

Irish Water

First Fix Leak Repair Scheme

For Domestic Water Customers

As approved by the Commission for Energy Regulation (CER) on 5th August
2015



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Glossary of Technical Terms

“**Business Days**” means the days between and including Monday to Friday and not including public holidays and weekends.

“**Business Hours**” means the time period within which leak investigations and repairs will be conducted. This will be between 7.30am and 6.30 pm on Business Days.

“**Branch Pipe(s)**” means a secondary pipe (or pipes) which runs off the supply pipe.

“**Constant Flow Alarm**” means a flow of 6 litres per hour through the Meter over a continuous 48 hour period.

“**Customer**” means the occupier of the Dwelling.

“**Dwelling**” means a building or part of a building used by a person as his or her place of private residence (whether as his or her principal place of residence or not).

“**External Supply Pipe**” means the water supply pipework serving the Property, which pipework runs between the point that is (i) 225mm outside the boundary to the Property and the point (ii) just before such pipework enters the Dwelling (the latter point being determined at Irish Water’s discretion, acting reasonably). External Supply Pipe excludes:

- (1) external plumbing systems, standpipes, irrigation systems or other external water supplies; and/or
- (2) pipework that exceeds 15 metres in length; and/or
- (3) pipework that runs under buildings or structures on the Property; and/or
- (4) pipework with an inside diameter exceeding 25 millimetres.

“**First Fix Leak Repair scheme**” means the leak repair scheme proposed to be introduced by Irish Water.

“**Internal Stop Valve**” means the valve which can be used to turn off the water supply into a Dwelling. The location of stop valves can vary depending on the style and age of the Dwelling but they are typically located on the pipework under the kitchen sink.

“**Internal Supply Pipe**” means the water supply pipework that runs under and/or inside the Dwelling.

“**Meter**” means a mechanical, electronic or other device for measuring volume or rate of flow of water supplied to a customer Property, together with the boundary box, the cover and any ancillary equipment for the purposes of data collection or transmission.

“**Owner**” means, in relation to a Property, a person or legal entity who, whether for themselves or as a trustee or agent for any other person or legal entity, is entitled to receive the rent of the Property (or where the Property is not let at a rent, would be so entitled if they were let), provided that nothing in this definition shall capture:

- a. a person who has defaulted on their mortgage and so is not in possession of their home;
- b. an agent acting in its capacity as a commercial agent for the sale, lease or rent of the Property; or

c. an executor or administrator of the estate of which the Property forms part.

“Pilot Scheme” means the pilot External Supply Pipe leakage repair scheme undertaken by Irish Water in Dublin and Kildare during 2014.

“Property” means a Dwelling and includes the curtilage to that Dwelling.

“Unaccounted for Water” means treated drinking water which is lost generally through leakage.

1. Executive Summary

In May 2014 the Government announced funding of €51m for a scheme to address water leakage on pipework within customer Property under a “First Fix” scheme. Irish Water (IW) has developed proposals as to the scope and implementation of the First Fix Leak Repair scheme and these proposals are outlined in this document.

Leakage of water from the network is a serious problem on a national scale. Lost water is estimated nationally at approximately 49% of the water produced for supply, well above international norms. IW proposes to introduce a customer side leak repair scheme similar to those operated successfully by UK utilities. The First Fix Leak Repair scheme will form part of IW’s strategy for reducing the level of water wastage through targeting the repair of leaks on domestic Property (estimated to be 20-30% of all network leaks).

Under the Water Services Act 2007 Irish Water is not responsible for addressing leaks that occur within the boundary of any Property. Under the First Fix Leak Repair scheme, IW intends to assist Customers by notifying them where suspected leakage is occurring within the boundary of the Property. It is intended that leaks which are identified on the External Supply Pipe serving a Property will be offered a free leak repair. The First Fix Leak Repair scheme will not apply to leaks within a Dwelling.

Given the need to prioritise water conservation, IW will, under the proposed First Fix Leak Repair scheme, prioritise repairs by size, based on the estimated volume of water lost. As a consequence it is anticipated that the largest leaks, which are wasting the most water, will be fixed first.

Through identifying and targeting the largest External Supply Pipe leaks using Meter read data, it is anticipated that the First Fix Leak Repair scheme will deliver water savings of at least 37 million litres per day, or enough to meet the daily water demand of 123,000 households.

2. Introduction

IW is targeting reductions in water losses as a key priority in delivering a more cost effective and sustainable water supply service to customers.

This document sets out IW's proposals for implementation of a national scheme of External Supply Pipe leakage repairs. Eligibility for the First Fix Leak Repair scheme and the process to avail of a free leak investigation and repair are also set out in this document. A Pilot Scheme was undertaken to help design the current programme and the findings of this Pilot Scheme are also outlined, along with some background research into similar practices in the UK.

The aim of this document is to outline to the CER the reasons for introducing the First Fix Leak Repair scheme, the proposed process for availing of it and the potential benefits that will occur in terms of water conservation.

Please note that leaks which occur on public property or outside the External Supply Pipe are outside the scope of the First Fix Repair Scheme. Leaks spotted by members of the public can be reported to Irish Water via the "Report a Leak" section on www.water.ie.

2.1. Background

Leakage on the water supply network in Ireland is unacceptably high. IW data indicates that up to 49% of all treated water that is produced is subsequently lost through leakage.

It is estimated that between 20-30% of water supplied to domestic Properties is lost through customer side leakage (i.e. leakage which occurs within the Property boundary). To date this type of leakage has proven very difficult to either identify or address.

IW's domestic metering project is set to Meter over one million domestic Property supplies by mid-2016. Data gathered from the Meters currently installed has provided a very useful insight into the extent and nature of Customer supply pipe leakage. This data, together with the Pilot Scheme, has informed the development of the current First Fix Leak Repair scheme.

It is anticipated that the First Fix Leak Repair scheme will form the first element of a broader framework of Customer side leakage policies which will be developed by IW to help to address this critical issue.

2.2. Research

To inform the development of the First Fix Leak Repair scheme, research into the policies and practices employed by water utilities in the UK to address similar External Supply Pipe leakage was undertaken to seek to identify trends and best practice. UK utilities have extensive experience of implementing similar 'customer side' leakage programmes. In addition to this, IW undertook a Pilot Scheme to seek to understand the local requirements for operating the First Fix Leak Repair scheme. The key elements are summarised below and detailed further in the Pilot Scheme report in Appendix 2.

2.2.1. Review of Best Practice in the UK

A desktop review of the policies and practices employed by water utilities in the UK to address External Supply Pipe Leakage was undertaken to identify current trends and best practice elements. UK utilities have operated leakage reduction programmes since 1995 and these have contributed to the successful reduction in total Unaccounted for Water from 5.1 gegalitres per day to 3 gegalitres per day (approximately 20% of the water put into the supply system).¹

These reductions in Unaccounted for Water have been supported by the introduction of a range of leakage policies. These policies range in the extent of coverage from provision of free repairs, replacement of pipes and/or subsidies towards repairs. Most of the utilities which operated such a scheme initially introduced a straightforward 'customer side' leak repair policy (i.e. a leak repair policy in relation to leakage on the External Supply Pipe) where water loss was identified through the Meter. Over time these have resulted in the development of follow-on repair policies to address the re-occurrence of leaks. These policies are typically limited by the time period or an absolute number per property. The policies favoured by specific utilities are also strongly influenced by the quality of their network assets (pipe material and age).

A review of the data compiled by OFWAT² between 2002-12³ showed the emergence of a trend towards pipe replacement in preference to local repairs. Pipe replacement is viewed as a more efficient option in the longer term from both a utility and customer perspective as it reduces the requirement for subsequent repeat investigations and repair works. Where a free replacement is offered the majority of utilities specify a length limit for this replacement. Recently an increasing number of utilities have moved towards providing a subsidy towards replacements as this reduces their operational responsibilities and cost exposure. Information provided to IW by a number of UK utilities suggests that the transition to a subsidy based model is only possible once the most significant leaks have been addressed and an approved register of suppliers is in place.

¹ Economics of Supply Side Leakage; Final Report, WRc, 2012

² The economic regulator of the water and sewerage sectors in England and Wales

³ Economics of Supply Side Leakage; Final Report, WRc, 2012

2.2.2. Field Studies - Pilot Scheme

To assist in the development of the First Fix Leak Repair scheme IW undertook a Pilot Scheme (outlined in appendix 2). This Pilot Scheme explored the technical and resource requirements required to successfully deliver the First Fix Leak Repair scheme.

