Affinity Water

Single Points of Failure

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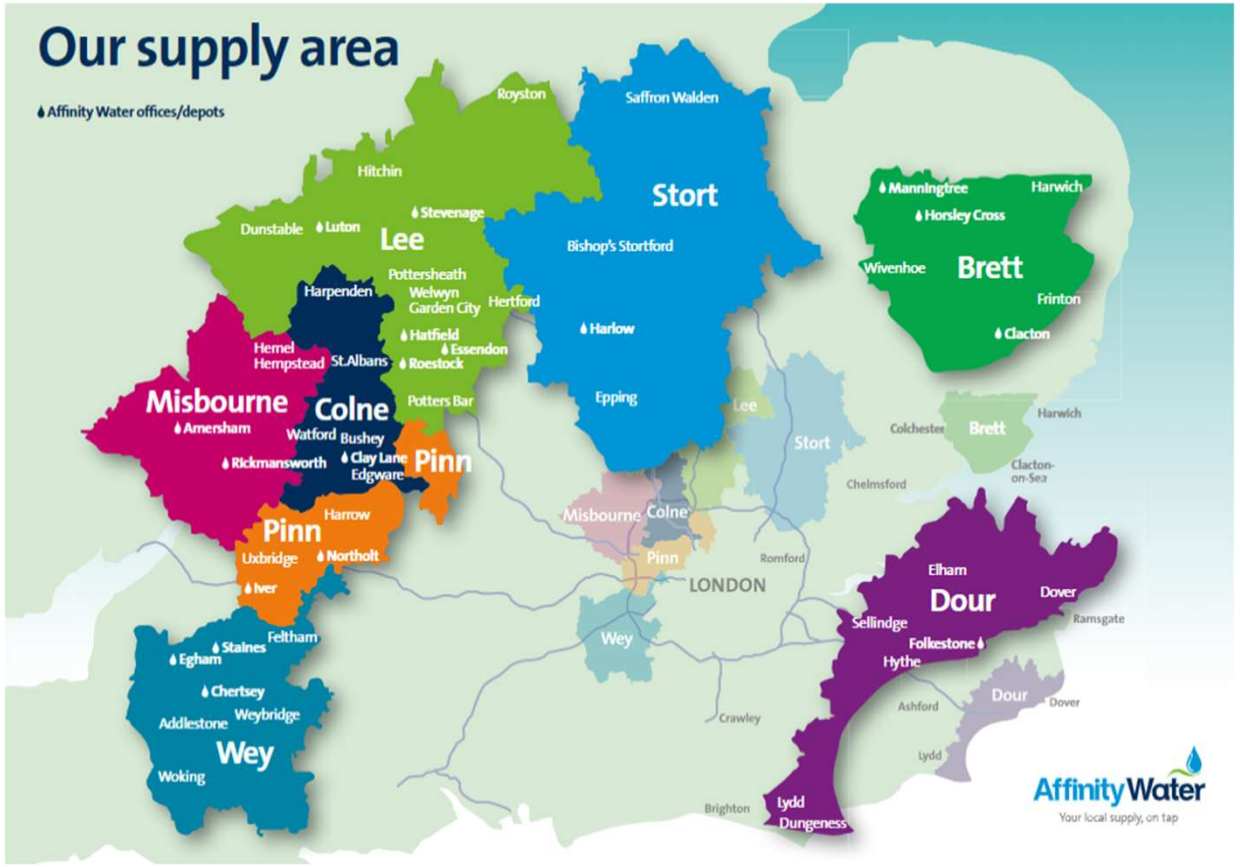
November 2023

cwmag
clean water
modelling advisory group

Overview

Affinity Water is the UK's largest water only supplier, providing more than 900 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.



