



H2O International



INTERNATIONAL WATER EXHIBITION
TECHNOLOGIES, TREATMENT
DISTRIBUTION, SUSTAINABILITY

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Beyond 2020: Strategic Planning Challenges

Mark Tully, Southern Water
mark.tully@southernwater.co.uk

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Background – Southern Water

- Southern Water currently supplies high-quality drinking water to over 2.5 million customers in the south-east of England through a 13,900km distribution network.
- Since privatisation in 1989 we have significantly reduced our Distribution input from over 900 MI/d to 540 MI/d (FY17/18) despite an increasing population.
- Household demand for water has decreased over time. This has been driven by our leakage reduction, metering and water-efficiency programmes, along with lifestyle changes and more efficient water-using devices.
- 87% of our customers now have a water meter and pay for the volume of water they use. Together with leakage and water-efficiency measures, we've seen water use fall by 16% in the past seven years .
- Per Capita Consumption (PCC) of 131 l/h/d and leakage of 105 MI/d (92 l/p/d) are among the lowest in the UK (this roughly equates to an ILI of ~1).

Background: Water Supply Areas

South East of England*

2020 Population = 8.8 million
2030 Population = 10.2 million



*excludes London

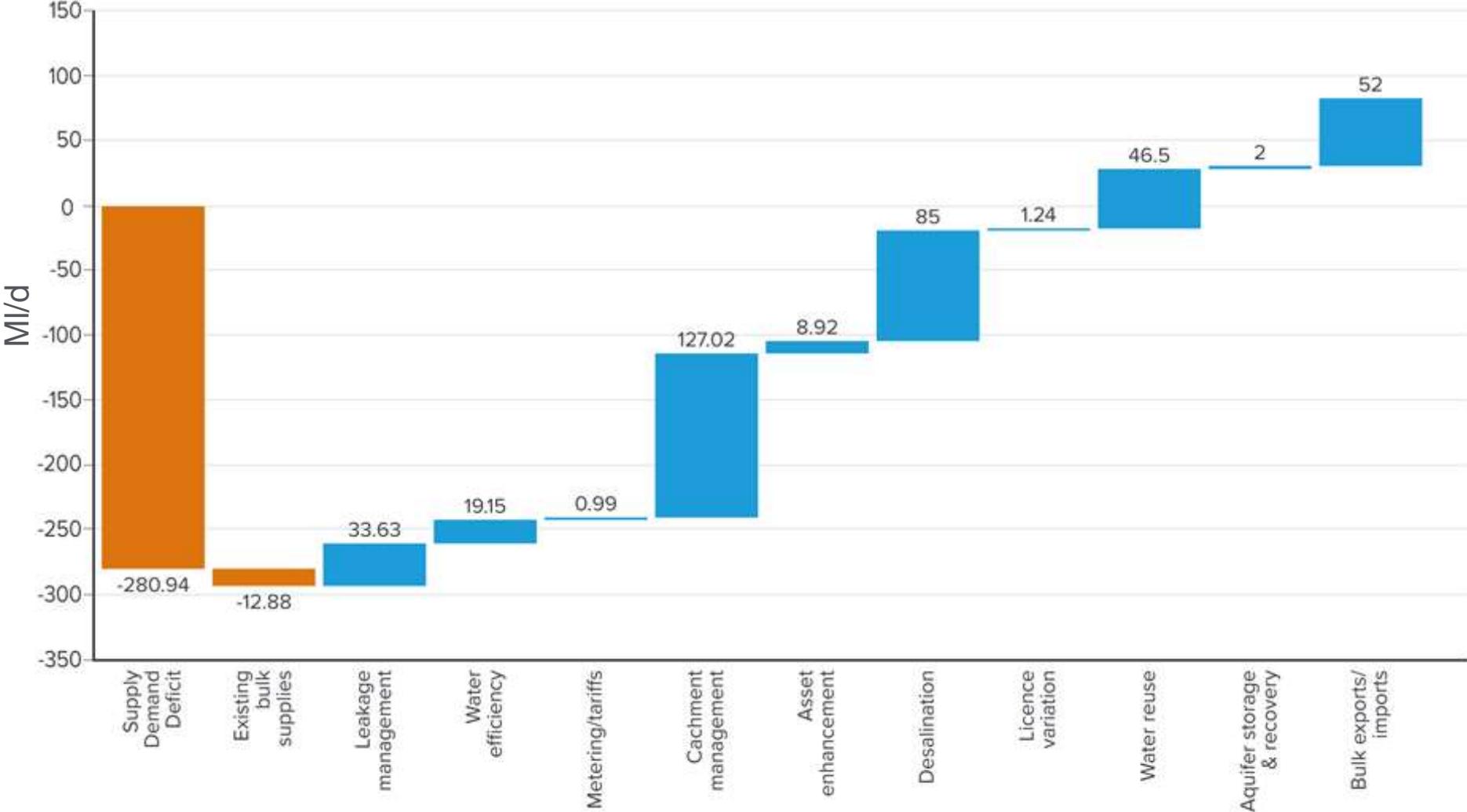
Beyond 2020: A Changing World

- The south-east of England is already a water scarce area.
- Rainfall is predicted to decrease by 20% by 2045.
- This means by 2045, we will have lost a third of our water sources through climate change and seen a reduction in the amount of water we are allowed to take from rivers and underground sources.
- The population is expected to grow by 15% from 2020 to 2030.
- Without action, we predict a supply and demand deficit by 2030, equivalent to around 50% of our current supply (deficit = 294 MI/d).

Responding to these challenges

- We are now undertaking a ‘triple track’ approach:
 1. Developing new resources and transfers, including the Regional Water Supply Grid, water reuse and desalination programmes. Total expenditure to 2030 is anticipated ~ € 1 billion.
 2. Invest in a catchment management (integrated water cycle management) approach to protect the environment and improve the resilience of our water sources. Total expenditure to 2025 ~ € 70 million.
 3. Demand Management:
 - Target 100: Reduce PCC from 129 l/h/d to 120 l/p/d by 2025 and to 100 l/h/d by 2040.
 - Leakage: Reduce by 15.1% from 92 l/p/d to 80 l/p/d by 2025 and to 60 l/p/d by 2040 (40 by 40).
 - Total expenditure to 2025 ~ € 250 million.

