Water Neutrality in Sussex North

February 23rd 2023

Central water resource zones

- **Sussex North**
  35% groundwater, 51% river, 8% reservoir, 6% transfers
- **Sussex Worthing**
  98% groundwater, 2% transfers
- **Sussex Brighton**
  100% groundwater

WATER for LIFE

from Southern Water

Welcome!

Sandra Norval – Future Growth Lead

from Southern Water

Agenda

13:00 **Welcome**

Sandra Norval – Future Growth Lead

13:05 **Target 100**

Tahira Abdullah – T100 Lead

T100 Q&A

13:35 **Water Efficiency in the Home**

Justine Lewis – Water Efficiency Officer

13:55 **Leakage**

Phil Tapping – Water Network Demand Manager

14:15 **Q&A for panel speakers**

14:30 **Close**

Housekeeping

Please note we will be recording today's session

Please remain muted during presentations, we have a lot of detail to share and will take questions when all presentations are complete

Please submit your questions on Slido using code #3077998

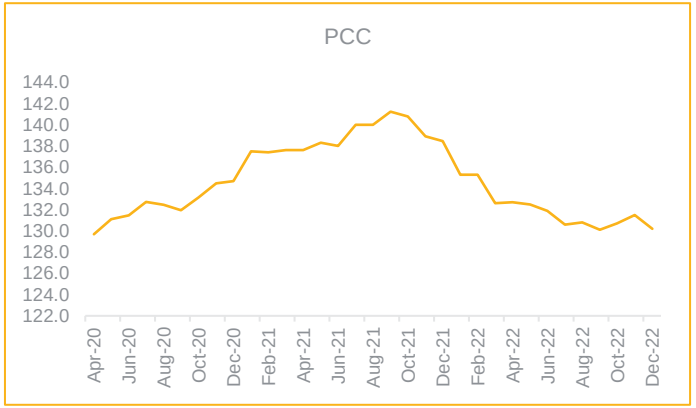
Target 100 (T100)

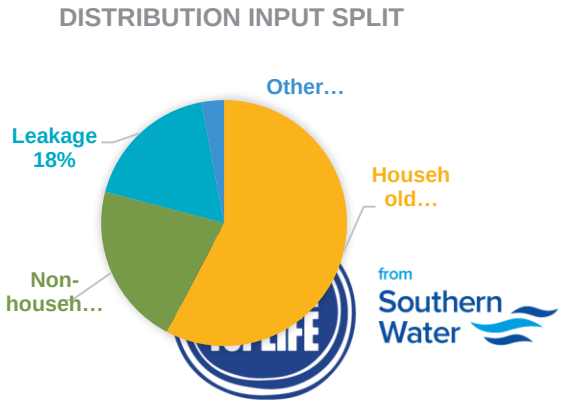
Tahira Abdullah – T100 Lead

from Southern Water

Target 100 is our commitment to reduce personal consumption to 100 l/p/d by 2040/50 & 9% reduction in NHH demand by 2037.

- T100 initially focused on reducing household consumption has now been expanded to reduce all demand (inc. business and new developments).
- We have just completed our WRMP consultation on achieving 100 or 109 and whilst we are still aiming for 100, the affect of Covid has made this target more challenging to achieve.
- T100 is a long term behaviour change programme for reducing water use and providing the necessary tool to support this change across all customers.





T100 has been expanded across the demand spectrum, including Non-Household and Developers (new homes).

- Businesses use roughly 1/3rd of water consumed in our region
- Existing housing stock poses our biggest challenge, by 2025, 80% of houses will have already been built inefficiently
- A water efficient home uses 41% less water than an inefficient home
- Developers are looking to deliver water neutral homes – we have a role to play in guidance and policy setting

WATER for LIFE from Southern Water

What we have learned

78% of people not believing the UK is water scarce.

21% think their household use 19l of water or less per day

a leaky loo wastes between 215 and 400 litres of water per day

Showers are the biggest water user in the house (25%), followed by toilets (22%).

Most impactful consumption sources

We've learned **which consumption sources will give us most impact and value for our investment**: showers, Toilets (leaking or excessive flushing) and garden hose use.

Making change easy

Customers won't motivate themselves, so we need to make it easy for them. Cost is seen as a high motivating factor but not enough alone. Making people's lives easier and environment have strong emotional pull.

Reciprocity

Southern Water need to show we are leading the way tackling leakage and being efficient ourselves. People are more willing to consider making changes themselves if they feel like the request is 'fair'. **They want transparency about Southern Water and other businesses.**

Making consumption more tangible

More tangible consumption is a key need of our customers and a challenge for us with current consumption data. We can provide products that close the gap in the meantime and measure our impact to learn and adapt.

New ways of reaching customers

Customers want creative, quick and easy ways of helping them change and keeping them on track. Water efficiency literacy is not something people naturally seek to learn more about.

New business models and partnerships for household, developer and retail

We expanded scope beyond household to retail and developer. Many learnings can be shared across these user groups. But deployment of solutions will require **new business models and partnerships**.

Building a water efficient culture achieved through behaviour change

7 Catalysts: the key workstreams to reduce demand directly and promote and accelerate a water efficiency culture

3 Approaches are the ‘how’ we’ll support the catalysts most effectively in our plan

- Evidence based
- Agile approach
- Partnership

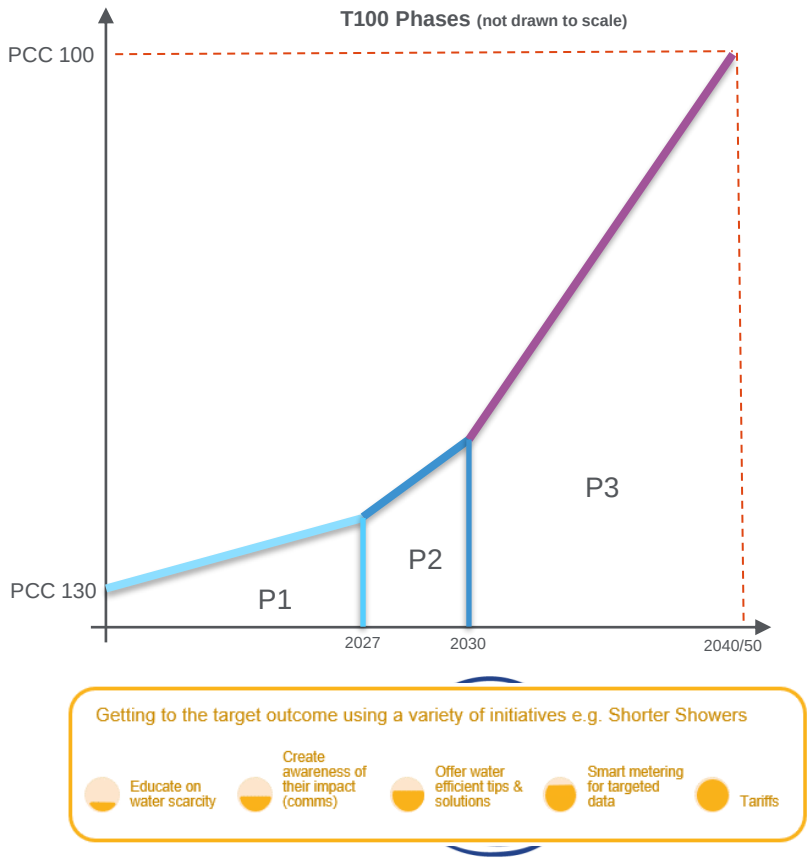
WATER for LIFE

from Southern Water

A long-term adaptive plan with three key phases

Behaviour change is complex and requires a phased approach for effective delivery