The Pilot Scheme allowed IW to trial the proposed First Fix Leak Repair scheme process and to identify efficiency improvements. It was determined, for instance, that a significant number of Customers could identify internal leaks themselves once they were provided with guidance. A Customer check procedure was therefore included in the First Fix Leak Repair scheme process. The Pilot Scheme also allowed IW to record the time taken to complete leak investigations, thereby informing scheduling and resource planning. The Pilot Scheme highlighted some key requirements including the need for Dwellings to have a working and accessible⁴ Internal Stop Valve installed in order for a leak investigation to be completed under the First Fix Leak Repair scheme. This was identified as being the only non-invasive means of isolating water in the External Supply Pipe to check for leakage.

Two areas were selected for the Pilot Scheme repair works, Kildare and North Dublin City. A total of 532 metered properties with current Constant Flow Alarms were contacted in September 2014 to inform them of a potential leak on the External Supply Pipe. These Customers were invited to contact IW to arrange a free leak investigation survey to seek to diagnose the cause of the constant flow (as identified by the Constant Flow Alarm). Customer response rates were almost identical in the two Pilot Scheme areas with 68% responding within 21 days, which then rose to an 82% response rate following the issue of a reminder letter. This response provided a sample of 229 properties in Kildare and 207 in North Dublin City for further leak investigation.

The investigations completed to the end of October 2014 revealed that a significant proportion (63%) of the total number of leaks identified were attributable to internal issues within the Dwelling (i.e. leakage occurring within the Dwelling). Faulty toilet cisterns were the source of the majority of internal leaks identified (accounting for 42% of leaks identified within a Dwelling). While a higher number of internal leaks within the Dwelling were identified relative to leakage on the External Supply Pipe, the Pilot Scheme demonstrated that such leaks within the Dwelling tend to be smaller than leaks on the External Supply Pipe in terms of the volume of water lost.

Leaks which were identified on the External Supply Pipe (37% of the total leaks identified in the Pilot Scheme) were offered a free repair/replacement to seek to remedy the leak that had been identified. A total of 57 repairs were completed under the Pilot Scheme as at the end of October 2014. These repairs were completed through a mixture of External Supply Pipe replacements or local repairs.

Based on current data it is estimated that the water savings achieved through the Pilot Scheme will be in the region of 795,000 litres per day, when all repairs have been completed. In addition

⁴ An Internal Stop Valve is considered accessible if no structural works are required in order to access it.

to this it is estimated that the independent repair of internal leaks/wastage which were identified through the Pilot Scheme will result in a further saving of 530,000 litres per day.

The key outcomes from the Pilot Scheme, including the leak investigation process are outlined in detail in Appendix 2.

Key points:

- The Pilot Scheme achieved good response rates of 82%, indicating that there would be strong participation in a subsequent national leak repair scheme.
- An accessible Internal Stop Valve would be required to complete a leak investigation under any subsequent national leak repair scheme.
- The Pilot Scheme indicated that 63% of leaks identified occurred within the Dwelling.
- In the Pilot Scheme 37% of leaks were on the External Supply Pipe serving the Property and these Properties were offered a free repair.
- It is estimated that 795,000 litres per day of wasted water will be saved through repairs carried out under the Pilot Scheme.
- A potential further saving of 530,000 litres of water per day could be made if internal leaks within Dwellings are addressed (which internal leaks were highlighted by the Pilot Scheme).

3. First Fix Leak Repair scheme

The aim of the First Fix Leak Repair scheme is to provide an efficient scheme with national reach to address, where possible, the issue of External Supply Pipe leakage through increased awareness of leakage and the provision, where appropriate, of leak repair solutions to maximise water savings.

Under the First Fix Leak Repair scheme, IW intends to assist eligible Customers by notifying them where suspected leakage is occurring within their Property. IW will then seek to provide these Customers with a free leak investigation, where this is requested by the Customer and, where appropriate, offer to repair any External Supply Pipe leakage (which repair work will be only be carried out if the Owner of the Property agrees to the repair in accordance with the Terms and Conditions outlined in Appendix 3).

3.1. First Fix Leak Repair scheme objectives

IW has identified the following objectives for the First Fix Leak Repair scheme:

- Improve water conservation through increased public awareness of the existence of leaks;
- Reduce water lost through customer side leakage through the offer of a free repair for leaks on External Supply Pipes to eligible customers and thereby helping customers to reduce bills;
- Develop an efficient data driven approach to the identification and prioritisation of leaks based upon water volumes; and
- Ensure the efficient operation of the First Fix Leak Repair scheme to minimise inconvenience to Customers and to maximise the return on investment in the First Fix Leak Repair scheme.

3.2. First Fix Leak Repair scheme structure

In seeking to implement the First Fix Leak Repair scheme objectives, IW has developed a number of proposals to seek to ensure that the First Fix Leak Repair scheme operates efficiently and maximises potential water savings. The Pilot Scheme, outlined in appendix 2, has highlighted the benefits of operating a targeted Customer side leak repair scheme using data obtained from Meter readings. The current domestic metering project is on course to Meter over one million supplies by mid-2016. IW proposes to implement the First Fix Leak Repair scheme using data obtained from Meters as the basis for identifying Customer side leakage. This will allow IW to prioritise the investigation of leaks to target the largest sources of water wastage. It will also facilitate the efficient use of resources under the First Fix Leak Repair scheme through a co-ordinated scheduling of leak investigations and repairs within geographic areas.

3.2.1. Importance of Meter read data

Utilising Meter read data to identify the most significant leaks is the key to operating the First Fix Leak Repair scheme efficiently. Previously, the key barrier to addressing leakage was the identification of where leakage arose. The vast majority of leaks remain underground and, as such, they are invisible and largely go un-noticed and un-detected. Prior to the Pilot Scheme (and the proposed First Fix Leak Repair scheme) leakage programmes have been based, primarily, around time-consuming and labour intensive sampling of areas in order to seek to detect anomalies on pipework. The IW domestic metering programme provides a technology based solution that addresses this challenge. Data obtained from Meters highlights abnormal water usage patterns and allows IW to isolate the source of leaks to a particular Property, thereby reducing the time required for leak investigation. Designing the First Fix Leak Repair scheme on the basis of Meter read data will enable IW to systematically identify significant water wastage at individual properties and allow the focus of resources on locating the source of wastage within individual Properties. If Meter data was not used, a large portion of the First Fix Leak Repair scheme resources would be used up on leak identification through area sampling. It would be expected that IW technicians would have to test numerous properties in any one area in an attempt to narrow down the source of water wastage. Such investigations may well be lengthy and may not always prove successful in terms of identifying significant leaks.

3.2.2. Constant Flow Alarm

Where Meter data for a Property indicates a constant flow of water through the Meter a Constant Flow Alarm will be generated. A current Constant Flow Alarm will be the starting point in the First Fix Leak Repair scheme process (it is an objective indicator that a potential leak requires investigation). A flow of 6 litres per hour through the Meter over a continuous 48 hour period will trigger a Constant Flow Alarm. The Constant Flow Alarm is set to this level to prevent activation

due to background seepage which occurs on all water systems or low level internal leakage; such as dripping taps. It would be extremely difficult to identify any leak occurring at a continuous flow of less than 6 litres per hour without carrying out significant excavation works. Setting the Constant Flow Alarm at this level provides a reliable and objective indicator of potential leakage.

Relevant Customers for whom a current Constant Flow Alarm is recorded will be issued with a Constant Flow Advice letter, a copy of which is included in Appendix 5. The Constant Flow Advice letters will be issued on a phased basis; and it is expected that Customers with Properties that record the most significant water consumption readings will be contacted first. When fully mobilised it is expected that 4,500 Constant Flow Advice letters a month will be issued by IW.

If a domestic Customer whose water is supplied through a Meter contacts IW to report a suspected leak, IW will first check the data from the Meter to determine if that Customer has a current Constant Flow Alarm. If a current Constant Flow Alarm is in place the Customer will be included within the First Fix Leak Repair scheme (subject to terms and conditions) and the matter will be addressed via the First Fix Leak Repair scheme process outlined in section 4. If the data from the Meter does not indicate a Constant Flow Alarm, the Customer will be issued with advice on water conservation..

A Constant Flow Advice letter will be required in order to allow participation in the First Fix Leak Repair scheme.

Phasing of Constant Flow Advice letters

In order to operate the First Fix Leak Repair scheme efficiently and minimise time lost travelling between repairs, IW will group Constant Flow Alarms based on size and geographical location. Leaks investigations will be prioritised by size of the leak and clustered on a regional basis, to seek to ensure that leaks are dealt with in an efficient manner.

IW will implement the First Fix Leak Repair scheme based on the eight regions⁵ identified for the current national domestic metering programme. Using the same regions will allow IW to leverage existing resources and infrastructure.