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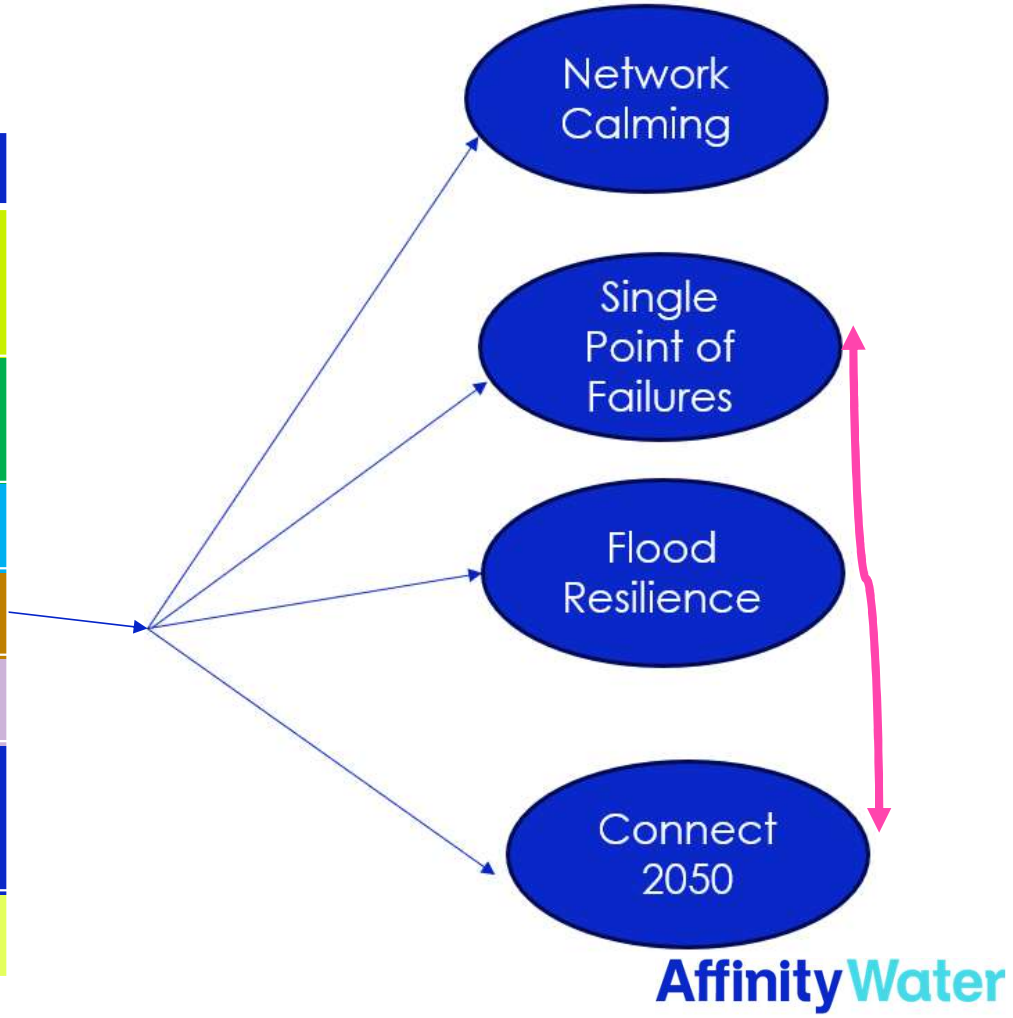
Overview of PR24 and the Company

PR24 enhancement expenditure breakdown
Net Zero
WINEP(Water Industry national environment programme)
WRMP(Water Resource Management Plan)
Resilience
SEMD(Security and Emergency Measures)
Water Quality
Lead



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- Step 1: Definition of Single Point of Failure (SPoFs)
- Step 2: Identification and validation of the SPoFs.(Critical Link Analysis)
- Step 3: Outcome: Confirm the schemes and fit them with other programme of works
- Step 4: Prioritization based on the Risk Index: Cost/Risk per Annum
- Step 5: Alternatives: Restauration techniques

Definition of Single Point of Failure (SPoF)

- An asset that has a low likelihood of failing, but if it does, it can cause a large disruption for customers.

- **The objective is to Improve resilience to low probability high consequence events and** achieve an interruption to supply target for AMP8 of less than 3 hours.

- Risks:
- Creation new WQ hazards (low velocity mains, dead legs)
- Creation of new SPOFs as part of the growth of the network