- **Phase 1: Laying the foundation and delivering (current phase)**
  - **Setting the foundation:** education, build awareness, lobby
  - **Doing what works:** home audits, campaigns, targeted technology
  - **Innovate to find new solutions:** trial and identify new products
  - **Smart metering deployment:** a key enabler for behaviour change and to improve effectiveness of other initiatives (audits) and enable new tariffs
- **Phase 2: Becoming 'Smart' enabled**
  - Continue doing what works at scale and deploying innovations
  - Benefitting from smart metering rollout and initial tariff testing
- **Phase 3: Tariffs**
  - Continue doing what works at scale and deploying innovations
  - Benefiting from longer term education
  - Total adoption of tariffs (currently a summer tariff disincentive)



Our new T100 Sponsored Education programme

2022-23 Activities and Impacts

1. Water Wise talks (all year)

- KS1&2: Water cycle, cleaning water and saving waterKS3 Cleaning process and water saving
- KS4 and KS5 – more scientific about the process

2. Our River Our Water (all year)

- In school delivery (Sept to March) and Riverside delivery (April to august) – not exclusive – KS2
- Crawley and Romsey and Dover (Rivers Trust)

3. Water Supply Challenge (Summer term)

- Upper KS2, KS3 and KS4 (and for graduate requirement)

62 engagements and 21,996 young people reached this year, using all three activities above.

2023-25 Activities and Impacts

We will continue engaging students across all key stages AND

4. New Wave (Our new education programme)

This is the We are Futures content across KS2,3,4, delivered throughout the year with a new release every term.

Up to academic year 24/25 we will reach: **214,256 young people, 342,810 parents, 1,182 teachers across 591 schools** (equivalent to about 1/3rd of all schools in our water and wastewater region)

Two lessons for KS2 - **Water Protectors -** Waste and Save game. **Water Detectives** - Help water drop find its way home.

WATER for LIFE from Southern Water

Urgent, clear and actionable communication, rooted in behaviour change models

78% of people not believing the UK is water scarce.

21% think their household use 19l of water or less per day

2023 Comms Strategy

Pre-summer	Summer	Post-summer	Winter
Hard Hitting campaign - the time is now	Reminders and rewards to keep going	Be responsive to the events of the summer	Be prepared for next year – start comms if low autumn/winter rainfall

Be locally relevant and targeted – deliver nudges

Keep communicating what SW are doing

Supported by behavioural insights

Messenger (National trust Vs Celebrity Vs Water company)

Timing (Now, Near future, future)

Motivation (Guilty, infographic)

Incentives (financial, comparative)

Behavioural asks (Shower, toilets, gardens)

from Southern Water

T100 activities 2023-24 (Developer Services)

- ✓ We are reviewing our WRMP consultation feedback which may require changes to our plan
- ✓ Three tiers of environmental incentives will be live from April ‘23 (excludes North Sussex) new-connection-charging-arrangements-2023-24.pdf (southernwater.co.uk)
- ❑ Trial new solutions and partnerships/business models (Innovation)
  - ❑ Retrofit project for schools with flow restrictors; initial results showing 18% reduction
  - ❑ Fitted flow restrictors in 500 social housing properties – results being analysed
  - ❑ New trial under design for using flow restrictors in meters
  - ❑ New trial with Hampshire County Council to audit and retrofit council properties
  - ❑ And others…

T100

Water Saving Home Visits
A brief overview

Justine Lewis – Water Efficiency Officer

WATER for LIFE

from Southern Water

Current Home visit programme

- A home visit programme started in 2010 as part of UMP.
- We are now working with RPS/Aqualogic to deliver 10000 visits pa
- The home visit programme is now part of Target100 to reduce usage to 100 litres per person per day by 2040. This is your Per Capita Consumption (PCC). Have you checked your own personal PCC?
- A targeted programme – Customers have to fit criteria –

  Water AND wastewater customers, have a water meter, average or above consumption

At the free water saving home visit, the trained and DBS checked engineers –

- Fit water saving devices (up to £100 devices per property) and give behavioural advice
- Take a meter read
- Refer direct to Affordability team/give Priority Services leaflets
- Check for Leaky loos and refer to plumber to fix
- Check Customer Side Leakage (approx.10% of properties), Points of Interest referred to leakage team
- Supply and fit waterbutts, when agreed suitable at booking
- Score excellent on customer satisfaction (Utility Award and Water Industry awards finalists)
- Provide a full post-visit report to all customers

Products – A customer choice

- Bathroom & kitchen tap Aerators- various types
- Kitchen stream (mixer tap multi function head)
- Showerheads
- Save a flush CDDs /Hippobags
- Waterbutts supplied and fitted
- Service valve adjustments
- Leaky loo strips
- Hose guns, tap jackets

Conclusion

What we have learned

- A successful programme, a variety of water saving products fitted, good reduction in water savings, high customer satisfaction scores
- Visits help save water, save energy – and save money on water bills
- Assumed average per visit saving - 27.5 litres
- Continue to reduce the Southern Water PCC figure

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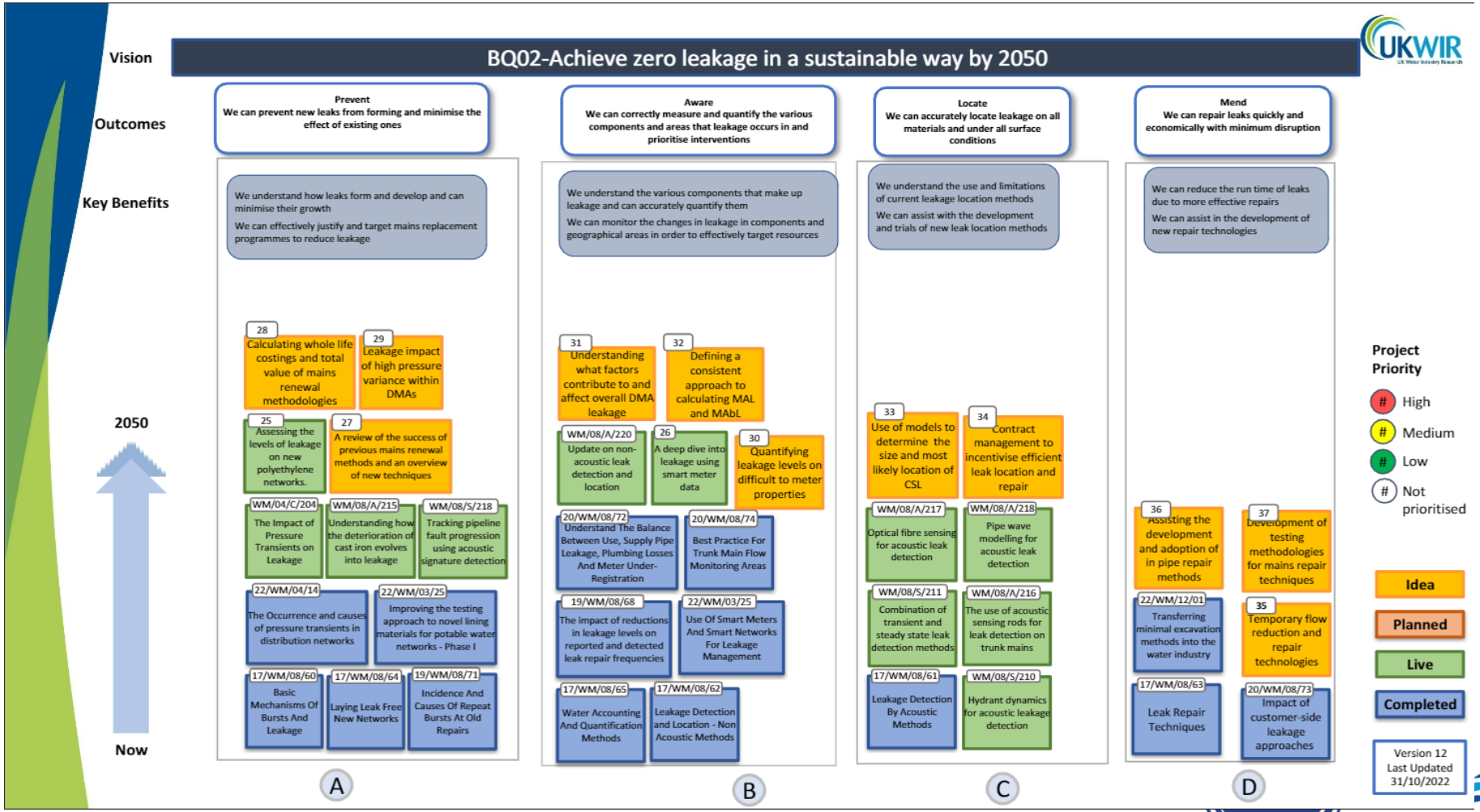
Leakage