The eight regions will be further subdivided into local authority areas. IW will then issue Constant Flow Advice letters to the Customers identified as having the largest leaks⁶ within that area. This group of customers will then enter the First Fix Repair Scheme process, outlined in section 4. When those leaks have been addressed, the same process will be followed in the next local

⁵ These 8 regions are the North West; West; South West; North East; County Dublin; Dublin City; Midlands; and the South East.

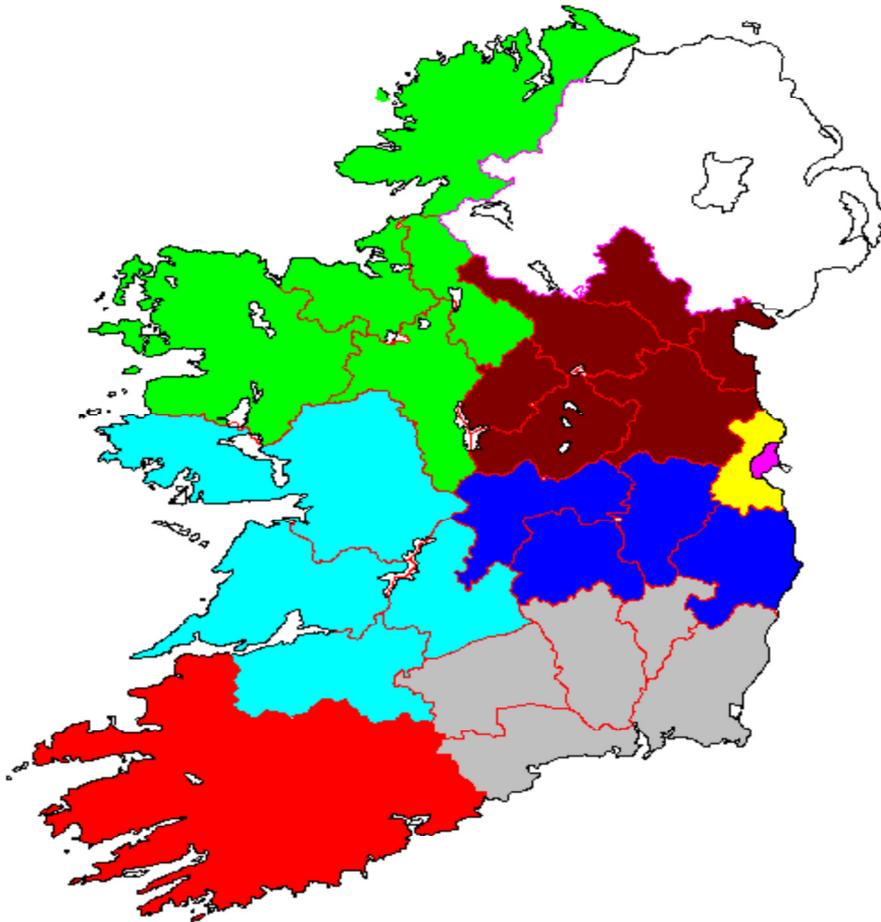
⁶ Classification of the largest leaks may vary between regions and local authority areas. For example the largest leaks in one local authority area may all be greater than 10,000l/day, while in a neighbouring local authority area some of the largest leaks may be between 5,000-10,000 l/day. IW will group the largest leaks until such time as they have a sufficient body of work in the area to proceed.

authority area until the largest leaks in the local authority area have been addressed.

Once the largest leaks in the region have been addressed, the process will resume, with the next largest leaks within the region. IW will aim to work sequentially through the leaks in each region, prioritising the leaks by size.

Customers who receive a Constant Flow Advice letter can request a free leak investigation (which can be requested by contacting the IW call centre, as advised in the Constant Flow Advice letter).

First Fix Leak Repair Scheme: Regions



3.2.3. Customer Eligibility: Leak investigation

Eligible Customers

The First Fix Leak Repair scheme will only apply to domestic Customers. In order to qualify for a free leak investigation under the First Fix Leak Repair scheme, the following additional criteria must be met:

- The water to the Dwelling must be supplied through a Meter;
- a Constant Flow Alarm is detected via data obtained from the Meter;
- The Dwelling has an accessible Internal Stop Valve⁷; and
- The Customer has registered with IW.

If an unmetered domestic Customer reports a visible surface leak on their Property to IW, IW will look into the report. The installation of a meter at the Property, to check for a Constant Flow Alarm, may be deemed the most appropriate course of action to address the reported leak. If so and if the property is deemed suitable for the installation of a Meter, IW will arrange for a Meter to be installed. Within 6 weeks of notifying IW of the visible surface leak the Customer will either (1) be scheduled for Meter installation (if there is planned Meter installation in the area), or, alternatively, (2) be contacted to arrange an exceptional Meter installation. If a Constant Flow Alarm is collected from Meter readings following the installation of the Meter, the Customer will be deemed to be eligible for the First Fix Leak Repair scheme.

Notwithstanding that a Customer may be eligible for the First Leak Repair scheme, and that investigation has identified a leak at the Property, no repairs to the External Supply Pipe of any Property will be carried out by IW under the First Fix Leak Repair scheme unless the Owner has agreed to the Terms and Conditions as set out in Appendix 3.

Notwithstanding that Customers may be eligible for the First Fix Leak Repair scheme; IW will operate the scheme in accordance with the principles set out in Section 3.2.4.

- **Inbound Customer Service**

A Customer may contact IW to report a leak in advance of receiving a Constant Flow Advice letter. In such circumstances the Customer's Property will be checked against the Meter read data to determine if there is an active Constant Flow Alarm. If an active Constant Flow Alarm exists then the Customer will be issued with a Constant Flow Advice letter and will be included in the First Fix Leak Repair scheme process. If a Constant Flow Alarm is not detected, this indicates that a leak does not exist on the External Supply Pipe and in such cases the Customer will be issued with advice on water conservation.

⁷ If required, IW will provide advice to Customers on how to identify the location of the Internal Stop Valve, as part of the leak investigation.

Ineligible Customers

- **Unmetered Domestic Customers:**

As outlined, the First Fix Leak Repair scheme will be operated using Meter read data to identify leaks and therefore will be limited to those domestic Property in respect of which a Meter is installed.

Some domestic Customers, particularly those living in older terraced houses, have their water supplied through a shared backyard pipe. Such supply configurations prevent the installation of Meters on an individual Property. This Customer category will require significant design works linked to mains renewal programmes prior to metering. It is therefore not practical to include such properties in the First Fix Leak Repair scheme. Where a domestic Property is not suitable for meter installation but has a visible surface leak the Customer will be advised that they are not eligible for the First Fix Leak Repair scheme and that a plumber should be engaged to repair the leak.

Reported visible surface leaks will be referred to IW operations for assessment. IW Operations will be carrying out mains renewal programmes and other remediation schemes on an ongoing basis. Significant leaks in an area may inform the scheduling of such works.

Leaks on Branch Pipes to external fittings (e.g. water features) will not be included in the First Fix Leak Repair scheme due to the difficulty in isolating the source of potential leaks.

- **Mixed Use and Non-Domestic Customers**

As outlined in section 3.2.1, the First Fix Leak Repair scheme has been designed to use meter read data to effectively identify the source of Customer side leaks. The domestic portion of water supplied to mixed use Customers⁸ is not separately metered and therefore cannot be included in the First Fix Leak Repair scheme. In addition, commercial Customers may have different water usage patterns to domestic Customers including, for example, 24 hour/day usage (e.g. cooling systems) and, on that basis; it becomes difficult to distinguish normal consumption from leakage. For this reason, the First Fix Leak Repair scheme will not apply to these categories of Customer.

As outlined, the First Fix Leak Repair scheme is the first element of a broader framework of Customer side leakage policies. While certain Customer categories cannot be included in the First Fix Leak Repair scheme, they may benefit from future Customer side leakage scheme.

⁸ Customers that use water services for both business and household purposes.

Key Points – Customer Eligibility Leak Investigation

Metered Domestic Customers that have:

- A Constant Flow Alarm;
- An accessible Internal Stop Valve; and
- Registered with IW.

Ineligible Customers

- Non-Domestic customers
- Mixed Use customers
- Unmetered Domestic customers

3.2.4. Customer Eligibility: Repairs

As noted above, IW will seek to prioritise leaks for repair based on volume of water lost. It is expected that the largest leaks resulting in the greatest loss of water will be addressed first, as these will deliver the greatest benefits in terms of water conservation. Leaks which are identified on the External Supply Pipe will be offered a free repair⁹. If it is found, following excavation that a more than one leak exists on the External Supply Pipe¹⁰, Irish Water will, where possible, repair all such leaks. This may require the replacement of a portion of the External Supply Pipe.