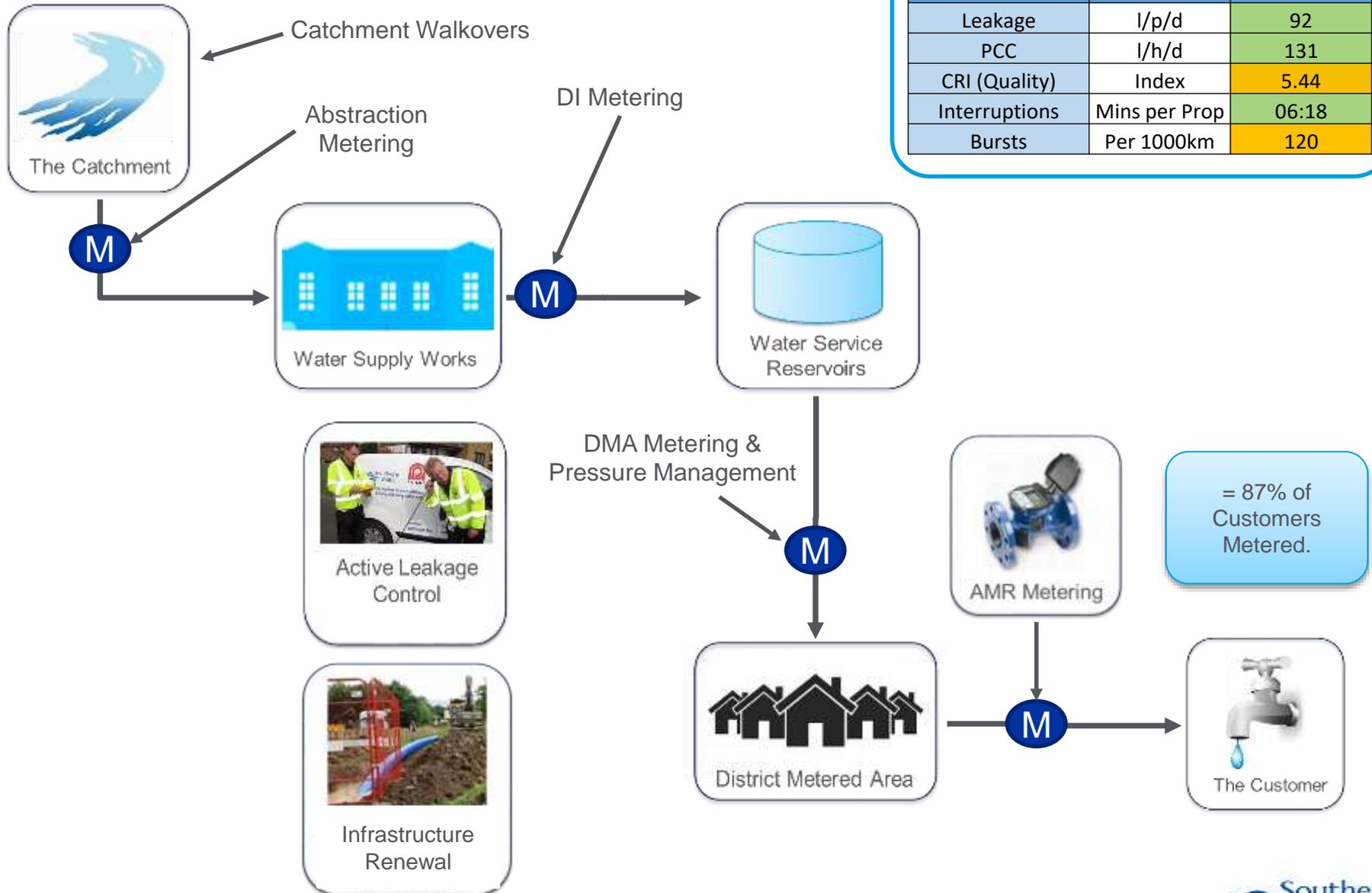
Recovering the Deficit



Key changes in our approach

- The introduction of our Single Integrated Network Strategy (SINES) to provide strategic direction for all water network investment from 2020 to 2045.
- The main objective of SINES is to integrate sensors and data to provide much improved situational awareness and improved network performance.
- This is based on developing and implementing key enabling technologies such as 5G/IOT and Artificial Intelligence (working with a number of strategic partners).
- SINES utilises a diverse range of strategic options, asset replacement, smart technology and operational solutions to ensure further strategic resilience:
 - Permanent acoustic sensors
 - IOT/5G enabled smart meters
 - Permanent transient monitoring
 - Remote sensing platforms
 - Increased automation
 - Increases infrastructure investment

Current Approach (to 2020)