Phil Tapping – Water Network Demand Manager

from Southern Water

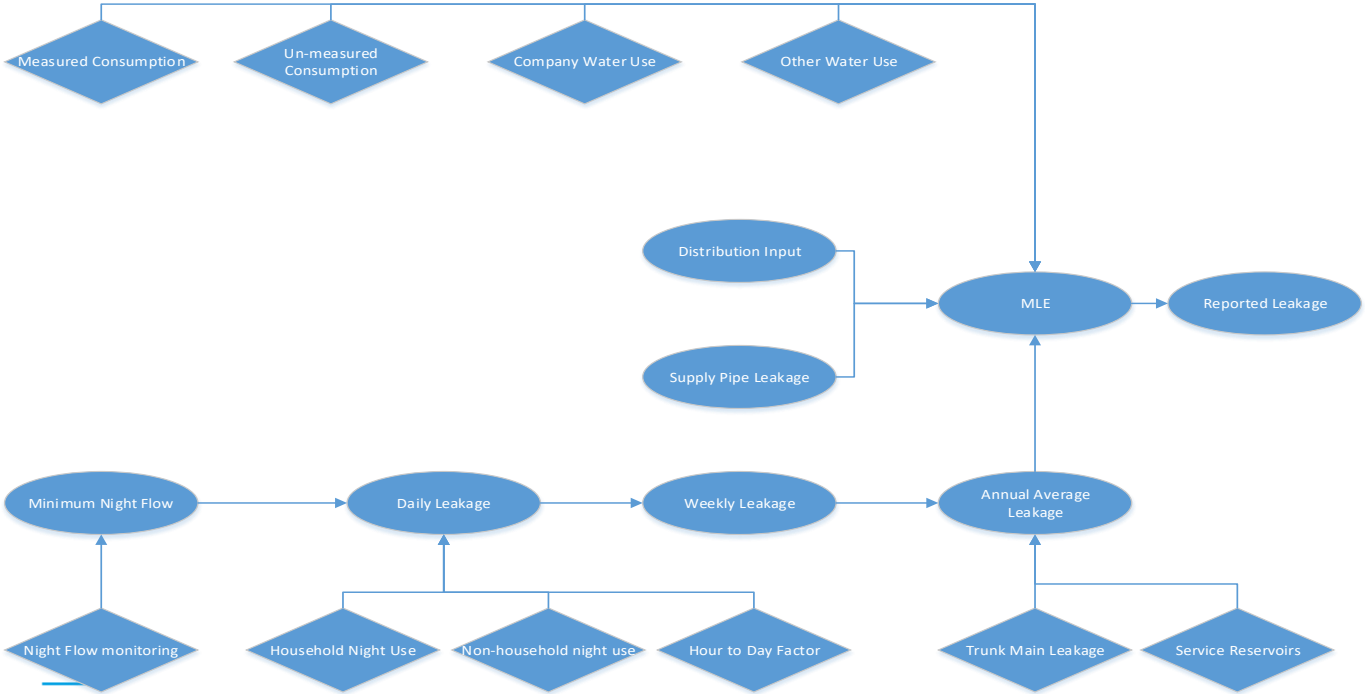
Our aims and ambitions

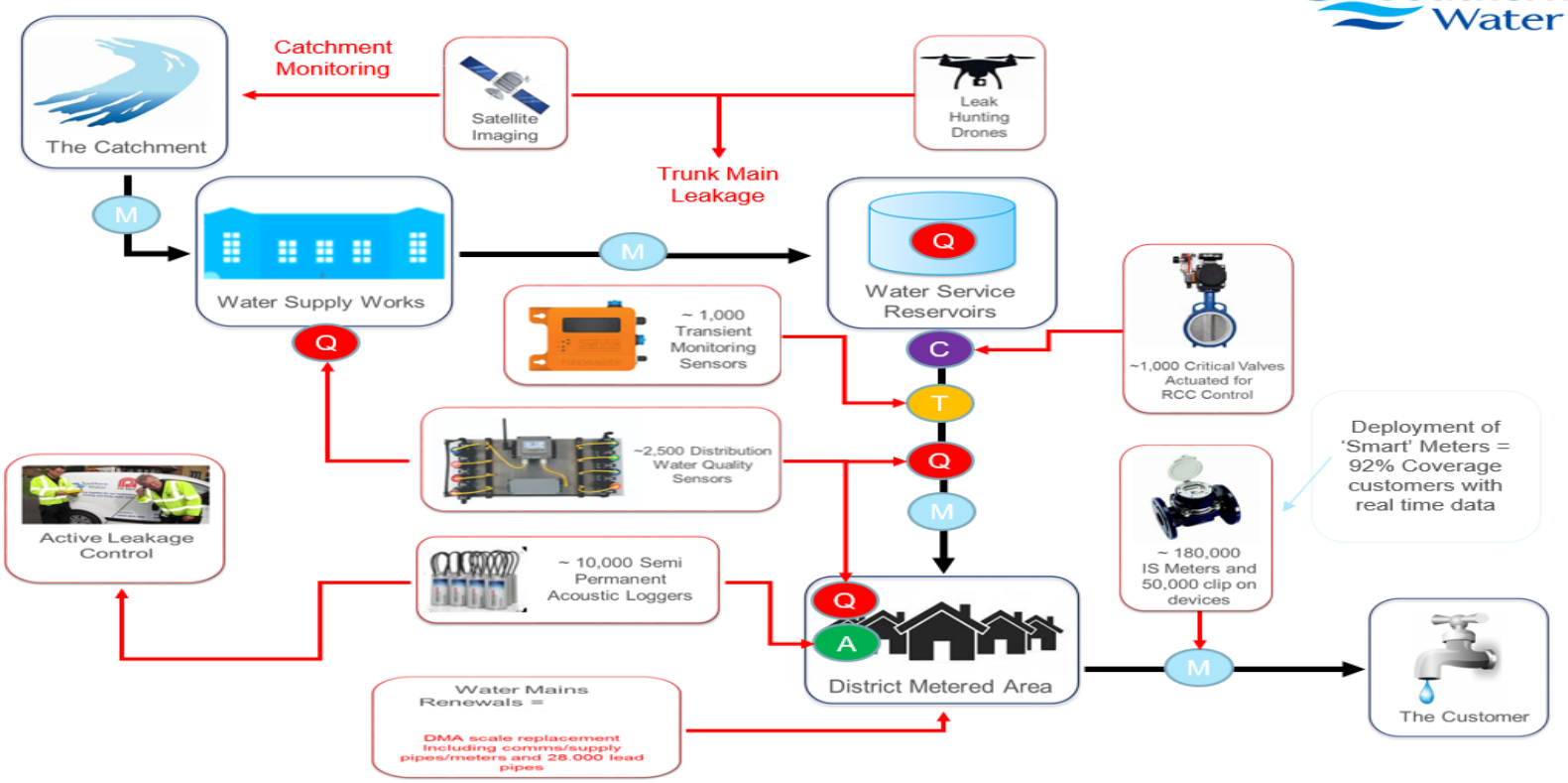
- Long Term Commitment to reduce Leakage
- 15% reduction in leakage levels within the funding period
- Network Leakage / Customer Side Leakage / Plumbing loses
- Reducing leak repair runtimes working with Highway Authorities
- Leakage Volume Reduction Targets
- Resource Retention to Find and Repair leaks
- Innovation and Technology
    - Satellite / Drone / Aerial Photography / Smart Metering
- Weather


