

Meeting Standards and Expectations in the Water Industry

Responding to Regulation & Key Public Health Challenges (BWNs, Lead, THMs)

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An Roinn Tithíochta, Pleanála,
Pobail agus Rialtais Áitiúil
Department of Housing, Planning,
Community and Local Government

Water Services Strategic Plan

Our Commitment

"We believe that all of our customers should receive a safe and reliable supply of drinking water and have their wastewater collected and safely returned to the environment.

We will protect the environment in discharging our responsibilities and support Ireland's social and economic growth through appropriate investment in water services."

Public Consultation 

Draft Water Services Strategic Plan

and Associated Environmental Assessment Reports

Irish Water has published its Draft Water Services Strategic Plan (Draft WSSP) and associated environmental assessment reports; an Environmental Report as part of a Strategic Environmental Assessment in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (as amended); and a Natura Impact Statement as part of the Appropriate Assessment pursuant to Article 6 of the Habitats Directive 92/43/EEC. We now invite you to have your say in shaping the final Water Services Strategic Plan.

This consultation process will run until the **17th April, 2015**, and submissions and observations are invited from all interested individuals and bodies on the Draft WSSP, the Environmental Report and the Natura Impact Statement. Submissions and observations will be taken into consideration in deciding on the final Water Services Strategic Plan. Every member of the public and all interested bodies are encouraged to contribute. The final plan will set out our collective vision for the future of water services in Ireland for the next twenty-five (25) years.

The documents are available at planning counters in main local authority offices and in public libraries across the country during normal opening hours and are also published on our website (and available to download) at <http://www.water.ie/about-us/project-and-plans/future-plans/>. Questions on any of the above documents should be directed in the first instance to the email address given below.

There are three ways you can give us your comments and contributions:

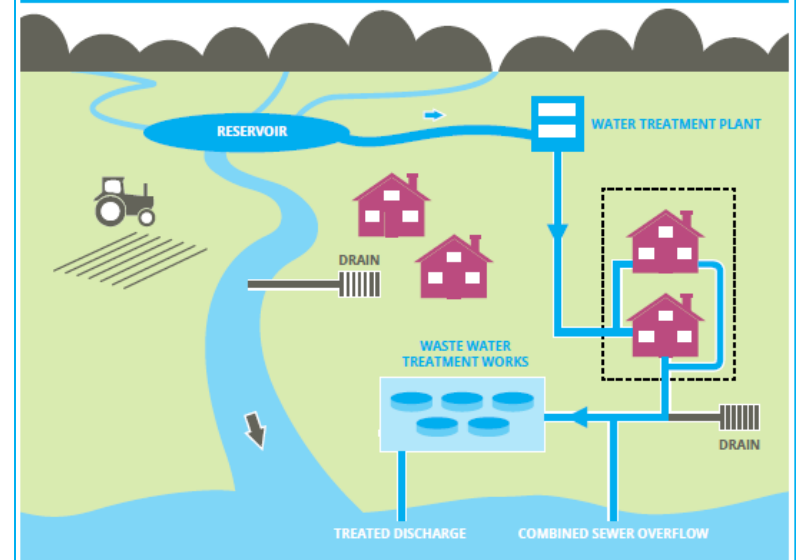
Online at:
<http://www.water.ie/about-us/project-and-plans/future-plans/>

By email to:
wssp@water.ie

By post to:
Water Services Strategic Plan,
Irish Water,
P.O. Box 860,
South City Delivery Office,
Cork. 



Figure 1 Extent of Irish Water's Responsibilities



Compliance – From a distance

- * 973 water supply zones
- * 2000 abstractions
- * 99.9% microbiological compliance
- * 99.4% chemical compliance

Compliance – Close Up!

- * 400 Open Files
- * 117 schemes on the RAL serving over 800,000 people
- * Almost 80,000 Boil Water Notices in place today
- * 180,000 households with lead services/plumbing
- * New emerging challenges



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive



An Roinn Tithíochta, Pleanála,
Pobail agus Rialtais Áitiúil
Department of Housing, Planning,
Community and Local Government



epa

Environmental Protection Agency
An Ghníothaireacht um Chaomhnú Comhshaoil



European Commission

ervia

CER

Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

External Advisory Body

Public Water Forum

Expert Commission



Iascach Intire Éireann
Inland Fisheries Ireland



Houses of the
Oireachtas
Tithe an Oireachtais

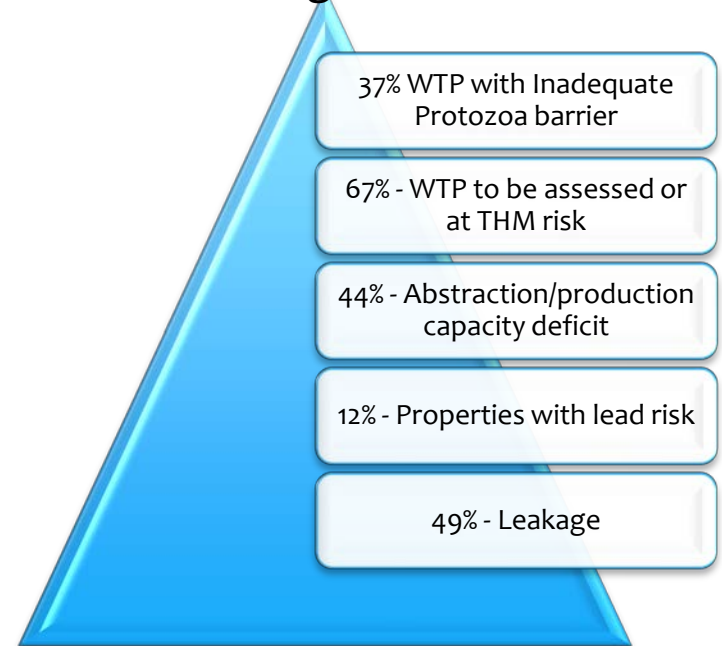
Drinking Water - The IW Approach

Risk Based: WHO Drinking Water Safety

Plan assesses risk for

- * **Catchment** (WFD, abstraction)
- * **Raw Water**
- * **Treatment** (THM, Crypto)
- * **Distribution** (Leakage, Lead, THM)
- * **Customer** (lead)
- * **Management** (Telemetry, training, SOP, PM)

Key risks to be mitigated through
**rationalisation, design, investment and
management**



Risk Based Approach

Key risks to be mitigated through **rationalisation, design, investment and management**