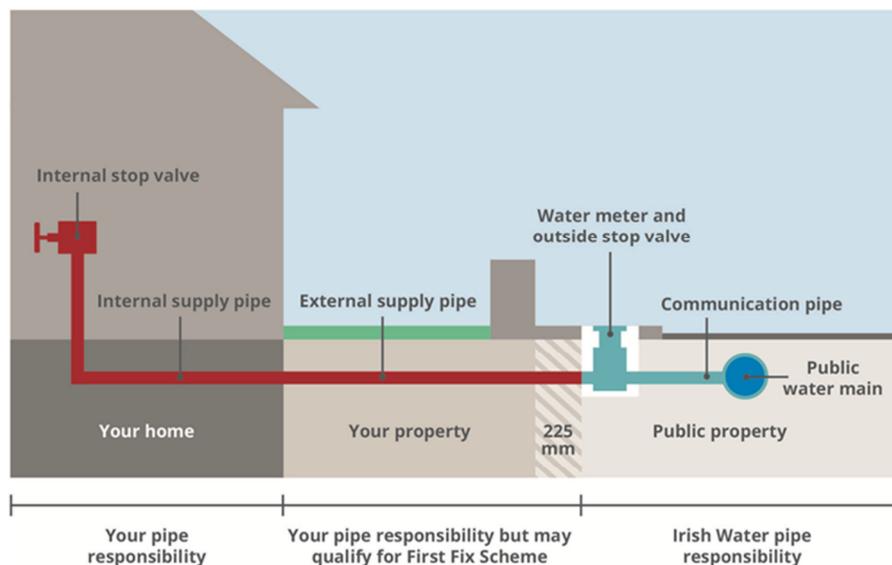
Even though the First Fix Leak Repair Scheme Offer is limited to pipework which does not exceed 15 metres in length, Irish Water may in its discretion (and taking into account the costs associated with the extension of the First Fix Leak Repair Scheme Offer) elect to extend such First Fix Leak Repair Scheme Offer to pipework serving the Property which exceeds 15 metres.

Repairs carried out under the First Fix Leak Repair scheme will be limited to leaks that occur between the Dwelling and the Property boundary. If the leak is internal to the Dwelling it will not be IW's responsibility to have the leak repaired. Where IW identifies that a leak is internal to the Dwelling and therefore outside the scope of the First Fix Leak Repair scheme, the Customer will be provided with advice on repair and water conservation options. IW will monitor the meter read data for these Properties through subsequent meter read cycles, if a Constant Flow Alarm is still registered at the property; IW will send a reminder letter to the Customer to check for an internal leak and will follow up with a second letter if required. The proposed applicability of the First Fix Leak repair scheme is represented in the following diagram¹¹.

⁹ Subject to Terms and Conditions, outlined in Appendix 3.

¹⁰ Not including branch pipes as outlined in section 3.2.3.

¹¹This graphics is for illustration purposes only and reflects the current policy of Irish Water on pipe responsibility which may be changed from time to time. Ultimately pipe responsibility is governed by the Water Services Acts 2007 to 2014.



It is not practical to roll out a scheme of this nature to incorporate repairs within the Dwelling. Due to the non-standard nature and potential range of skills and materials required for works within a Dwelling such works are not amenable to a standardised works contract arrangement. In addition, bespoke internal works could present liability risks that would be outside the level generally accepted by any national utility. Our research on the operation of similar leakage repair schemes in the UK indicates that such schemes are limited to repairs to pipework outside the house. Therefore leaks which are internal to, or under the Dwelling, will not be offered a leak repair by IW under the First Fix Leak Repair scheme.

Leak investigation is a complex process which does not always result in a confirmed source of water wastage. Even with the presence of a Constant Flow Alarm and following a comprehensive investigation by IW there will be instances in which the source of a leak cannot be identified. In these cases, following leak investigation works, the IW contractor will not be able to carry out a repair and will complete an activity report, outlining the basis for the finding. This activity report will be submitted to IW and the Customer will be notified by letter that the leak cannot be identified and repaired and, in such circumstances, the leak investigation will be deemed to be closed by IW.

Key points – Customer Eligibility: Repairs

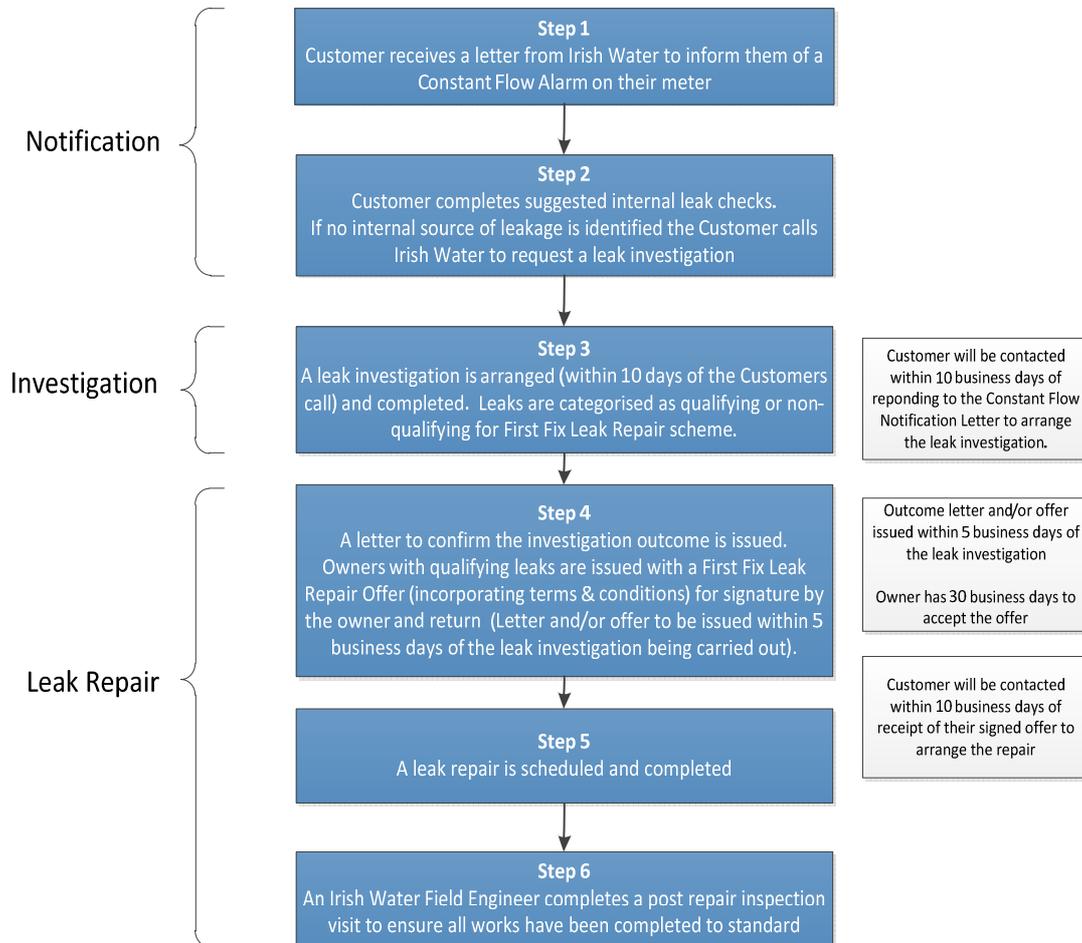
- The First Fix Leak Repair scheme will be operated using Meter read data to seek to identify the source of potential leaks.
- A Constant Flow Alarm reading will be the trigger in the First Fix Leak Repair scheme process.
- Customers for whom a Constant Flow Alarm reading is registered will be issued with a Constant Flow Advice letter and then (if they request it by contacting the IW call centre

as set out in the Constant Flow Advice letter) a free leak investigation.

- Customers require an accessible Internal Stop Valve to participate in the First Fix Leak Repair scheme.
- Any Customers who are not also the Owner of the Property will need to have obtained the consent of the Owner of the Property in order to avail of a repair under the First Fix Leak Repair scheme (it is expected that initial leak investigation will take place without Owner consent).
- Customers also need to have registered with Irish Water.
- Where the need for a repair is identified under the First Fix Leak Repair scheme, this repair will be offered in respect of any applicable Property free of charge (subject to acceptance of Terms and Conditions).
- Repairs will only be carried on the External Supply Pipe, for internal leaks the Customer should contact a plumber (or Owner if appropriate).
- If an un-metered domestic Customer reports a visible surface leak on their Property to IW they will be scheduled for a Meter installation, if the property is deemed suitable for metering. Following the Meter installation, the Customer may then become eligible for inclusion in the First Fix Leak Repair scheme, subject to the terms and conditions.
- Non-domestic Customers and mixed use Customers will not be included in the First Fix Leak Repair scheme.