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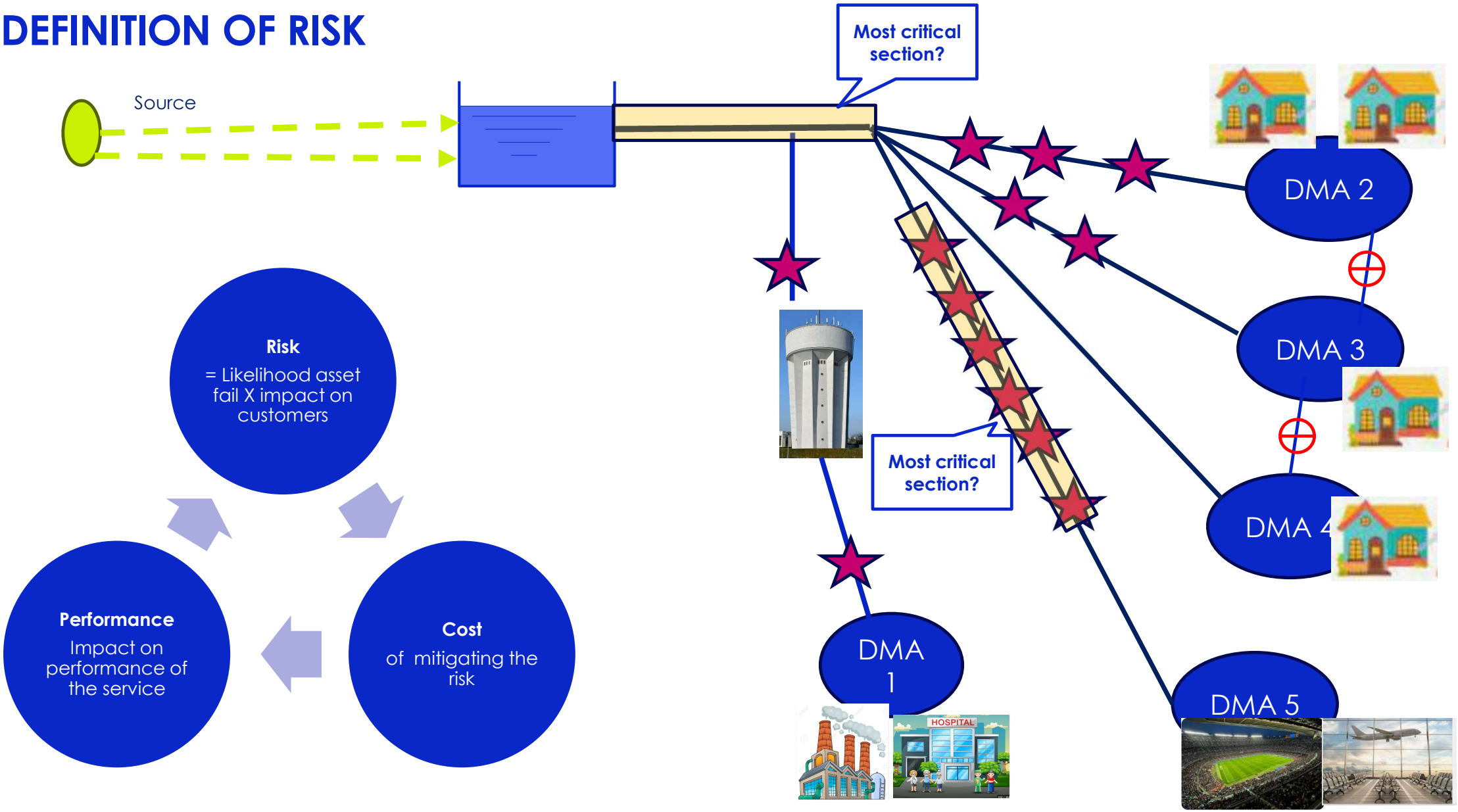
DEFINITION OF RISK