Non-trivial/complex treatment risks



WHO Drinking Water Safety Plan Approach



WTP name	Scheme name	Collection		Treatment			Distribution		
		Source Yield	Production Capacity	Microbiolog local Risk	Protozoa Risk	THM Risk	Lead Risk	Leakage	
Central Regional WTP	Central Regional	Red	Green	Green	Red	Yellow	Red	Yellow	
Liffekenny WTP Goldrum	Liffekenny	Red	Yellow	Green	Red	Yellow	Yellow	Yellow	
Lough Talt WTP	Lough Talt	Red	Green	Green	Red	Yellow	Yellow	Yellow	
Lisheen Lake	Brookstown / Slipin	Green	Green	Green	Red	Yellow	Yellow	Yellow	
Carrara WTP	Carraige WSS	Green	Yellow	Green	Red	Yellow	Yellow	Yellow	
Ring/Heilick/Seaview WTP	Ring/Heilick/Seaview	Yellow	Yellow	Green	Red	Yellow	Yellow	Yellow	

37% WTP with Inadequate Protozoa barrier

67% - WTP to be assessed or at THM risk

44% - Abstraction/production capacity deficit

12% - Properties with lead risk

49% - Leakage

One Team Approach to Achieving Environmental Compliance



Longer term infrastructure planning

- Water Services Strategic Plan 2015-2040



Asset Management Approach

- Data and performance information driving the decision making
- Policy-based, with full life cycle cost assessments



Operations and Maintenance Practices

- Standard procedures to operate and maintain assets in the field
- Modern systems to collect asset, cost and performance data



Delivery of Capital Infrastructure

- Best practice project and construction management
- Standardised Designs and optimised Procurement approaches

Responding to Challenges

- * Customer expectations
- * Boil Water Notices
- * THMs
- * Lead

Irish Water face prosecution over quality of water in Carraroe

The company is being prosecuted by the Environmental Protection Agency (EPA).

The case was listed before Judge John O'Hall today at Dublin District Court where an adjournment was granted.

Irish Water face prosecution over quality of water in Galway

The company is being prosecuted by the Environmental Protection Agency (EPA).

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One way or the other we'll all be paying for our water problems



by James Nix

For years our Irish public services were consistently ranked as leading or in those where issues were being set for electoral reasons. This is unfortunate but it has consequences which cannot be denied, whatever the identity of the incumbent.

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Drinking water for 400,000 people is contaminated

A campaign in Europe to have Irish Water customers informed of toxic chemicals exceeding the World Health Organization and European Union safety standards has failed, according to Friends of the Irish Environment.



The European Commission has taken a case against Ireland over water quality supplied to households. **Paul Meila**

EMERGENCY water supplies in rural areas are contaminated with toxic chemicals, according to Friends of the Irish Environment (FIE). The water is supplied to 400,000 people in Ireland. The water is contaminated with toxic chemicals, according to Friends of the Irish Environment (FIE).

Irish Water splashes the cash

Utility company vows to clean up eleven sub-standard supplies across the country

Irish Water has committed to spending around €2.2 billion on water supply improvements over the next five years.

The company has announced plans to invest in water supply improvements across the country. The investment will be used to improve water supply infrastructure and to ensure that water is safe and of high quality.

One in every five drinking dodgy water

EPA reveals more than 20,000 residents are connected to substandard schemes

BY DARA BRADLEY

More than 20,000 people in Ireland are connected to substandard water supply schemes, according to a report from the Environmental Protection Agency (EPA).



ALMOST 35,000 AT RISK FROM WATER QUALITY

Eleven water supplies on latest list

BY ROBYN WILSON

Almost 35,000 people in Ireland are at risk of drinking water of poor quality, according to a report from the Environmental Protection Agency (EPA).

EPA detects potential cancer risk in north Roscommon water

BY ROBYN WILSON

The Environmental Protection Agency (EPA) has detected a potential cancer risk in water supplies in north Roscommon.

Five Cork water supplies named on EPA's Remedial Action List

BY ROBYN WILSON

Five water supplies in Cork have been named on the Environmental Protection Agency's (EPA) Remedial Action List (RAL).

Faulty drinking water plants put 800,000 at risk

Irish Water faces prosecution for

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by James Nix

Hogan, the minister, rammed the Bill for it through in three hours, after the opposition walked out.

Of course consultancy and PR charges were scandalously inflated, metering seemed disproportionately expensive, the underlying principle of the polluter paying was undermined by the setting of standard charges and a misnamed conservation rebate was applied to the bemusement of all.

The problem is homegrown. There is no infirmity in the EU regime which we purport to be implementing. Under the EU water framework directive the aim of water pricing is to "provide adequate incentives for

users to use water resource efficiently". "Social, environmental and economic effects" can shape these price levels; what is required from user groups is an "adequate contribution".

Of course one of the reasons for forming a commercial company was that it would be able to borrow

for years vital Irish public services were consistently starved of funding at a time when taxes were being cut for electoral reasons. This is unfortunate but it has consequences which cannot be denied, whatever the ideology of the (non-)payer.

Drinking water for 400,000 people is contaminated

A campaign in Europe to have Irish Water customers informed of toxic chemicals exceeding the World Health Organisation and European Union safety standards has failed, according to Friends of the Irish Environment.

Rural water schemes pose public health risk

Local Authority	Name of supply	Population served	Non-compliance
Cavan	Annaghly	1,800	20%
	Charaberry	700	20/Jan/2014
	Brooklawn	1,100	20%
	Moynan Lodge	1,400	20%
Clare	Clifden	600	20%
	Clifden	600	20%
Dublin	Clonsilla	200	20/Jan/2014
	Clonsilla (Rural)	200	20%
	Clonsilla (Rural)	200	20%
Ferry	Ballinacorney	400	20%
	Ballinacorney	400	20%
Mayo	Ballinacorney	600	20/Jan/2014
	Ballinacorney	600	20/Jan/2014
	Ballinacorney	600	20/Jan/2014
	Ballinacorney	600	20/Jan/2014
	Ballinacorney	600	20/Jan/2014
Roscommon	Ballinacorney	600	20%
	Ballinacorney	600	20%
Sligo	Ballinacorney	600	20/Jan/2014
	Ballinacorney	600	20%

*These schemes and the nature of their non-compliance were identified by the European Commission against Ireland.



The European Commission has taken a case against Ireland over water quality supplied to households, reports **Paul Melia**

DRINKING water supplies serving more than 20,000 households across rural Ireland have been identified as posing a public health risk due to trihalomethane (THM) contamination.