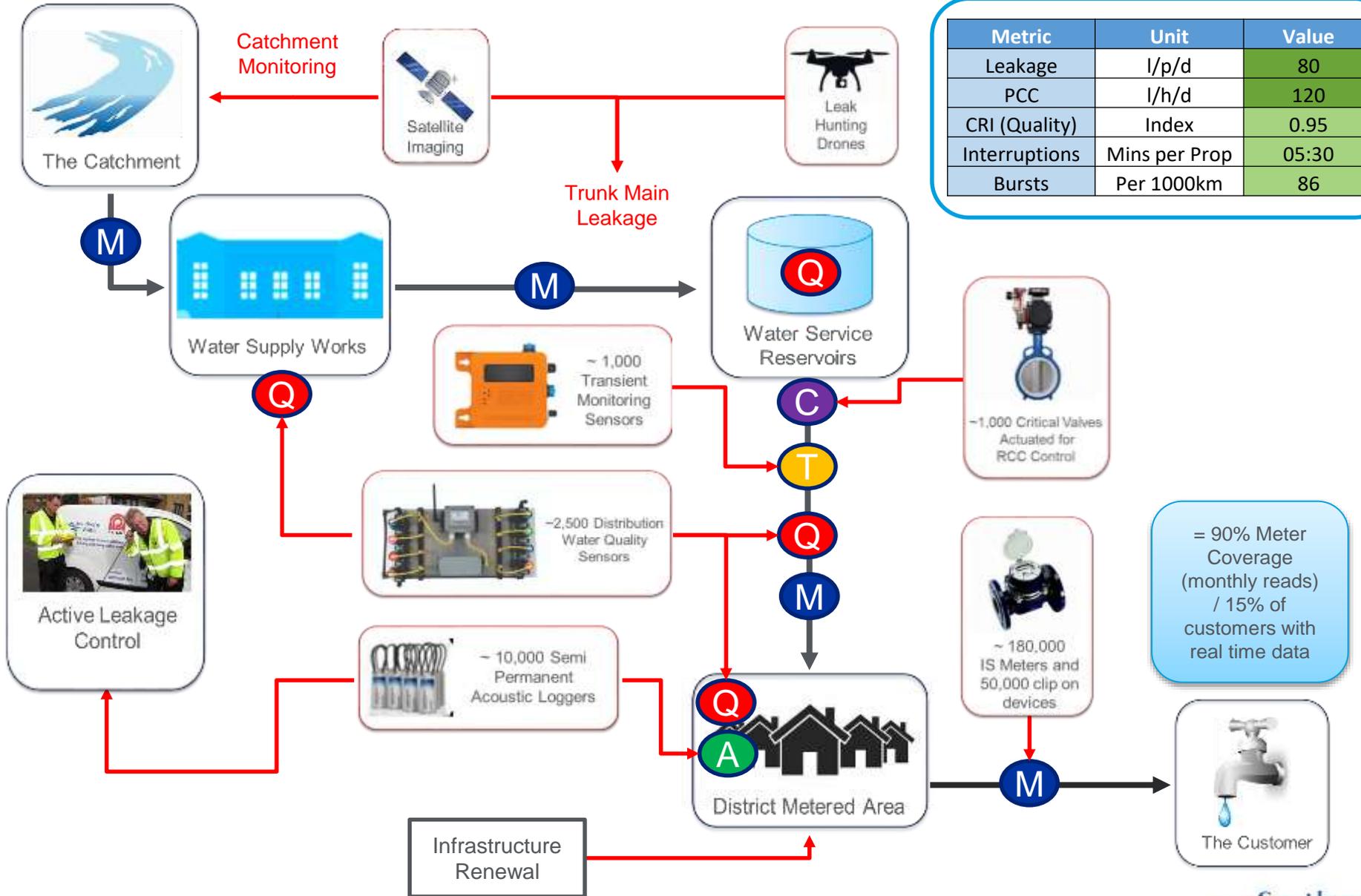
Network Dashboard

Metric	Unit	Value
Leakage	l/p/d	92
PCC	l/h/d	131
CRI (Quality)	Index	5.44
Interruptions	Mins per Prop	06:18
Bursts	Per 1000km	120

AMP7 Approach (to 2025) = SINES Phase 1

Network Dashboard

Metric	Unit	Value
Leakage	l/p/d	80
PCC	l/h/d	120
CRI (Quality)	Index	0.95
Interruptions	Mins per Prop	05:30
Bursts	Per 1000km	86