Vision
BQ02-Achieve zero leakage in a sustainable way by 2050
Outcomes
Prevent
We can prevent new leaks from forming and minimise the effect of existing ones
Aware
We can correctly measure and quantify the various components and areas that leakage occurs in and prioritise interventions
Locate
We can accurately locate leakage on all materials and under all surface conditions
Mend
We can repair leaks quickly and economically with minimum disruption
Key Benefits
We understand how leaks form and develop and can minimise their growth
We can effectively justify and target mains replacement programmes to reduce leakage
We understand the various components that make up leakage and can accurately quantify them
We can monitor the changes in leakage in components and geographical areas in order to effectively target resources
We understand the use and limitations of current leakage location methods
We can assist with the development and trials of new leak location methods
We can reduce the run time of leaks due to more effective repairs
We can assist in the development of new repair technologies
2050
Now
28 Calculating whole life costings and total value of mains renewal methodologies
29 Leakage impact of high pressure variance within DMAs
25 Assessing the levels of leakage on new polyethylene networks.
27 A review of the success of previous mains renewal methods and an overview of new techniques
WM/04/C/204 The Impact of Pressure Transients on Leakage
WM/08/A/215 Understanding how the deterioration of cast iron evolves into leakage
WM/08/S/218 Tracking pipeline fault progression using acoustic signature detection
22/WM/04/14 The Occurrence and causes of pressure transients in distribution networks
22/WM/03/25 Improving the testing approach to novel lining materials for potable water networks - Phase I
17/WM/08/60 Basic Mechanisms Of Bursts And Leakage
17/WM/08/64 Laying Leak Free New Networks
19/WM/08/71 Incidence And Causes Of Repeat Bursts At Old Repairs
31 Understanding what factors contribute to and affect overall DMA leakage
32 Defining a consistent approach to calculating MAL and MAbL
WM/08/A/220 Update on non-acoustic leak detection and location
26 A deep dive into leakage using smart meter data
30 Quantifying leakage levels on difficult to meter properties
20/WM/08/72 Understand The Balance Between Use, Supply Pipe Leakage, Plumbing Losses And Meter Under-Registration
20/WM/08/74 Best Practice For Trunk Main Flow Monitoring Areas
19/WM/08/68 The impact of reductions in leakage levels on reported and detected leak repair frequencies
22/WM/03/25 Use Of Smart Meters And Smart Networks For Leakage Management
17/WM/08/65 Water Accounting And Quantification Methods
17/WM/08/62 Leakage Detection and Location - Non Acoustic Methods
33 Use of models to determine the size and most likely location of CSL
34 Contract management to incentivise efficient leak location and repair
WM/08/A/217 Optical fibre sensing for acoustic leak detection
WM/08/A/218 Pipe wave modelling for acoustic leak detection
WM/08/S/211 Combination of transient and steady state leak detection methods
WM/08/A/216 The use of acoustic sensing rods for leak detection on trunk mains
17/WM/08/61 Leakage Detection By Acoustic Methods
WM/08/S/210 Hydrant dynamics for acoustic leakage detection
36 Assisting the development and adoption of in pipe repair methods
37 Development of testing methodologies for mains repair techniques
22/WM/12/01 Transferring minimal excavation methods into the water industry
35 Temporary flow reduction and repair technologies
17/WM/08/63 Leak Repair Techniques
20/WM/08/73 Impact of customer-side leakage approaches
A
B
C
D
Project Priority
High
Medium
Low
Not prioritised
Idea
Planned
Live
Completed
Version 12
Last Updated
31/10/2022

The Leakage Calculation – Ofwat Directive

- Industry Wide Methodology – Commenced in 2020 – Using a weekly average
- Using Data from Minimum Night Flow over a fixed hour period over night
- There are a number of components that make up reported leakage
- We have to account for all water usage in the calculation if we cannot apply usage to a category it has to be recorded as Leakage




The Catchment
Catchment Monitoring
Satellite Imaging
Leak Hunting Drones
Trunk Main Leakage
M
Water Supply Works
M
Water Service Reservoirs
Q
~ 1,000 Transient Monitoring Sensors
~1,000 Critical Valves Actuated for RCC Control
C
T
Q
M
~2,500 Distribution Water Quality Sensors
Deployment of 'Smart' Meters = 92% Coverage customers with real time data
Active Leakage Control
~ 10,000 Semi Permanent Acoustic Loggers
~ 180,000 IS Meters and 50,000 clip on devices
Q
A
District Metered Area
M
The Customer
Water Mains Renewals =
DMA scale replacement including comms/supply pipes/meters and 28,000 lead pipes

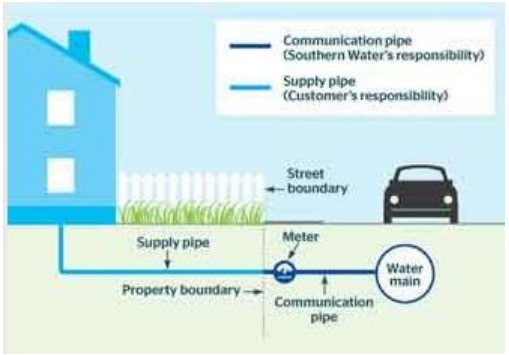
2

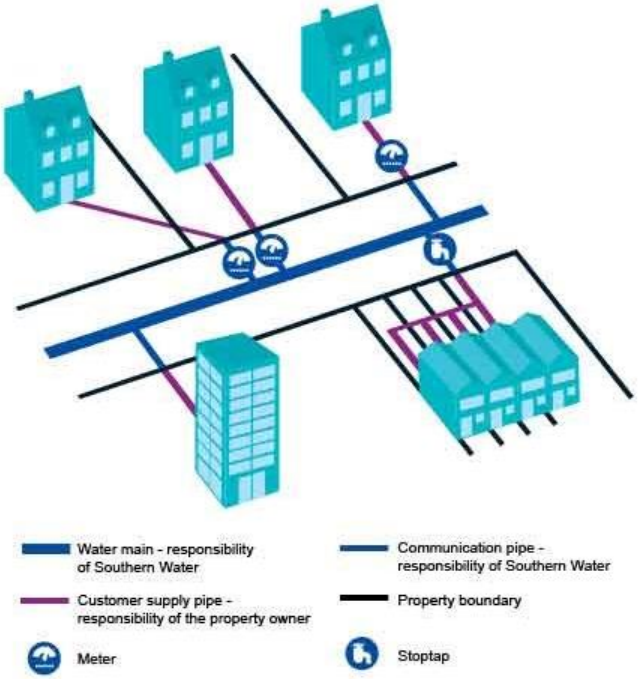
How do we identify Leakage:

Two main contributing elements to the leakage calculation

- **Network Leakage:** On infrastructure owned by Southern Water which include:
  - Pipes / Fittings / Trunk Mains / Reservoirs / Valves /
  - There are over 1,100 District Metered Areas that we monitor – data is retrieved every 15 minutes into our leakage reporting software