4. Process Details

The process of identifying a potential leak (and implementing the associated repair) requires a series of steps, beginning with a Continuous Flow Alarm indication in the supply to a domestic Property, followed by the necessary on-site checks to establish a definitive (identifiable) leak capable of repair on the External Supply Pipe.



The context and process details of the First Fix Leak Repair scheme are outlined in the following section. The key Customer interaction points are summarised in the diagram and are described in further detail below. The First Fix Leak Repair scheme Customer journey is illustrated in Appendix 1.

4.1. First Fix Leak Repair Scheme – Advice

Where an active Constant Flow Alarm is collected during Meter reading the impacted Customer will be issued with a Constant Flow Advice letter. The issuance of such letters will occur on a phased basis, Customers with the most significant leaks will be contacted first. Where a Property is tenanted, Irish Water will advise both the Customer and the Owner of the presence of a Constant Flow Alarm on the property¹².

The Constant Flow Advice letter will inform the Customer of the Constant Flow Alarm and provide them with a booklet, 'How to check your home for leaks' (see Appendix 5) which outlines a series of checks to help identify common sources of wastage e.g. faulty cisterns. If the Customer has any difficulty in carrying out these checks, they should contact IW for assistance, using the contact details set out in the booklet. Where the Customer cannot attribute the continuous flow to an internal issue/wastage, the Customer should contact Irish Water to arrange the next step in the process - a leak investigation. IW will do some checks over the phone to assess if a leak investigation survey can be completed.

On scheduling the leak investigation, the Customer will be requested to confirm that they have

- a) Registered with IW¹³; and
- b) the Dwelling has a working and accessible Internal Stop Valve.

In the event that no response is received from a Customer following the issuance of two consecutive Constant Flow Advice letters, a letter will be issued to the Customer to advise that notwithstanding the Constant Flow Alarm the Property will be removed from the First Fix Leak Repair scheme.

If a Customer does not receive the two consecutive Constant Flow Advice Letters (e.g. as a result of being out of the country) and is removed from the First Fix Leak Repair scheme as a result of failure to respond to the letters they may contact IW to request re-inclusion. In the event of a change of ownership of a Property in which a Constant Flow Alarm has been detected, IW will contact the new occupier of the Property on validation of their details with IW to notify them of the existence of Constant Flow Alarm at the Property. The Customer will be entitled to avail of the First Fix Leak Repair scheme at that point, subject to the terms and conditions.

If an unmetered domestic Customer reports a visible surface leak on their Property to IW, IW will look into the report. The installation of a meter at the Property, to check for a Constant Flow Alarm, may be deemed the most appropriate course of action to address the reported leak. If so and if the property is deemed suitable for the installation of a Meter, IW will arrange for a Meter to

¹² Where Irish Water has contact information for the Owner.

¹³ These details are required to determine the account holder.

be installed. Within 6 weeks of notifying IW of the visible surface leak the customer will either (1) be scheduled for Meter installation (if there is planned Meter installation in the area, or, alternatively (2) contacted to arrange an exceptional Meter installation. If a Constant Flow Alarm is collected from Meter readings following the installation of the Meter, the Property will be deemed to be eligible for the First Fix Leak Repair scheme.

Key Points:

- IW will write, on a phased basis, to all Customers with a Constant Flow Alarm.
- Customers will be provided with advice on checks to complete in order to seek to identify the most common sources of internal leakage.
- Where a Customer cannot identify an internal source of leakage they should contact IW to arrange a leak investigation.

4.2. First Fix Leak Repair Scheme – Leak Investigation

If a Customer cannot identify an internal source of leakage they should contact IW to arrange a leak investigation. IW will conduct an on-site non-invasive leak investigation to seek to classify the nature of the leak and determine if it can be repaired within the scope of the First Fix Leak Repair scheme. IW will contact the Customer to schedule the leak investigation within 10 Business Days of the Customer requesting a leak investigation, in response to a Constant Flow Advice letter. At this stage, Customer cooperation and access to the Property for IW technical staff will be necessary to verify if there is an identifiable leak to the External Supply Pipe. The verification process will entail:

- Finding and shutting off an Internal Stop Valve , while observing the Meter flow-rate to ascertain External Supply Pipe loss;
- Where a leak is suspected between the Internal Stop Valve and the Meter, further leak investigation tests will be carried out to check for flow noise and to trace pipework to locate the leak (See Appendix 4 for details of leak investigation tests likely to be carried out); and
- Checking for any evidence of shared backyard pipes or Branch Pipes.

Customers will be required to facilitate a leak investigation visit during Business Hours. This requirement is necessary for efficiency, operational and health and safety reasons. Leak investigators will also require the support of back office services which are only in place during these times. The Customer will be provided with a leak investigation outcome card (see Appendix 5) which will provide guidance on the investigation outcome and responsibility for any required repairs.

If after six months of issuance of the first Constant Flow Advice letter, having made reasonable efforts, a leak investigation cannot be conducted (e.g. failed appointments or lack of customer engagement) then the case will be closed and the Customer will be notified that they are no longer being considered for participation in the First Fix Leak Repair scheme.

Key Points:

- A leak investigation will be offered free of charge to Customers. IW will contact the Customer to arrange a leak investigation within 10 Business Days of receipt by IW of a response to a Constant Flow Advice letter.
- Customers (or a nominated adult representative) must be present during a leak investigation to facilitate access to the Property;
- Leak investigation techniques will be used to determine whether a leak can be located on the External Supply Pipe. No excavations will occur during the leak investigation stage.
- Repair of all leaks internal to the Dwelling are not the responsibility of IW.

4.3. First Fix Leak Repair Scheme – Leak Repair

If a leak has been identified on the External Supply Pipe and the repair is deemed to be within the scope of the scheme, the Owner will be issued with a First Fix Leak Repair scheme offer document. On the assumption that the Owner's name and address can be identified, this First Fix Leak Repair scheme offer (included in Appendix 3) will issue within 5 Business Days of the identification of the leak. The offer will detail the terms and conditions applying to the First Fix Leak Repair scheme offer. The Owner will have 30 Business Days from date of issuance to accept the terms and conditions and return the offer document. If the Owner does not accept the offer, it will lapse and IW will not be able to carry out the repair.

Once an offer has been accepted by the Owner in the prescribed format of the terms and conditions, IW will contact the Customer within 10 Business Days of receipt of the signed offer to schedule a mutually acceptable time to undertake the repair. If after sixty days of this initial contact being made, having made reasonable efforts, a repair cannot be conducted (e.g. failed appointments or lack of Customer engagement) then the case will be closed and the Customer will be notified of their removal from the First Fix Leak Repair scheme. If the Customer was not aware of the attempts to contact them and therefore did not respond to this communication within the timeframe (for reasons such as absence from the country) but does wish to avail of the repair, they may should contact IW to request re-inclusion in the scheme.

IW will endeavour to complete repairs as soon as is practicable after the leak has been identified, in keeping with the water conservation objectives of this scheme. Assuming that a mutually acceptable time can be agreed, IW will seek to carry out the repair within a maximum of 4

months of contacting the customer, however, assuming a good level of Customer engagement, it is anticipated that the majority of repairs will be carried out within a few weeks of the leak identification.

Following completion of a repair, the External Supply Pipe will be tested to ensure that no leaks remain on it. In the unlikely event that a defect¹⁴ occurs on the External Supply Pipe within 12 months of the repair being completed, IW will arrange to rectify the fault.

Key Points:

- IW will offer to fix qualifying leaks on the External Supply Pipe free of charge upon receipt of a signed First Fix Leak Repair scheme offer document;
- IW will prioritise repairs based upon the size of the leak and potential water savings resulting from the repair.

5. Resources and Cost Estimates

The experience gained from the Pilot Scheme has been used to model the roll-out of the First Fix Leak Repair scheme on a national basis to December 2016 and to forecast the associated expenditure.

5.1. Estimated First Fix Leak Repair Scheme Costs

Leak repair activities were always envisaged as a follow-on activity of the IW domestic metering programme as it was known that the installation of Meters would provide the data necessary to identify leaks. Therefore, when the metering works contract when being publicly procured (Domestic Water Metering Services and Works Contract Ref# 12/081) included a schedule for external leak repairs. This contract was procured at a time of reduced activity in the construction industry and IW believes that very competitive rates were achieved. Four contractors were appointed to provide national coverage over eight metering regions. These contractors have experience of working within IW's work order management systems, quality and health & safety requirements thereby reducing the associated mobilisation and setup costs. It is planned to use these contractors to complete all leak investigation and associated repair works.