= 90% Meter Coverage (monthly reads) / 15% of customers with real time data

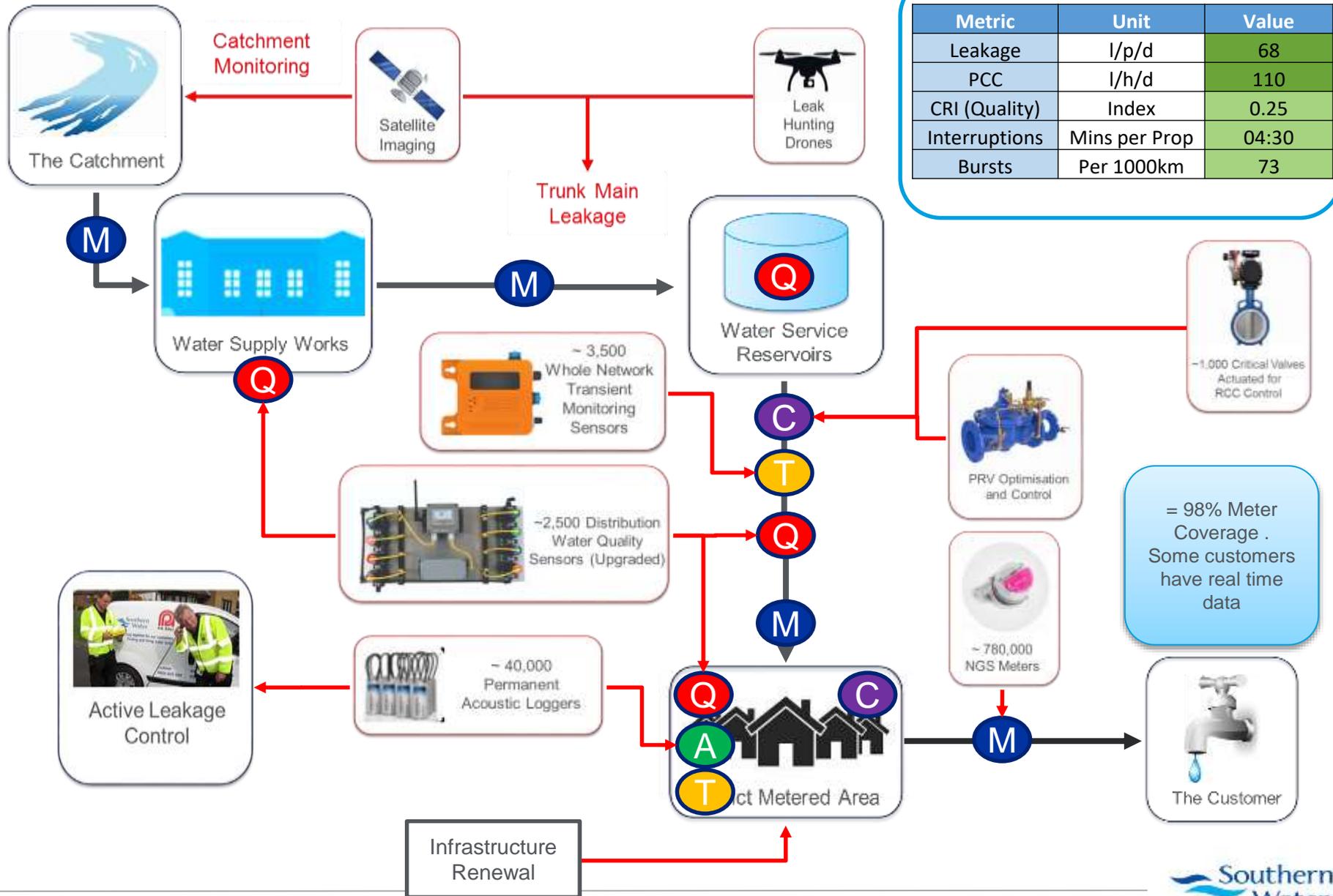
Capabilities deployed by 2025.

1. Implement the Network Management Platform (NMP) including the capability to integrate, visualise and interpret all data captured from the both existing and new sensors.
2. Deployment of 2,500 water quality sensors and automation of critical control valves to improve resilience and improve distribution water quality performance
3. Deployment of 1,000 pressure transient monitors across the trunk main network for improved transient identification and mitigation.
4. Deployment of ~ 20,000 semi-permanent acoustic loggers for improved Active Leakage Control (ALC) targeting.
5. Deployment of remote sensing platforms (such as satellite and drone imaging) to more efficiently target strategic trunk main leakage and catchment monitoring.
6. Installation of ~ 300,000 smart meter devices to reduce both per capita consumption and customer side leakage.
7. Replace 330km of water mains as part of a DMA scale asset replacement based on leakage (~2.5% of network).