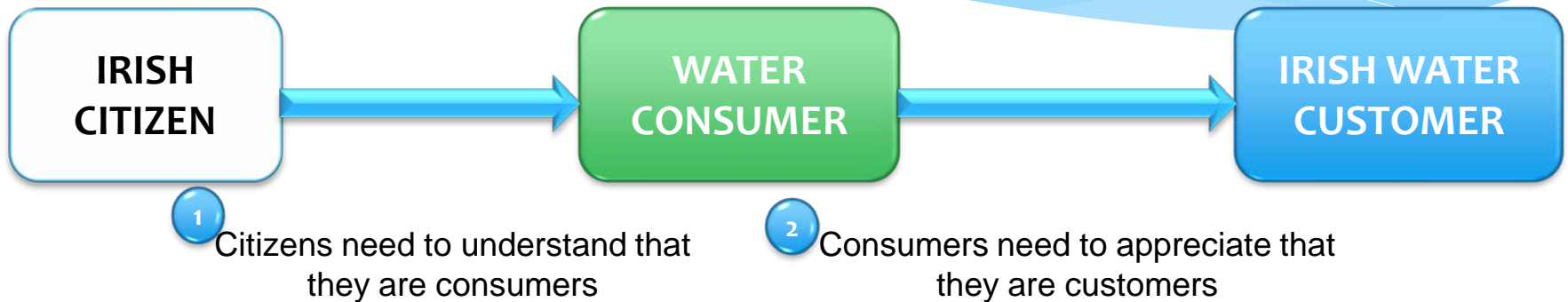
increased risk of certain types of cancer and other health problems, but it is considered riskier to drink untreated water.

The group water supplies have been identified by the European Commission as not

been detected in 1/9 small, private supplies, and that 97.3pc comply with quality standards. This compares with 99.9pc of supplies in the public system, operated by Irish Water.

Around 6pc of the population source their drinking water

Key Objective for Irish Water - Change how people think and act in relation to water...



Irish Water Case Study - Lead in Drinking Water Mitigation Plan

Contents

- 1) Background to the Lead Issue
- 2) Overview of draft Lead in Drinking Water Mitigation Plan
- 3) Next Steps in the implementation of the Plan



How to identify Lead?

- ❖ Lead is dull grey in colour
- ❖ If you scrape the surface you will see the shiny silver coloured metal beneath

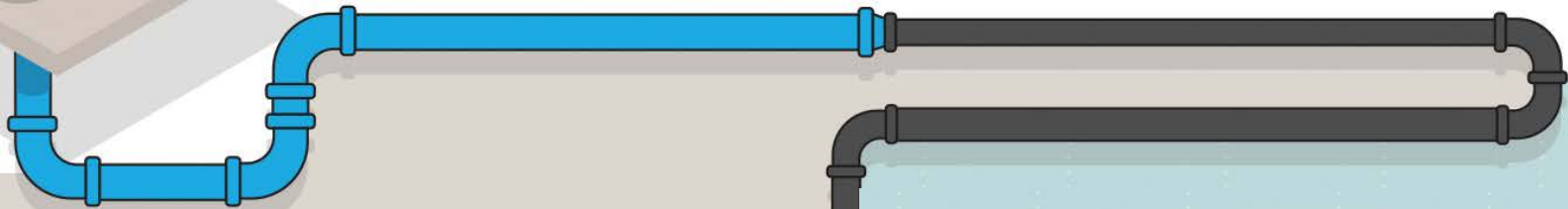
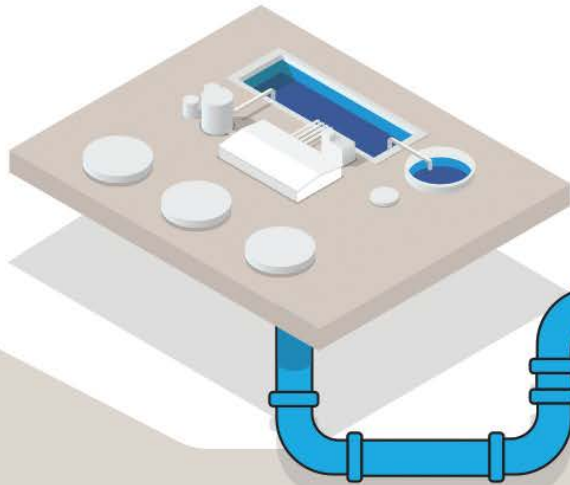
Introduction

1. What we know

- Irish Water supplies 1.7 billion litres of drinking water per day.
- Lead-free water is supplied from our treatment plants.
- Records show we've no lead public water mains.

2. But lead is getting into our drinking water

Lead can dissolve into water passing through lead pipes and fittings.



Regular intake of even low levels of lead can affect our health.



3. Who is affected?

Estimated 180,000 homes (Public Supplies)

Lead was used in water service connections and internal plumbing in houses built before 1980.

- 140,000 individual lead service connections;
- 40,000 common lead (backyard) shared services.

[View Video on IW Website](#)

Greatest risks are for:



Pregnant Women



Babies



Children

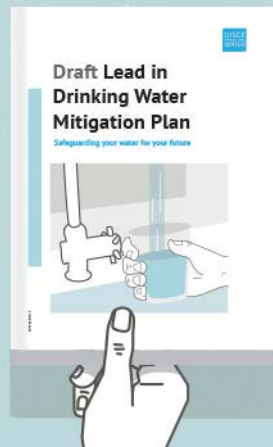
Background to the Lead Issue

- * Drinking Water Regulations limit for lead has been lowered to 10 µg/l in December 2013
- * No safe level of lead in drinking water (WHO/HSE)

Key Irish Water Objective:

Protection of public health through limiting exposure to lead in drinking water

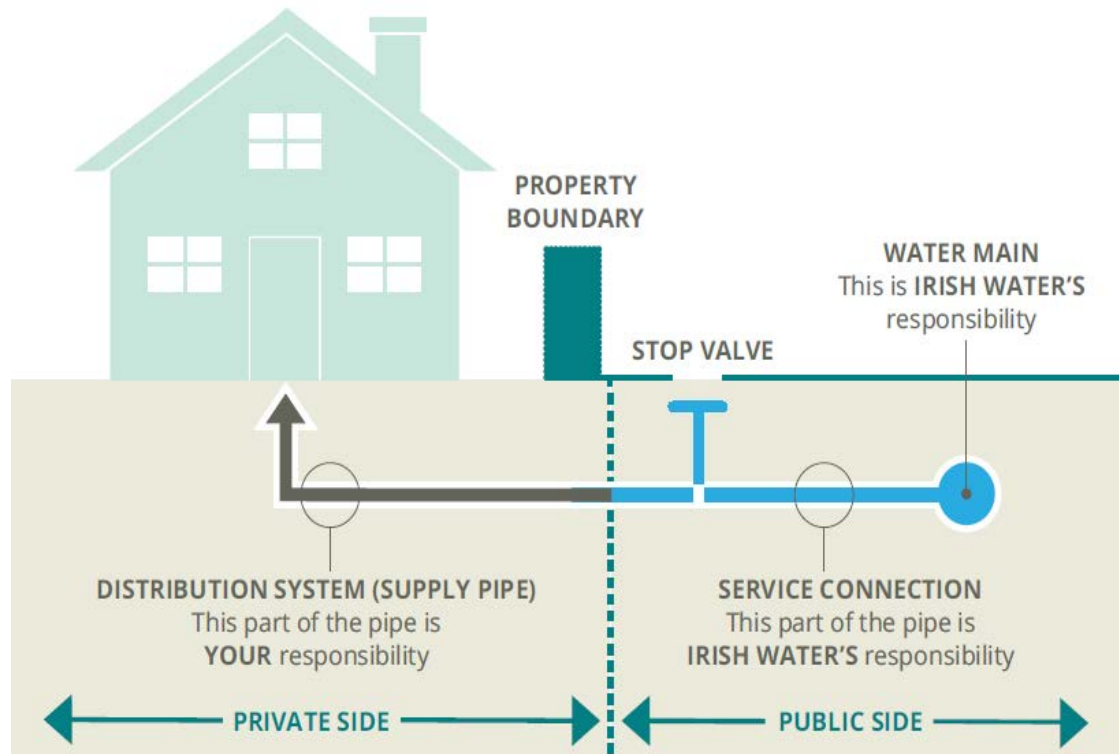
Government has a national strategy and Irish Water has developed a Draft Lead in Drinking Water Mitigation Plan.



Irish Water are:

- ✓ Checking for lead in drinking water.
- ✓ Checking for public lead services.
- ✓ Writing to you if we find lead at your property.
- ✓ Fast-tracking replacement of all public side lead service connections.

What is Irish Water's Responsibility?



The Drinking Water Regulations specifically state that:

1. the water supplier will **not** be in breach of its obligations where the non-compliance is due to the domestic distribution system;
2. Nevertheless, Irish Water shall ensure that appropriate measures are taken **including advising premises' owners affected, or** other measures such as application of **appropriate treatment techniques**

Background: Lead Study

Dublin City Council conducted a detailed study in Raheny for compliance with lead limit:

Key findings:

- * **15 of the 16 properties failing the 10µg/L limit had no public side lead**
- * **Flushing reduced lead concentrations but did not achieve compliance**

Component of Water Supply Network	Responsibility for Water Quality
Water Treatment, Transmission and Storage	Irish Water – Fully Compliant
Water Distribution Network Mains	Irish Water – Fully Compliant
Water Communication Pipe from Main Pipe to Customer Boundary	Irish Water – Fully Compliant
Water Service Pipe and plumbing and fittings within Customer Boundary / House where there is no lead	Customer – Fully Compliant
Water Service Pipe and plumbing and fittings within Customer Boundary / House where there is lead	Customer – Not Compliant

Conclusion:

1. Both private and public lead services should be replaced at the same time if possible (longer term)
2. Government Grant for householders since February 2016, administered by LAs
3. Irish Water Opt In Lead Service Replacement Scheme Available since July 2015
4. Corrective Water Treatment required in the short term

Irish Water urges Tipperary homeowners to check their pipes

Irish Water is urging all Tipperary residents have had limited exposure to lead effective way of dealing with lead in drinking water is to re-

Irish Water urges Waterford homeowners to check their pipes as Draft Lead in Drinking Water Mitigation plan is published

IRISH Water is urging all homeowners in Waterford lead has been removed from petrol and paint. Since then, far as a property boundary, sampling (already undertaken in the responsibility of Irish way) which is used to

Lead pipe check is urged by Irish Water

exposure and consequent health risk until the pipes are replaced. This option is extensively used in Britain, Northern Ireland and widely across North America."

Before Irish Water can ta

Irish Water urges Sligo home owners to check pipes

Public consultation on plan to deal with lead in water

Irish Water to spend €370m on lead pipes

OLIVIA KELLY
Dublin Correspondent

Irish Water says it plans to spend €370 million over the

fore 1980 to check internal plumbing for lead pipes.

About 180,000 homes are served by lead pipes, Irish Water estimates, and are at risk of

routinely used in the plumbing of homes up to the mid 1970s.

Irish Water is responsible for the service connection pipes as far as the property boundary

1940s to the 1960s, and Irish Water has agreed to also replace these.

It proposes to treat water until lead pipes are replaced. This

Levels of lead in Limerick pipes 'priority' for Irish Water

What are the risks, who is affected and who is going to pay?