- **Customer side Leakage:** approx. 20 to 30 % of total recorded leakage
  - Household
  - Non household





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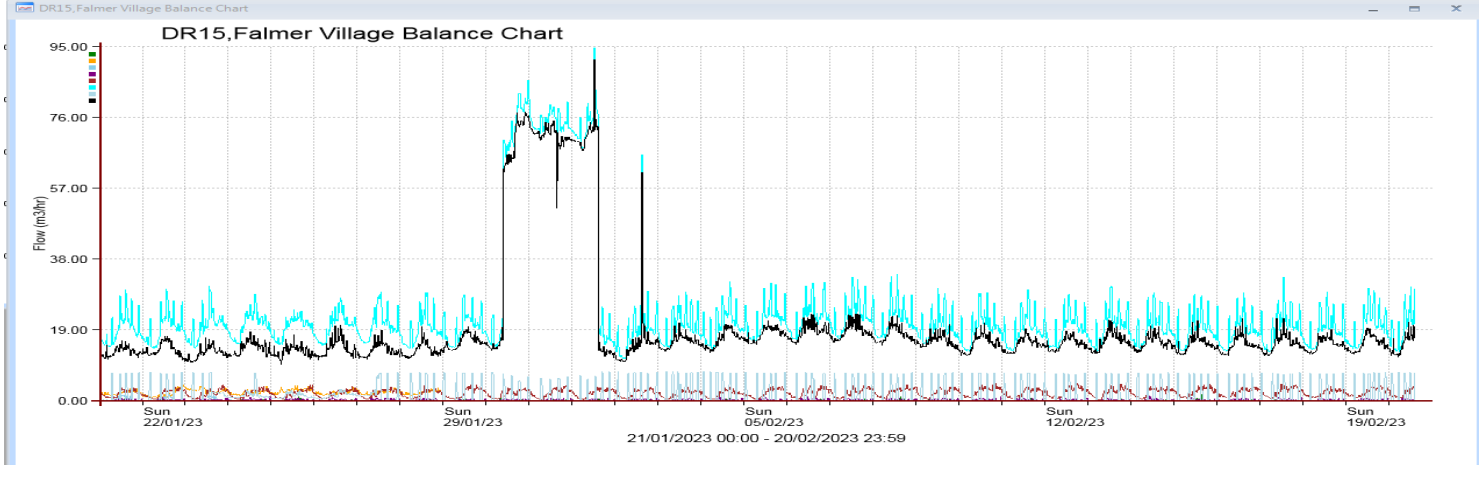
Visible Leaks

Locate reduce run times to get customers back into supply



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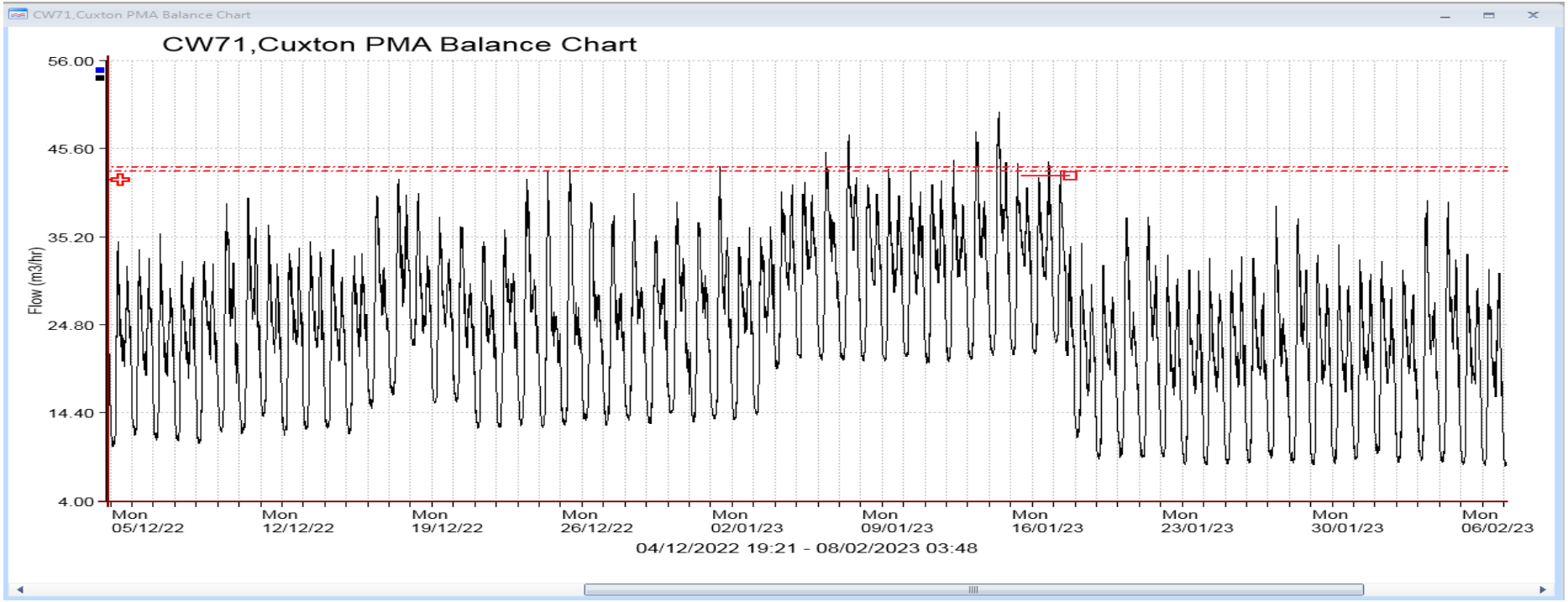
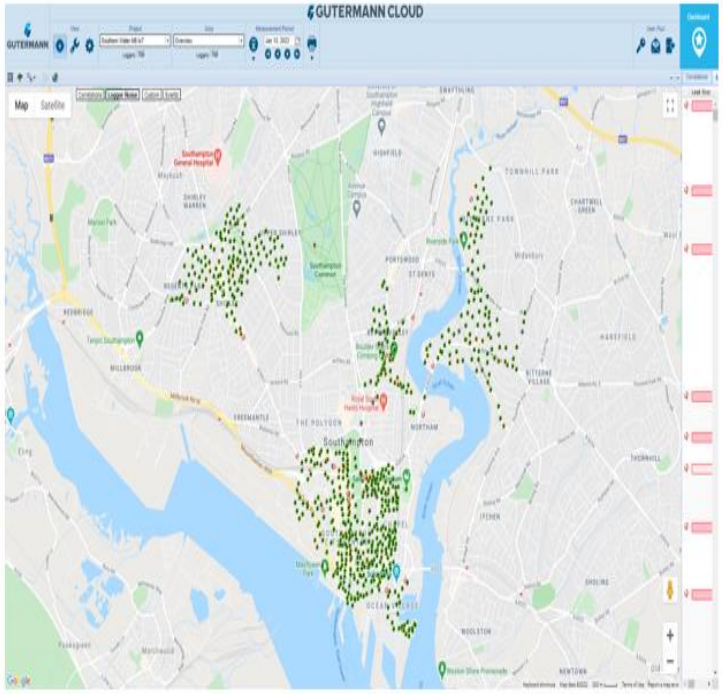
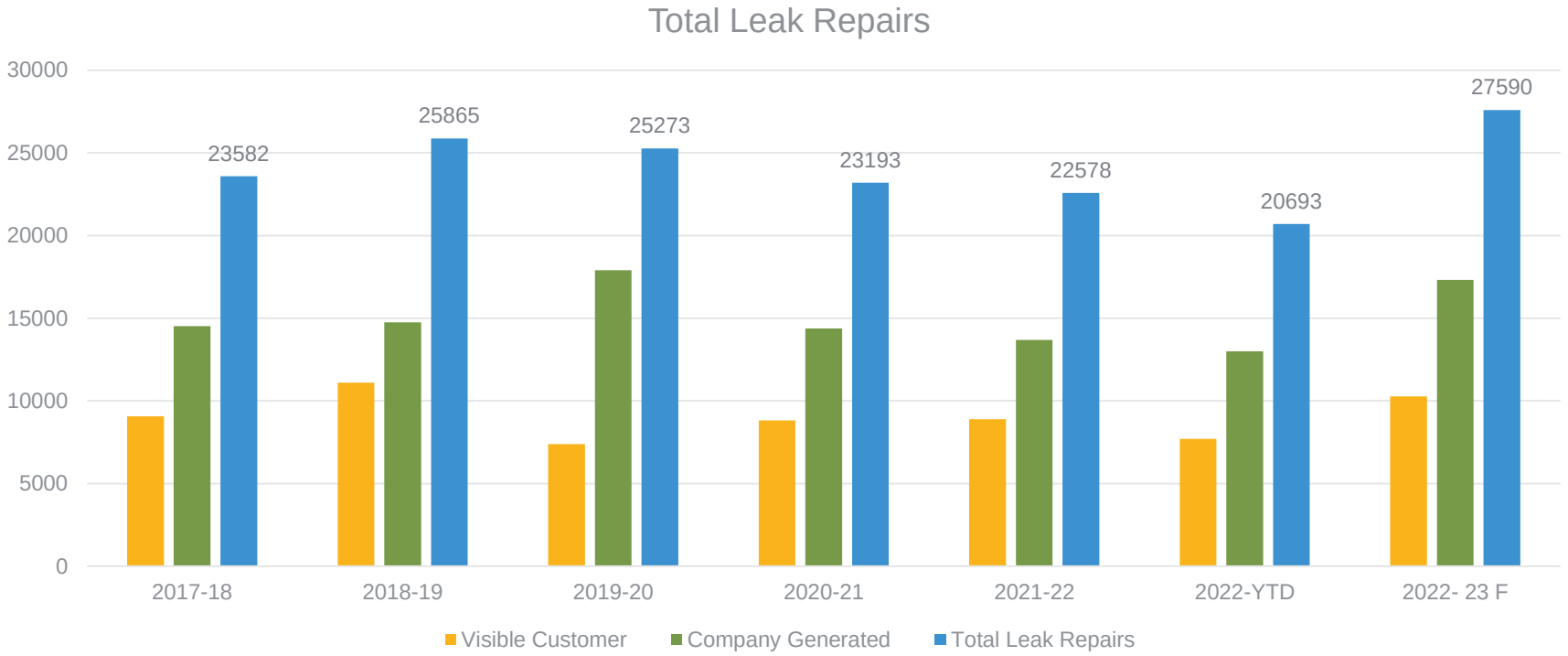
Non visible leaks