DATA

Historical Records(Pipe Samples

Pipe

Gro
Cono

CLIMATE CHANGE

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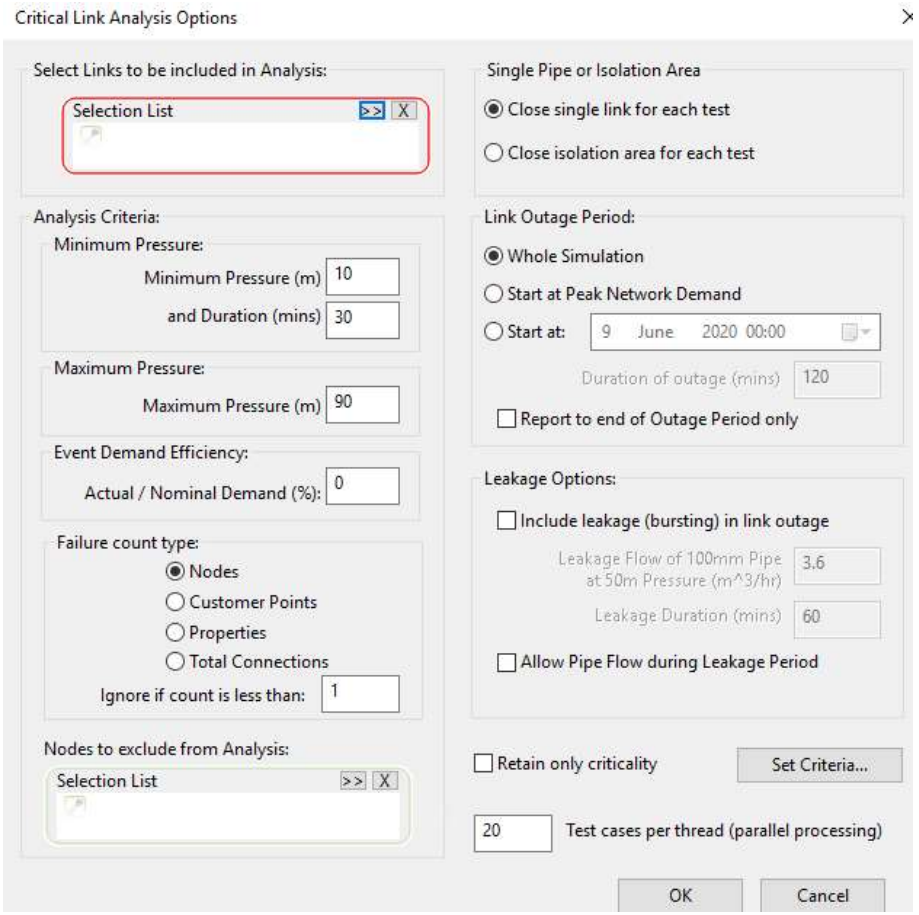
The CLA results from the model show that approximately 0.35% of our entire network length are SPOFs for more than 2,000 properties. This corresponds to 19 sections of TM, affecting less than 0.2% of our customers with water disruptions.



- **Identification and validation**

Capacity 0.7 l

DMA 1

DMA 2

DMA 3

DMA 4

DMA 5

SPoF?

Single Point of Failure

Reservoir A
20 Ml

Source

SPoF?
How long it takes to repair a main?
What is the time survival of the reservoir?

Reservoir B

Different System

Railway Crossing

- **Identification and validation**

- Monitoring Resilience of customer supply :
  - Operation Resilience Assessment tools
  - Asset Risk Management system (ARM)
  - Monthly NIMMS and PIMMS meeting
  - Critical Link Analysis run every two years

- **Solution: Outcomes**
- **Schemes**

Water Tower (Capacity(0.7Ml

DMA 1

DMA 2

DMA 3

DMA 4

DMA 5

Solution option 1

New Reservoir

Source

Reservoir A Capacity(20 Ml)

SPoF?
How long it takes to repair a main?
What is the time survival of the reservoir?

New Main?
Is the best solution?

Reservoir B

Railway Crossing

New Reservoir

Is the best solution?

Prioritization

Risk Index: Cost/Risk per Annum

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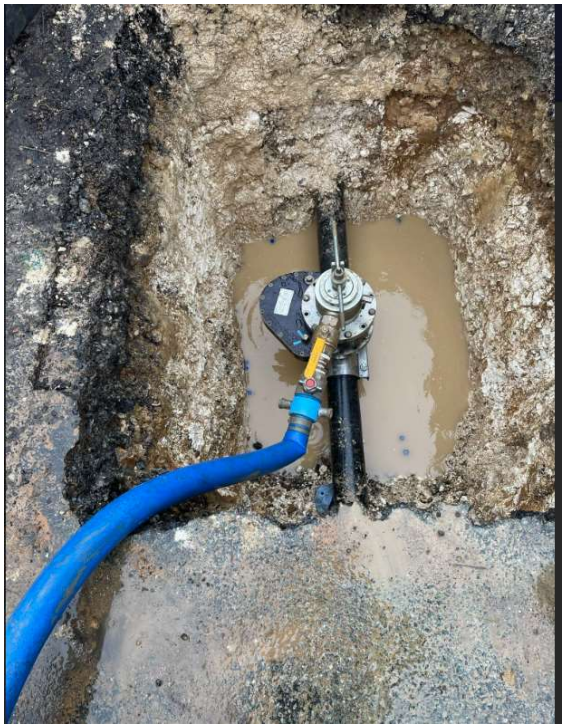
- **Restauration Techniques**

- **Water tankers**
- **Overland supply**

Double Line stop and bypass



Water tanker

Questions

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