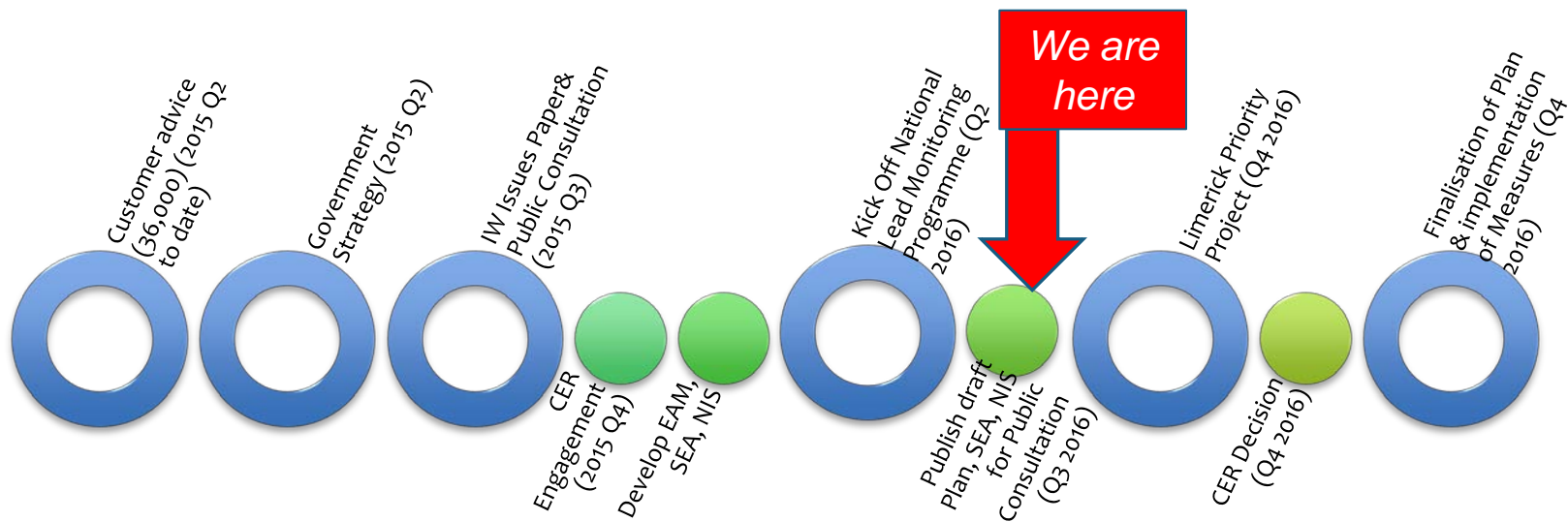


What is the plan to fix it?
The ultimate solution is to replace the lead pipes. Irish water is to spend €370 million

industry". The HSE says there are no public health implications for its use. However, Ireland does have a problem with too much phosphate in rivers and lakes which can be

Roadmap – Where are we now?

- * June 2015 – present: 36,000 advice letters issued based on data from metering programme.
- * June 2015: Government published a [national strategy](#) to reduce exposure to lead in drinking water
- * June 2015: Irish Water published [Lead in Drinking Water Mitigation Plan – Issues Paper](#)
- * Sept. 2015 – July 2016: Developing Environmental Assessment Methodology, SEA, NIS in consultation with EPA and other environmental Stakeholders.
- * July 2016: National Lead Monitoring Programme kicks off
- * July – September 2016: 8 week Public Consultation Period on draft Lead Mitigation Plan
- * October 2016 propose to commence OP Treatment in Limerick after Public Consultation and subject to Statutory approvals



Background – French Lead Mitigation Plan

- * Overall Lead Strategy of lead pipe and service connection replacement
 - * **In the past 15 years, 2.7M public lead service connections have been replaced at an estimated cost of €5B.**
 - * Estimated 1.2M public lead service connections yet to be replaced
- * Replacement of Private Side lead supply pipes by homeowners has been **very low**
- * Corrective Water Treatment:
 - * Basic pH adjustment
 - * Orthophosphate has been introduced at small number of plants and French Government has **recommended to extend OP treatment** to other regions
- * Overview - Despite the significant investment, the compliance level with the lead limit remains **unchanged at around 94%**



Background– Northern Ireland Water Lead Mitigation Plan

- * Orthophosphate treatment
 - * Introduced OP as corrosion inhibitor in 2006 at all 25 Water Treatment Plants (Plant sizes ranging from 0.5 MLD to 160 MLD)
 - * Random Daytime Sampling and analysis shows ~**98% compliance level with lead limit**
- * 25 Year Programme to identify and replace public side lead service pipes
 - * Customer opt-in lead pipe replacement scheme available



Draft Lead in Drinking Water Mitigation Plan

Factors affecting concentration of lead:

- **Length** of lead pipe
- **Temperature** – winter vs summer (1:2)
- **pH** <7 high, 7-8 moderate
- **Alkalinity** <50 mg/l CaCO₃(high)
- **Contact time** (stagnation)

Source: EPA Handbook (2010)

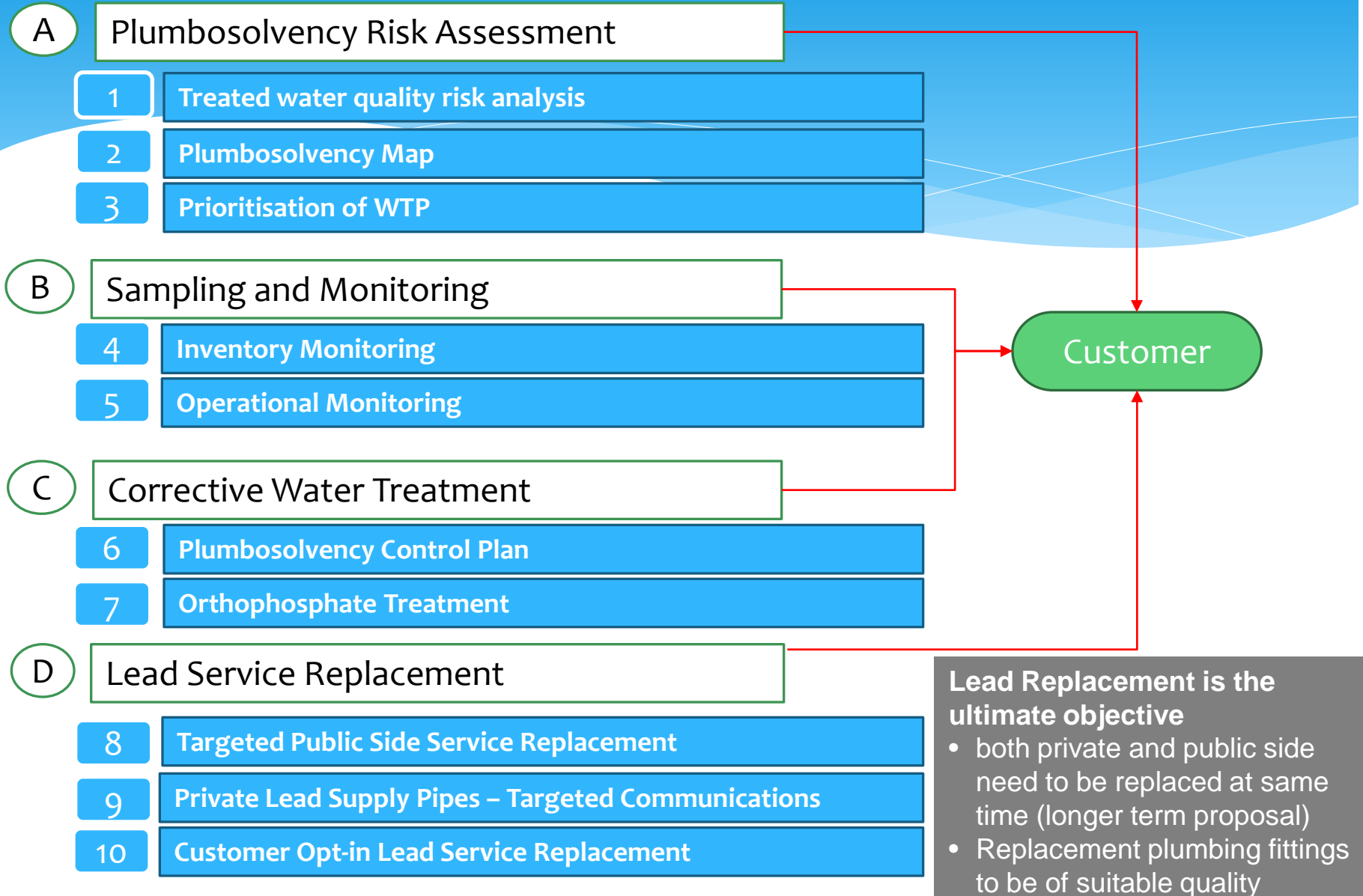
Virtually all water is sufficiently plumbosolvent to cause a lead exceedance