- These are more problematic as we have no idea exactly where they are
- Leak Repair volumes: we are looking to do less leak but of a higher volume

Innovation: NBIoT Acoustic loggers




Total Leak Repairs
30000
25000
20000
15000
10000
5000
0
23582
25865
25273
23193
22578
20693
27590
2017-18
2018-19
2019-20
2020-21
2021-22
2022-YTD
2022- 23 F
Visible Customer
Company Generated
Total Leak Repairs

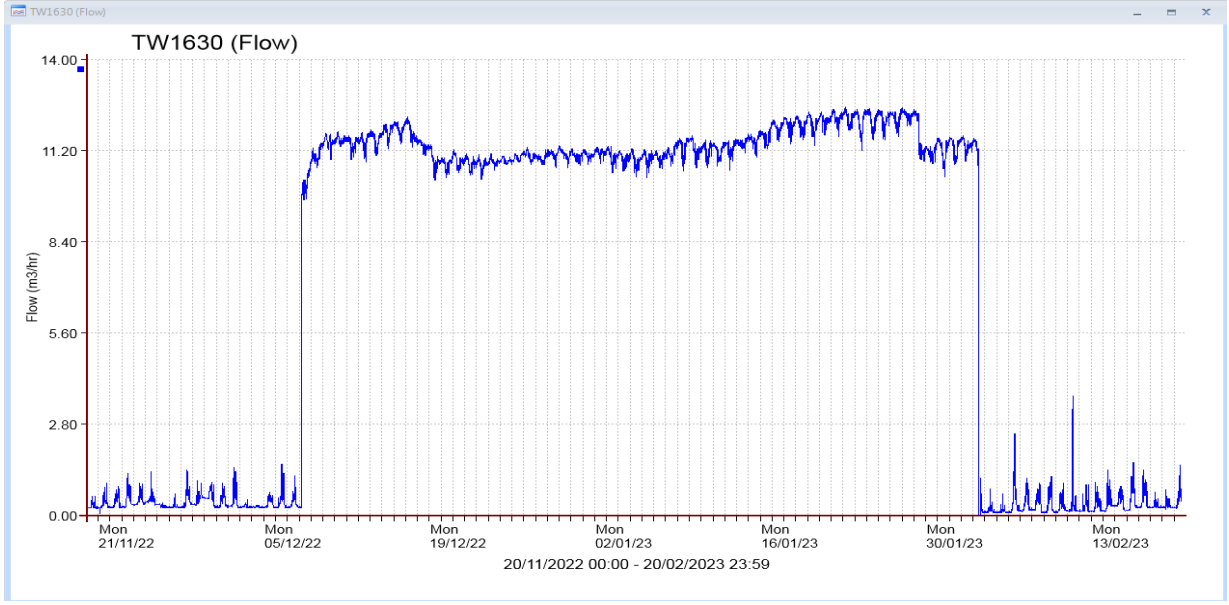
Customer Side Leakage

Household Leakage

- We repair leaks on customer supply pipe free of charge to our vulnerable customers
- Replace Lead pipe work if it is leaking or a Water Quality Sample failure has occurred
- We have a team to assist our other customers to undertake a repair as they are the owner of the pipes
- We apply a plumbing loss allowance within the calculation but it is really important to identify and repair this type of water usage

Example of Non Household Leakage

- Generally we will serve a waste of water notice on this type of incident to enforce a repair
- We also monitor all flows into NAV (New Appointment and Variation) sites



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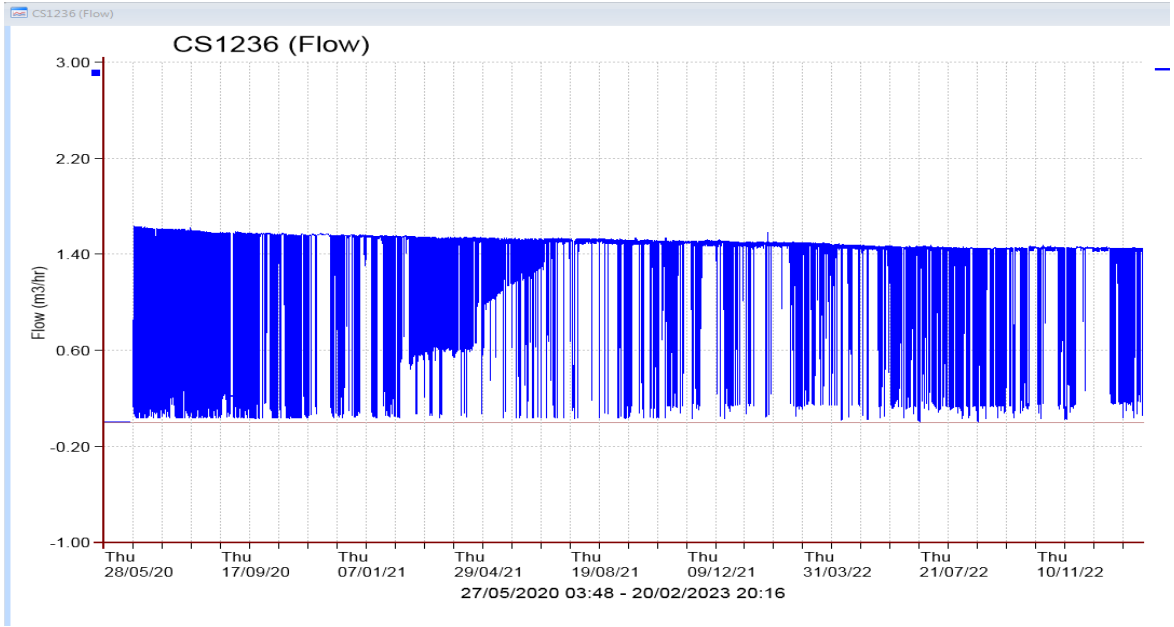
Water Usage on Southern Water Sites