Where metered Customers are unable to identify an internal source of leakage, they can avail of a free leak investigation under the terms of the First Fix Leak Repair scheme. When IW engages with all Customers with current Constant Flow Alarms (based on current Meter data this is anticipated to be circa 77,000 Customers), it is expected that a significant proportion of the First Fix budget €13.9m (28%) will be spent on leak investigations to seek to assist Customers in

¹⁴ Please see section 8 of the terms and conditions set out in appendix 3 for details of defects covered.

identifying the sources of leaks/wastage. The average cost of a leak investigation is estimated to be approximately €250, with the number of estimated leak investigations to be completed under the scheme expected to be in the region of 55,000.

The output of the leak investigation will confirm whether the Property has a qualifying leak under the First Fix Leak Repair scheme. Based on the conversion rates experienced during the Pilot Scheme and the composition of repair solutions deployed, it is estimated that the repair of qualifying leaks will account for €26.3m (52%) of expenditure under the First Fix Leak Repair scheme in the period to the end of 2016. The average cost of a leak repair for a Property is estimated to be €1,000; however this will vary depending upon the actual length of pipe, type of leak and surface material under which the pipe is laid.

It is estimated that resources to inspect, manage and administer the delivery of the First Fix Leak Repair scheme will account for €4.6m (9%) of expenditure. VAT and other charges are estimated to account for €5.3m (11%) of expenditure.

Cost estimates have not been included for the installation of any additional Meters required under the First Fix Leak Repair scheme to facilitate previously unmetered Customers who notify IW of visible water leakage on their Property.

It should be noted that the cost estimates have been based on the results of the Pilot Scheme operated by IW in 2014. As outlined in section 2.2.2, the Pilot Scheme was operated using a sample of 532 Customers in North Dublin City and Kildare. This sample, located in two predominantly urban areas may not be fully representative of IW's national Customer's base. It is possible, therefore, that the actual costs of operating the First Fix Leak Repair scheme on a national basis may be higher than anticipated (taking into account travel times between houses in rural or more geographically dispersed communities). Additionally, geographical variations in pipe composition, ground conditions and house type could also result in significantly different levels of qualifying leaks. IW will monitor expenditure during the First Fix Leak Repair scheme and report on this quarterly to the CER.

The table below provides a breakdown of the forecasted expenditure on the First Fix Leak Repair scheme in the period to the end of 2016. As outlined above, these figures are based on a limited urban sample and will be subject to ongoing review by IW. These indicative figures are cumulative and broken down on a quarterly basis:

Table 1: First Fix Leak Repair scheme: Estimated total expenditure

	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016
Leak investigations	€ 2,227,500	€ 4,792,500	€ 7,155,000	€ 9,666,000	€ 11,934,000	€ 13,095,000	€ 13,860,000
Leak repairs	€ 3,156,090	€ 7,319,010	€ 11,875,170	€ 16,634,730	€ 20,906,130	€ 24,546,990	€ 26,255,550
Additional costs - scheme inspection & administration, VAT etc.	€ 2,077,675	€ 3,738,410	€ 4,980,448	€ 6,304,668	€ 7,642,585	€ 8,898,320	€ 9,985,812
Cumulative Expenditure	€ 7,461,265	€ 15,849,920	€ 24,010,618	€ 32,605,398	€ 40,482,715	€ 46,540,310	€ 50,101,362

5.2. Estimated First Fix Leak Repair scheme Deliverables

Under the First Fix Leak Repair scheme it is estimated that approximately 77,000 Constant Flow Advice letters will be issued to Customers in the period to the end of 2016. It is expected that this will result in the completion of over 55,000 leak investigations. Whilst it is only possible to estimate the proportion of cases that will be found to have leakage on the External Supply Pipe (which will convert to returned leak repair offers), based on the limited sampling from the Pilot Scheme it is estimated that approximately 23,000 repairs will be completed under the 'repair' phase of the First Fix Leak Repair scheme.

Table 2: First Fix Leak Repair Scheme: Estimated quarterly deliverables (Cumulative)

	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016
Customer Notifications	16,500	30,000	43,500	57,000	69,250	74,750	77,000
Leak Investigations Completed	8,910	19,170	28,620	38,664	47,736	52,380	55,440
First Fix Repairs Completed	2,793	6,477	10,509	14,721	18,501	21,723	23,235

5.3. Anticipated Benefits

Based on Meter consumption data, IW estimates average household¹⁵ consumption at 300 litres per day. Based on the current Meter reading data the average consumption at properties with a Constant Flow Alarm is 1,900 litres per day, over six times the normal consumption for a typical household. Allowing for actual customer consumption, it should be possible to achieve water savings of 37,000,000 litres per day on a national basis based on the target number of repairs to be carried out in the period to the end of 2016. This saving equates to the daily water demand of 123,000 households. However, using the proposed prioritised approach to implementing the First Fix Leak Repair scheme, this volume of water savings could be exceeded, assuming good levels of Customer engagement.

The Pilot Scheme indicated that a high number of Customer side leaks originate within or under the Dwelling¹⁶. Although the repair of leaks within Dwellings is outside the proposed scope of the First Fix Leak Repair scheme, the occurrence of such leaks will be highlighted to Customers through the First Fix Leak Repair scheme process. There is potential for significant additional water savings should Customers (acting on the information provided to them by IW) seeks to address these leaks and arrange repairs.

5.4. Reporting

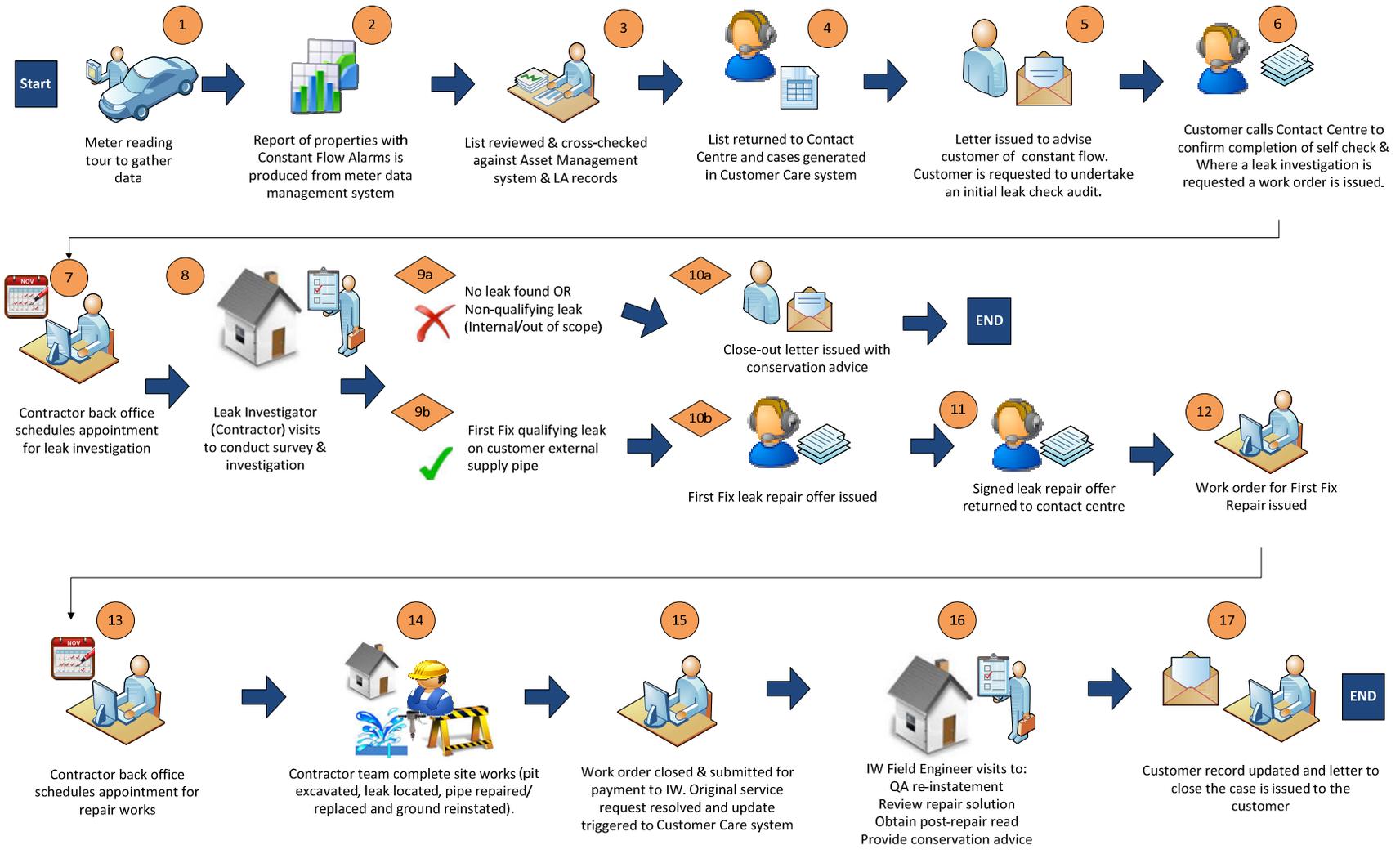
IW's work and asset management system will be used to record all works issued and completed under the First Fix Leak Repair scheme. IW contractors will report to IW on the number of investigations that result in repairs as well as the reasons for repairs not being carried out. This will ensure that detailed data exists for KPI reporting. This will support reporting on the number of advice letters issued, responses received and investigations and repairs completed by region and local authority area as well as the number of repairs that could not be carried out. In addition a detailed breakdown of the overall First Fix Leak Repair scheme expenditure and water savings achieved will be reported on a quarterly basis to the CER.