Options assessed within mitigation plan to achieve compliance and public health benefits e.g. complexity, compliance achieved, cost, delivery time....

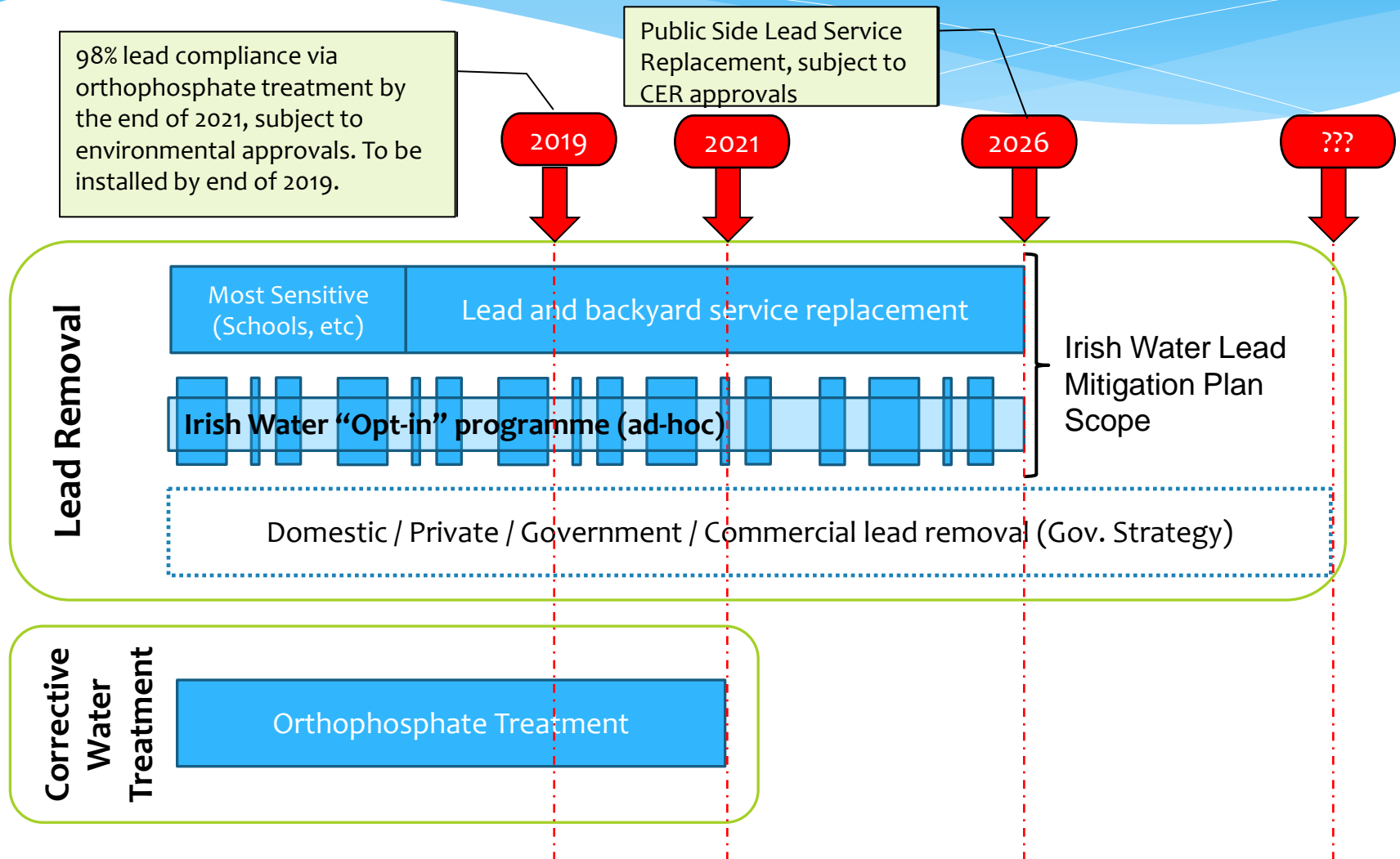
- * pH Adjustment;
- * Point of use filters;
- * Lining of lead services;
- * Lead service replacement;
- * Corrective Water Treatment for the protection of public health.

SEA, AA process in parallel with preparation of the Plan....