- Water Recycling
- Monitor flows into major and other selected sites
- Introduce water saving devices

Partridge Green WTW



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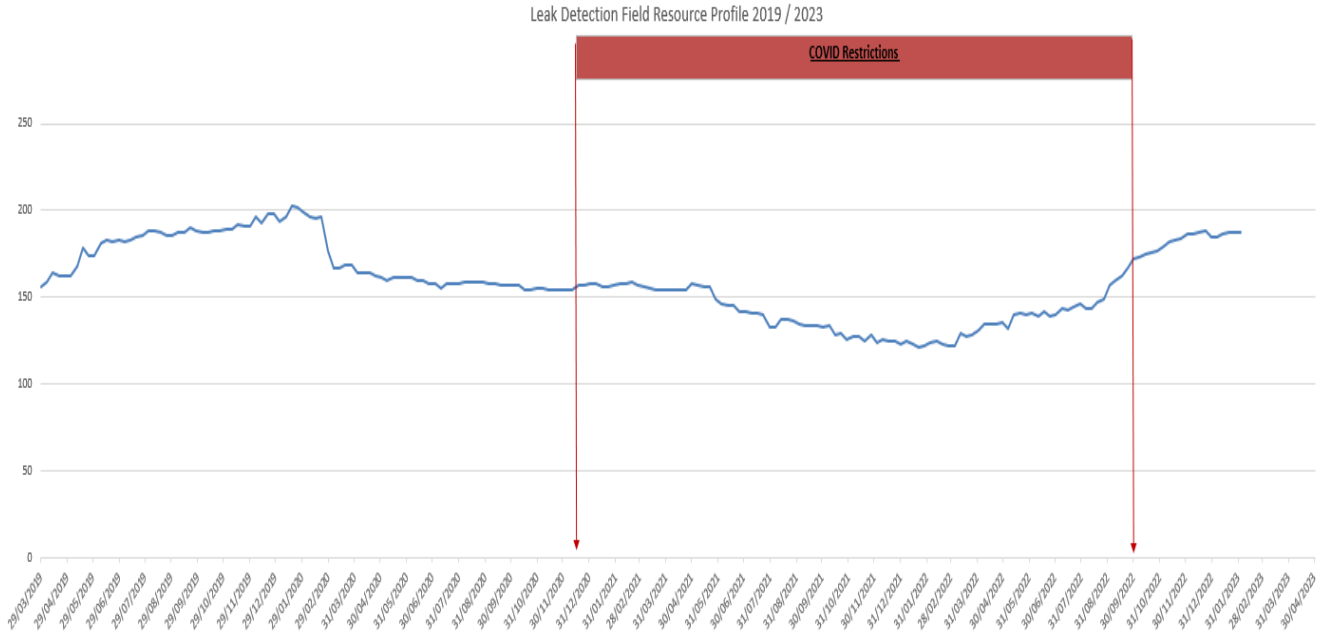
Strategic Plan moving forward

Project	Scope Summary	Status Summary	Leakage Benefits Targeted (Ml/d)	Leakage Benefits Delivered (Ml/d)
Smart Networks	Develop and deploy a smart network model focused (initially) on leakage performance	G **Design** Proof of Concept	*Situational Awareness Imps*	G *Situational Awareness Imps*
Advanced Pressure Mgt	AMP7 Year 3: 57 PRV installations AMP7 Year 4: 35 PRV installations AMP7 Year 4: 28 VSD Booster Controls	A **Implementation (47)** **Yr4 PRV: Design (10)** **Yr4 VSD: Design (3)**	*3.2 Baseline* *5.18 Stretch* *~1.77* *~1.62*	G 5.63
Transient Reduction	Phase 1 Transient Identification- targeted logger deployment at 250 discrete locations – to identify pressure transients and potential mitigations.	G **Closedown** All 45 schemes completed with 27 mitigations across 25 sites	*Identification Phase Only*	G *Identification Phase Only*
Operational Water Use	Meter & Logger validation at 27 Operational Sites (-9 from original) & 14 NAV sites	A **Implementation (Ops)** 13 sites with new meters / loggers G **Closedown (NAVs)** All 14 sites logged	*0.5 (Initial Ph1 sites)* *3.0 (All 333 sites)* *0.1*	A 0.23 0 G 1.0
NHH Meter Under Registration (MUR)	100+ NHH meters to be exchanged and old ones independently verified	A **Design** 56/123 sites enabled for implementation by Clancy	*Water Balance Imps*	*Water Balance Imps*
Totals - YTD			***3.8 (YTD B'line)*** ***5.78 (stretch)***	***6.86 (YTD)***

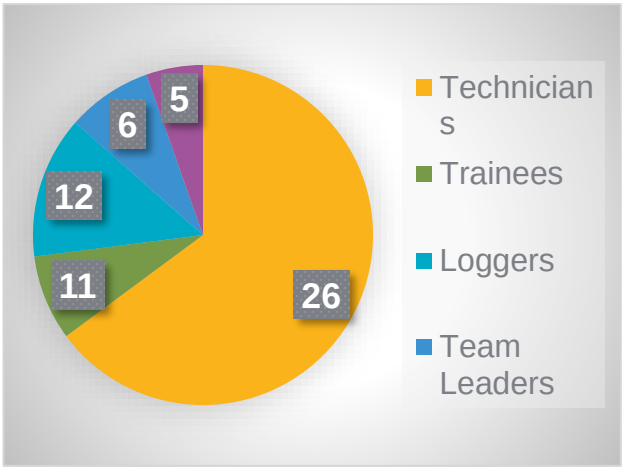
Leak Detection Resources

- We are looking to work with our supply chain partners to recruit develop and retain key leakage detection and repair specialists
- An industry wide issue
- The early indications are showing good results