¹⁵ Based on CSO household occupancy data. -

¹⁶ 63% of customer side leaks identified during the Pilot Scheme were found to have originated inside or - under the Dwelling. -

Appendices

Appendix 1 – Customer Journey



First Fix Scheme

Pilot Scheme Report

DRAFT - V 0.4

November 2014

Irish Water Metering Programme



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1. Executive Summary

1.1. Purpose of Document

The purpose of this document is to provide an overview of the planned approach for implementing the First Fix Scheme. This document will form the basis for discussions and agreement of the proposed approach with the CER.

1.2. Context

Irish Water has targeted reductions in water losses as a key priority in delivering better and more cost effective water supply service to customers. One of the common methods employed by water utility companies internationally to address water losses through leakage is to provide customer supports to address customer side leakage.

Following an announcement in May by DECLG, the Government has committed to introducing a 'first fix' scheme which will assist customers who have had a meter fitted with the repair of external leaks located on their private supply pipe. Irish Water intends to assist customers in this situation through the identification and repair of leaks on their property (external to the dwelling) and otherwise offering advice on approaches to resolving leaks and saving water on their premises.

The first fix scheme will form the first element of a broader framework of customer side leakage policies which will be developed to help to address this critical issue.

1.3. Approach to Implementation

In order to achieve a fit-for-purpose scheme, a draft first fix policy was developed and a leak repair pilot scheme was executed against it. This provided real data and scenarios to understand the complexities of customer side leakage and to determine whether the policy provided adequately for the range of potential customer situations. The experience and learning gathered during this pilot scheme will then provide a basis to inform the process and

system design, model deployment scenarios and support the implementation of an enduring solution.

1.4. Leak Repair Pilot

A total of 671 properties were identified for inclusion in a customer side leak repair pilot scheme which commenced in August. This comprised a sample of 348 properties in the North Kildare area (Maynooth, Celbridge, Leixlip & Naas) with constant flow alarms at the time of meter validation. A further 323 properties located in north Dublin city (Whitehall, Beaumont, Collinswood & Donnycarney) matching the same criteria were subsequently added to the pilot scheme sample in September. The inclusion of the north Dublin city area allowed for an expanded range of pipe and property types, thereby ensuring the pilot scheme examined a broader range of leak repair scenarios.

As meter installation had taken place in these areas in October 2013, a follow-up meter reading tour was completed to gather current consumption volumes and alarm status data. This reading tour confirmed that 532 properties (79.3%) still had an active constant flow alarm and that the associated consumption with these properties was 1,867,800 litres per day. This equated to an average consumption of 3,500 litres per day per property.

A letter was issued to these properties to inform them of an abnormal usage pattern which may be indicative of a leak. Customers were requested to contact Irish Water to make arrangements for a leak investigation. Customer response rates were almost identical in the two pilot scheme areas with 68% responding within 21 days, which then rose to 82% following the issue of a reminder notification. This provided a sample of 229 properties in Kildare and 207 in North Dublin for further leak investigation.

Initial screening was conducted by Irish Water Field Engineers which identified 100 properties (23%) as non-qualifying as a result of the internal leakage/wastage. A total of 281 cases were passed to leak detection crews for further investigation, and of these, 234 were completed during the pilot scheme period.

In Kildare, 59 of the 135 leaks investigated qualified for a first fix repair, equating to a conversion rate of only 43%. In Dublin, where the supply pipework is generally older 58 of the 99 leak investigations completed resulted in a qualifying repair, equating to a conversion

rate of 58.5%. The pilot scheme revealed that a significant proportion of leaks were attributable to internal plumbing issues. In these cases property owners were notified of the cause of “non-qualifying” leaks and advised to engage a plumber to complete a repair. The estimated water savings arising from the repair of these non-qualifying leaks is 4,346,000 litres per day.

Leak repair offers were issued to the 117 properties with qualifying leaks, and as of 24th October, a signed acceptance has been received in 87 cases (74%). These have been issued to the contractor to schedule and complete a leak repair. Based upon the particular surface conditions and type of leak the contractor determines whether a local repair or a replacement service provides the best solution.

A total of 57 leak repairs have been completed to date, 38 in Kildare and 19 in North Dublin. The volume of water associated with the qualifying repairs in Kildare was 273,400l/day. It is estimated that by returning each property to an assumed “normal usage” of 325l/day will result in water savings of 261,000l/day, equivalent to 7,600l/day per property.

The volume of water associated with the 19 qualifying repairs in Dublin was 193,400l/day. It is estimated that by returning each property to an assumed “normal usage” of 325l/day results in a water saving of 187,200l/day, equivalent to 9,850l/day per property. The total estimated water saving associated with the repair of qualifying leaks in both Kildare and Dublin is 448,000l/day. When the outstanding qualifying repairs are completed, it is estimated that the total water savings from the repair of qualifying leaks will be 717,000l/day.

Therefore, assuming that all non-qualifying leaks identified to customers during this pilot scheme are repaired and the remaining qualifying repairs will be completed, the total water saving identified through this pilot scheme is estimated to be 1,151,000l/day.

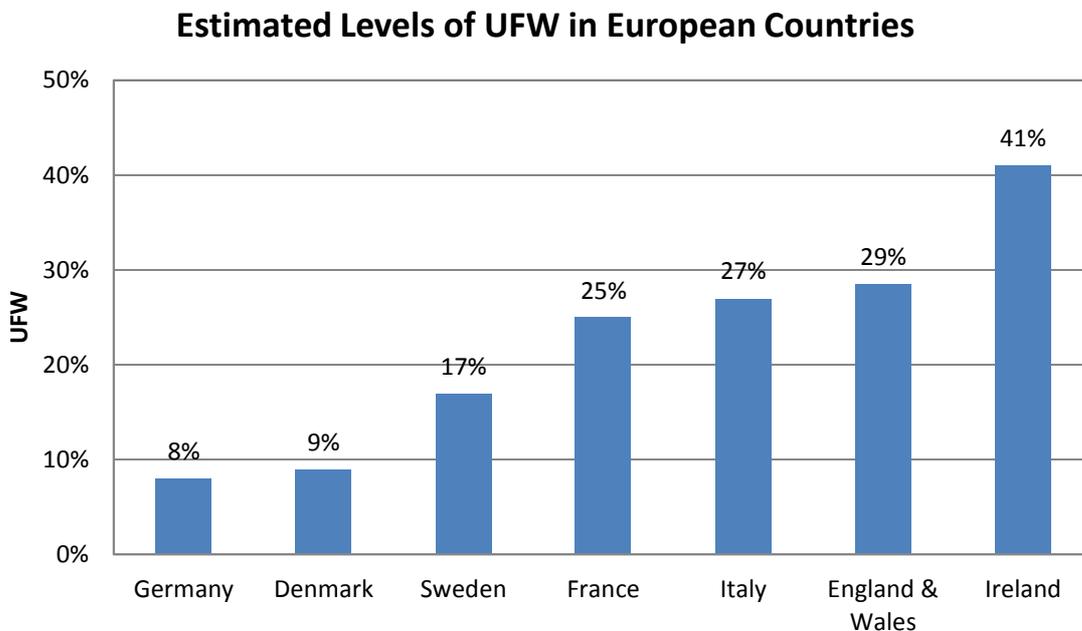
The pilot scheme has been very instructive in highlighting some of the complexities and challenges associated with customer side leak repairs. The pilot scheme outputs and lessons learned are detailed further in the main body of this report.

2. Customer Side Leakage and Water Wastage

2.1. Overview

Irish Water has targeted reductions in water losses as a key priority in delivering better and more cost effective water supply service to customers. A number of reports have estimated that approximately 41% of all water supplied in Ireland is unaccounted for (UFW), the majority of it lost through leaks in the network¹⁷. The graph below shows that by international comparison Ireland has above average levels of unaccounted for water. Irish Water data indicates that UFW in Ireland is even higher than these estimates, at 49%.