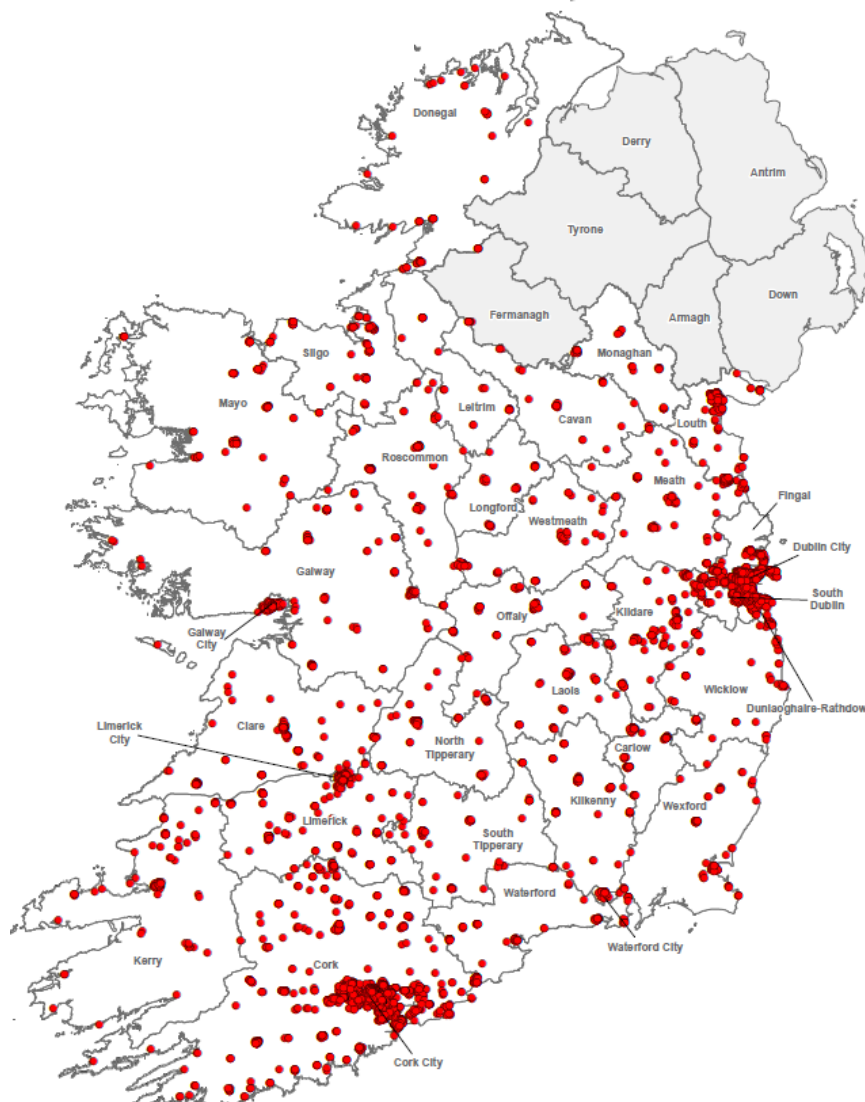
Implementation Plan Overview



Our Preferred Approach: Treatment & Removal in parallel



Lead Service Replacement - Map of Individual lead services identified and notified to date



Legend:



Lead Services identified by metering crew

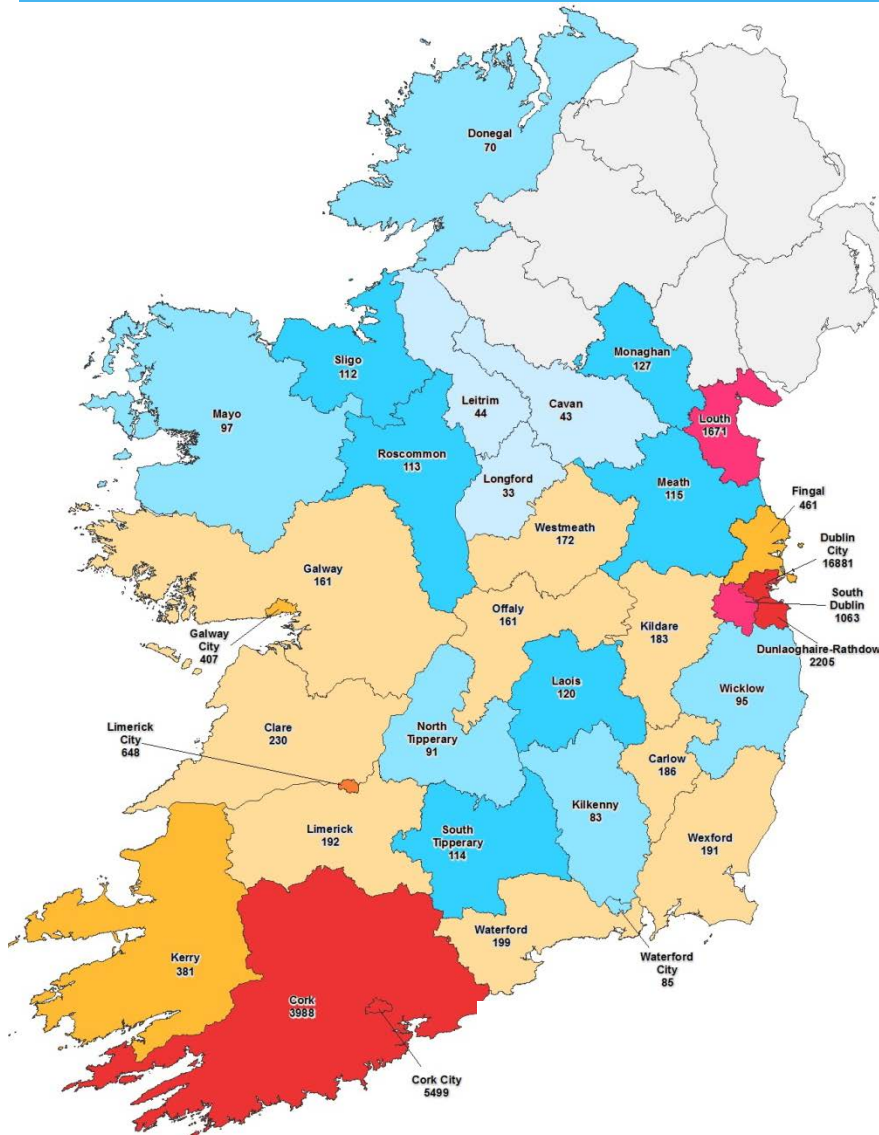
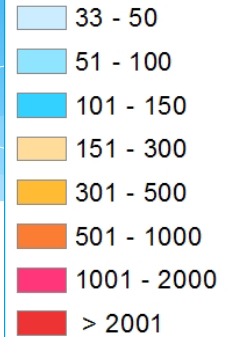
Focus on Risk:

- High Risk supplies
- Most Sensitive Customers (Schools, crèches etc.)
- Backyard shared services & Public side service connections
- Longer term solution – 10 year

Lead Service Replacement – Map of individual lead services by Local Authority

Legend:

Lead Service Connections identified during meter instalation



Estimated No. of Lead Services	180,000
Identified to date:	
Individual Lead Services through Metering	36,000
Pre-metering surveys - Backyards	40,000
Yet to be identified	104,000

Data gap – Need to identify unknown lead?