AMP8 Approach (2030) = SINES Phase 2

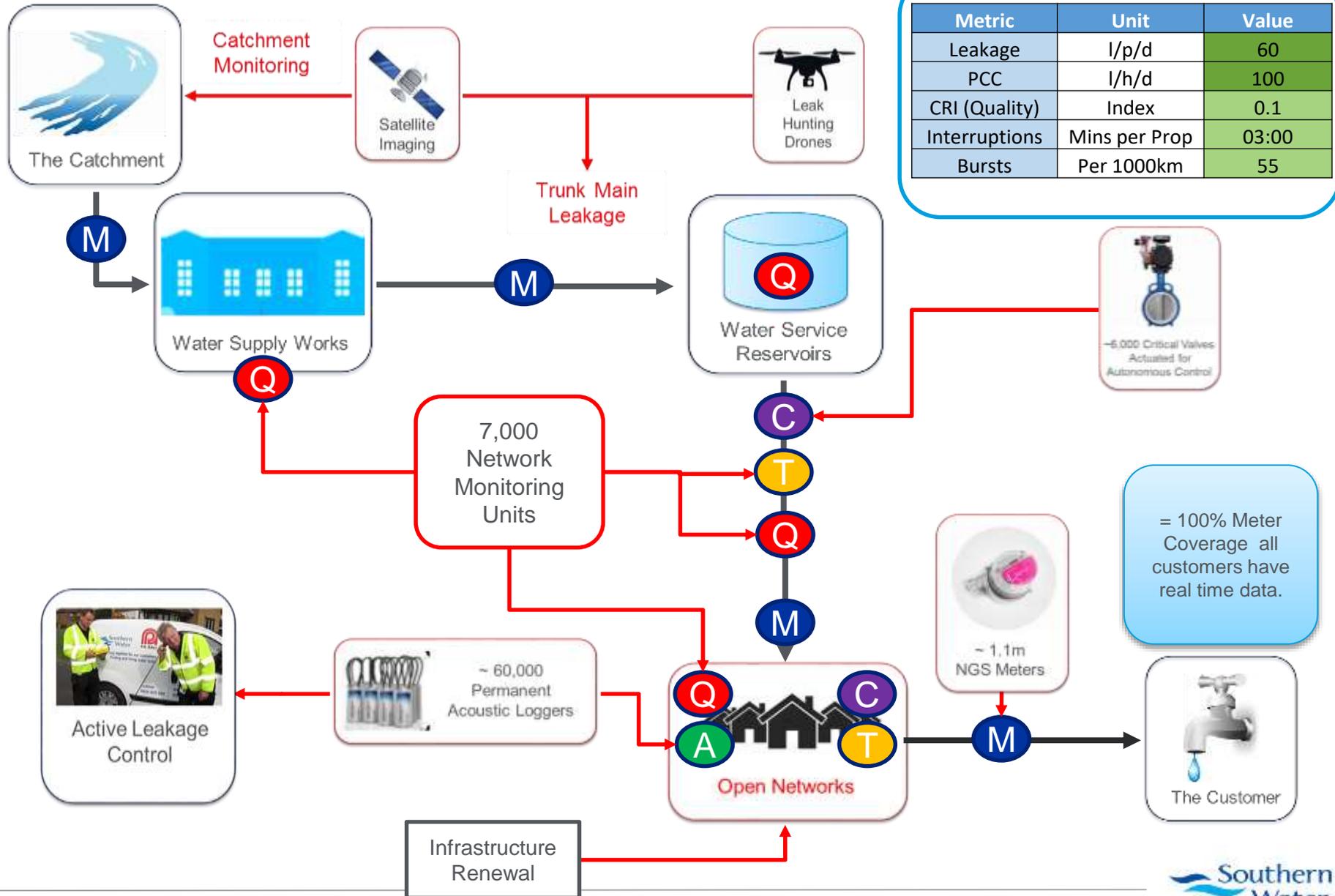
Network Dashboard

Metric	Unit	Value
Leakage	l/p/d	68
PCC	l/h/d	110
CRI (Quality)	Index	0.25
Interruptions	Mins per Prop	04:30
Bursts	Per 1000km	73



AMP9 Approach (2030 to 2040)

Network Dashboard 2040



Summary

- The southeast of England has a number of significant challenge over the next 20 years. Reducing water loss is a key part of that challenge.
- We have built a diverse but integrated strategy which brings together a number of existing and emerging technologies to deliver a 12 l/p/d reduction by 2025.
- This is part of our long strategy to reduce leakage by 50% by 2050 which aligns to the targets of the UK government.
- We are open to collaboration and are happy to share what we have learnt. We also need industry to collaborate.
- We are looking for new approaches and new technologies to further enhance our approach.

Questions ?

Contact details:

Mark Tully

Strategic Planning Manager

Southern Water

Mark.Tully@southernwater.co.uk