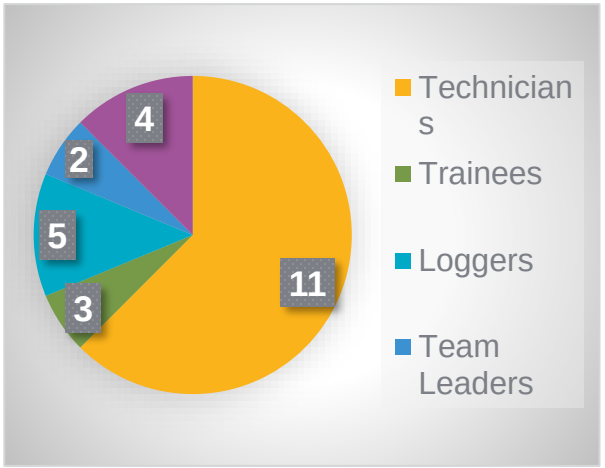


Leak Detection Works Orders and Activities – Sussex / Sussex North

- Total Staff - 60

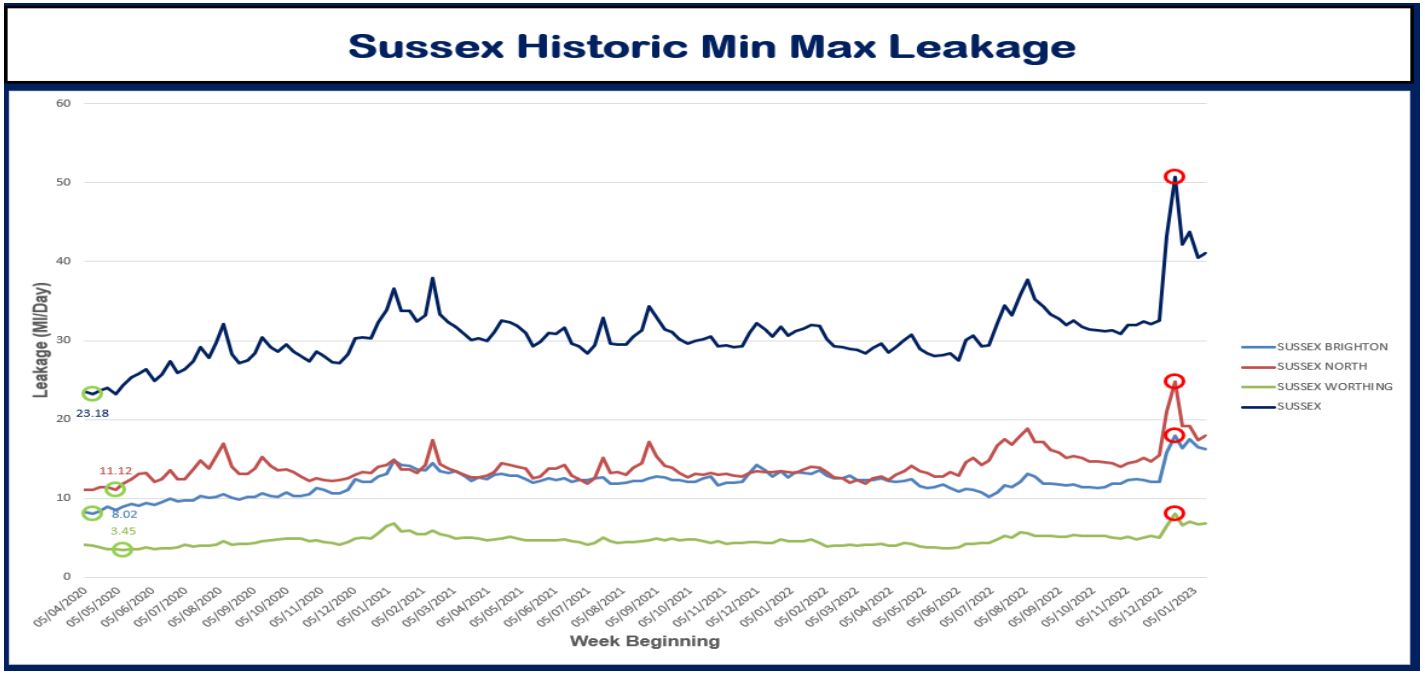


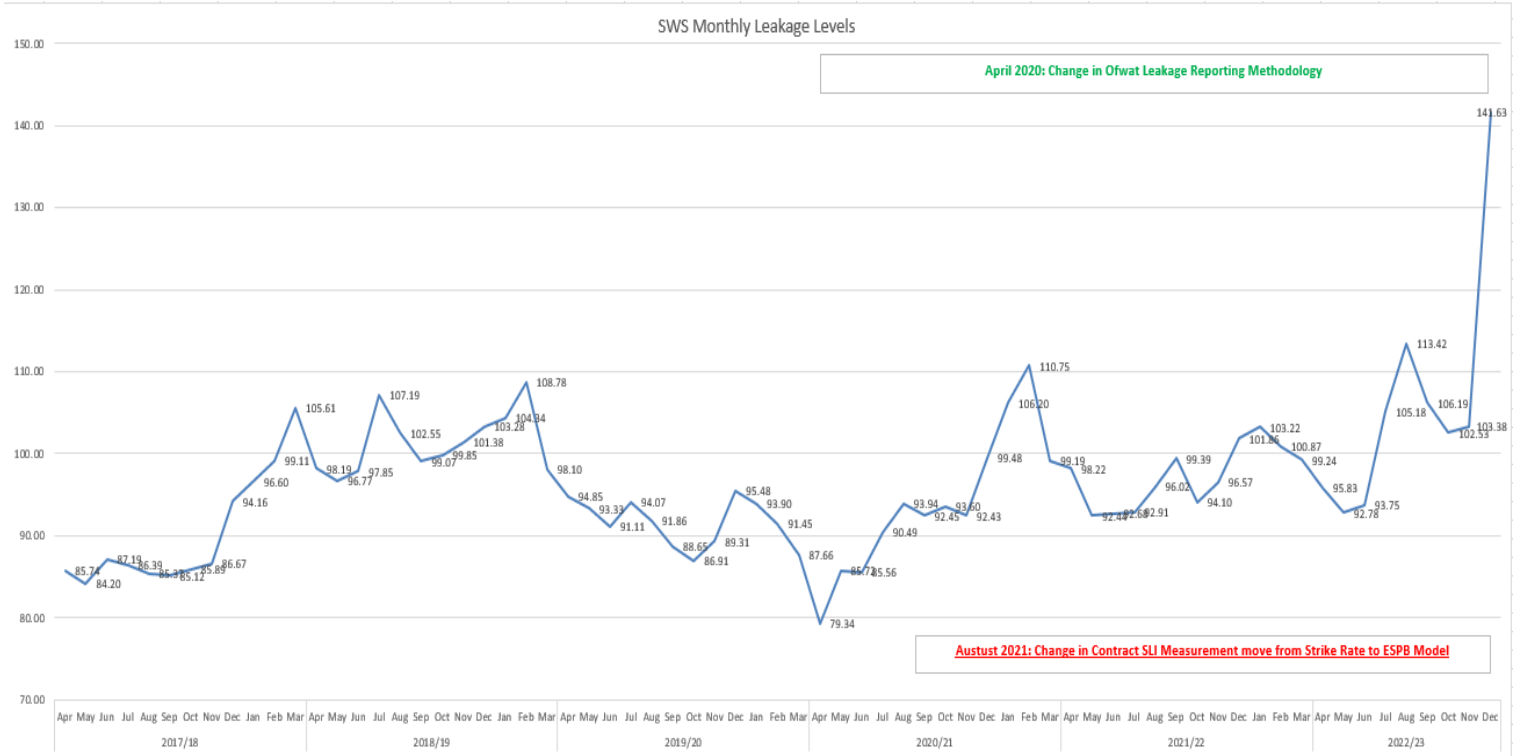
- Northern Staff - 25



How the weather can impact leakage

- Summer demand / drought
- Winter Freeze thaw




SWS Monthly Leakage Levels
April 2020: Change in Ofwat Leakage Reporting Methodology
Austust 2021: Change in Contract SLI Measurement move from Strike Rate to ESPB Model
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
2017/18
2018/19
2019/20
2020/21
2021/22
2022/23

Panel Q&A

Panellists: Sandra Norval, Justine Lewis & Phil Tapping

Please submit your questions on Slido using code #3077998

WATER for LIFE

from Southern Water

Thank you!

We look forward to seeing you again at our next event!

from Southern Water