1. Via National Sampling Programme, Watermain rehab programmes, LA knowledge on the ground.
2. **Over next 6 months, request for LAs to submit GIS maps identifying suspected lead in areas not metered via GIS Digitisation Process**
3. Data will be used for risk prioritisation of individual water supplies and lead replacement programmes

Corrective Water Treatment - Ortho-Phosphate in Drinking Water

- * Ortho-Phosphate as a food grade additive:
 - * Naturally occurring in milk, cheese, apples, potatoes, fish
 - * Addition to Water is 0.5-2.0 parts per million
 - * Levels in Soft Drinks is 150 parts per million (100 + times)
 - * Levels in Beer is 250 parts per million (200 + times)
 - * Typical adult daily intake of P is about 1,300 mg of which water would be 4.5 mg
- * Over 90% of Water Supplies in Britain (61 Million people)
- * All public Water supplies in Northern Ireland since 2006
- * Widely used in Canada & United States
- * Ortho-Phosphate delivering 99% compliance with lead limit



A lead pipe, a corroded pipe, and a pipe with protective orthophosphate coating. Photo: USEPA

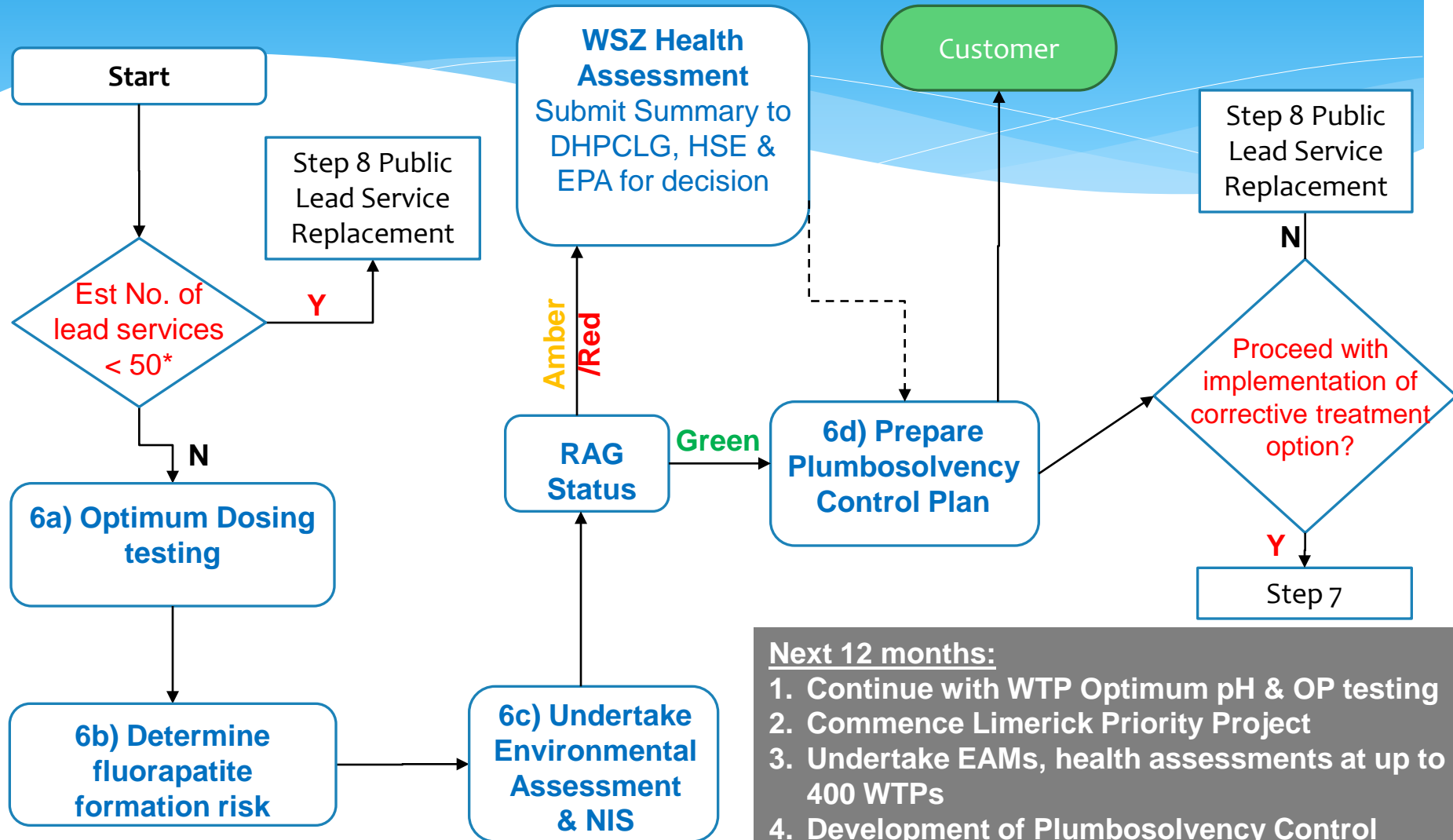
Corrective Water Treatment

1. Develop Plumbosolvency Control Implementation Plans **in consultation with Local Authorities**
2. Complete environmental assessment for each proposed supply (assess up to 400 “high risk” water supplies)
3. Install orthophosphate treatment systems where technically, economically and environmentally viable
 - Takes 6-24 months to form protective coating throughout the network, thereafter a maintenance dose is required
 - Standardised design / modular construction
4. Associated upgrade works may be required:
 - Upgrade pH control
 - Phosphorus Removal at WWTPs
5. Monitor Water at tap and Phosphorus in wastewater



A Typical orthophosphate treatment unit

Step 6 of Plan : Corrective Water Treatment - WSZ Plumbosolvency Control Plan



Next 12 months:

1. Continue with WTP Optimum pH & OP testing
2. Commence Limerick Priority Project
3. Undertake EAMs, health assessments at up to 400 WTPs
4. Development of Plumbosolvency Control Plans in consultation with Local Authorities.

Next Steps

1. Finalise the Lead in Drinking Water Mitigation Plan
2. Limerick Priority Project
3. **Lead Replacement** - Identify unknown lead services through updating GIS; and prioritise lead service replacement
4. **Corrective Water Treatment** - Complete WSZ Environmental Assessment & Health Assessments at up to 400 WTPs



Find out more information?

- * Visit: www.water.ie/lead for infographics, videos and other additional information