nor neglect existing ones.

Lastly, the repercussions of climate change, although not fully comprehended and somewhat unpredictable, are becoming more evident. Current indications suggest that these environmental shifts can affect groundwater levels, hasten changes in ground stability, and potentially increase the frequency of bursts.