SCHEDULE 1 Figure 1: Estimated levels of unaccounted for water in some European countries

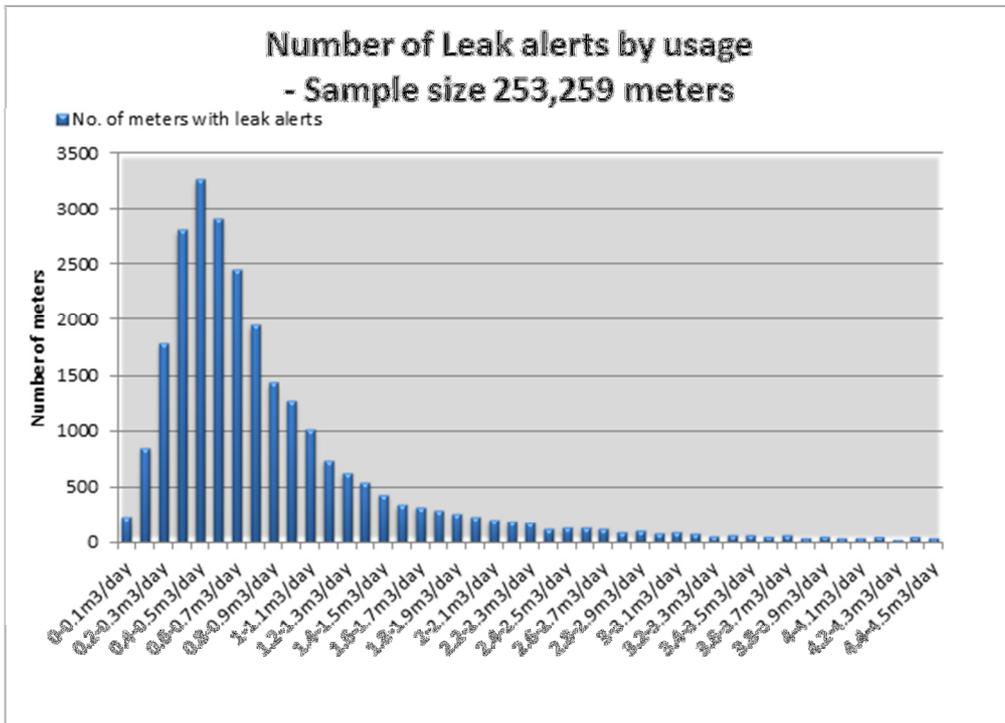


Historically, utility companies have struggled to quantify where in their networks water losses were occurring. Similarly in Ireland, Local Authorities have conducted a number of limited studies to attempt to gather data on this issue. One such recent report by Dublin City Council estimated customer side leakage (CSL) at 65l/property/day in the Greater Dublin Area resulting in the loss of 37MI/d (The Plan, Water Supply Project, Greater Dublin Area 2010).

¹⁷ Reform of the Water Sector in Ireland Position Paper, DECLG, 2012

However, the scale of the Irish Water metering programme presents a unique opportunity to understand the flow of water through the network in Ireland, and to gain an accurate understanding of the proportion of water that is being lost through customer side leakage CSL. The largest relevant sample of data available arises from the metering programme where a validation read is taken within 21 days of meter installation by the metering contractor to ensure that the meter is operating correctly and transmitting data.

Using validation read data (July 2014 sample of 253,259 meters) 7% of meters installed had recorded an active constant flow alarm. Extrapolating from this data and assuming that 478,000 meters are installed by December 2014, it is estimated that there will be approximately 52,066 active leak alarms by January 2015 when billing commences.



Note: To allow sufficient scale the graph does not include 741 leaks that are over 10,000l/day

If these trends continue, by the completion of Phase 1 metering, it is estimated that there will be approximately 77,000 active constant flow alarms.

Recognising the scale of this issue, in May 2014 the Government committed to introducing a 'first fix' scheme which will assist customers who have had a meter fitted with the repair of external leaks located on their private supply pipe. Similar to schemes operated by other water utility companies, Irish Water intends to assist customers in this situation through the identification and repair of leaks on their property (external to the dwelling) free of charge and otherwise offering advice on approaches to resolving leaks and saving water on their premises. The first fix scheme will form the first element of a broader framework of customer side leakage policies which will be developed to help to address this critical issue.

3. First Fix Scheme

3.1. Process Description

Properties potentially qualifying for Irish Water's first fix scheme will be identified through meter reading data as those having an active constant flow alarm. These customers will be notified of a potential issue and requested to conduct a number of self-checks to eliminate the most common sources of non-qualifying leaks/wastage. If the customer is unable to identify an internal issue/wastage as the likely cause, they will have the option to contact Irish Water to request a leak investigation. An Irish Water contractor will conduct an on-site non-invasive investigation to locate and classify a leak and determine whether it can be repaired within the scope of the first fix scheme. Qualifying leaks will then be repaired by the regional metering contractor (subject to the customer agreeing to the terms and conditions of the scheme).

3.2. Objectives

The following objectives have been identified for the first fix scheme:

- Reduction of CSL through repair or replacement of leaking customer supply pipes.
- Reduction of CSL through increased public awareness.
- Support a smooth transition to metered water billing through the reduction of bill disputes and customer wastage.
- Provide a tangible demonstration to customers of the benefits of Irish Water and water metering.

The scope of the first fix scheme is limited to domestic customers who have had an Irish Water meter installed. Qualifying leaks will be those located on the customer's supply pipe between the meter box and the point that the supply pipe enters the dwelling. The works will involve activities on the private side of the property boundary and therefore will require the customer's consent.

The following are excluded from the First Fix scheme:

- Leakage on supply pipes of non-domestic or mixed-use customers.
- Internal plumbing related leaks.
- Unmetered properties.
- Leakage on supply pipes located underneath a building/inside the property.
- Reinstatement of specialist surfaces.
- Supply pipes with branches to external fittings

4. International Experience

The drought of 1995 in the UK highlighted the impact of unaccounted for water, with some 30% of the water being put into water company distribution systems being lost due to leakage. As a result many water utilities encountered significant difficulties in maintaining supplies. A Water Summit was subsequently convened by the Government which established a 10-point action plan for the industry which included setting targets for water companies to reduce leakage.

OFWAT has worked with the water companies in the UK to monitor performance in achieving leakage targets and total leakage has fallen from 5.1 gigalitres per day to three gigalitres per day, approximately 20% of the water put into the supply system. As a result, leakage levels in the UK are now generally better than average by international standards. There is some uncertainty around the total volume of leakage and in particular the proportion that is attributable to customer side leakage as most customers still do not have water meters.

Despite the significant investment that has been made by UK utilities over a 20 year period to address leakage, data from OFWATs 2010/11 Service Incentive Mechanism Survey shows the most common reason customers had for contacting their water company was to report a leak (13%)¹⁸.

Reason for Contact	% Survey Sample
Report a water leak	13%
Pay bill	11%
Dispute/query bill/high meter bill/reading *	11%
Blocked sewer/sewer flooding	10%
Moving home/change of details	9%
Setting up payment arrangement	6%

¹⁸ Economics of Supply Pipe Leakage, Water Research Council, 2012

Loss of supply *	6%
Request a water meter to be installed	5%
Water quality complaint/enquiry	5%
Loss of pressure *	4%

From the table above it is apparent that several of the most common categories for contact could also be deemed leakage related and these are highlighted.

The approach of UK water utilities has been influenced by this, and in response, most companies have put in place policies to address customer side leakage. These policies range in the extent of coverage from provision of free repairs, replacements and/or subsidies. The tables below provide a summary of the customer supports that are offered by UK Water utilities.

The table below summarises policies in relation to repairs offered. A broad range of criteria is applied; however the majority of companies limit the number of free repairs to one per property/occupancy.

Group	Definition	Water Companies
Free Unlimited	No limit on the number of free repairs offered	Wessex Water, Severn Trent Water
Free – every 1-2 years	One free repair is offered every one or two years	United Utilities, Veolia Water, Southeast Yorkshire Water
Free – every 3-5 years	One free repair is offered every three, four or five years	Dwr Cymru Welsh Water, Northumbrian Water, Cambridge Water
Free - 3 per occupancy	Three free repairs are offered per occupancy of the property	Southern Water
Free – Two per property	Two free repairs offered per property	Portsmouth water, South East Water, Dee Valley Water
Free – One per occupancy	One free repair is offered per customer or per occupancy	Veolia Water Central, Veolia Water East, Sembcorp

		Bournemouth water
Free – One per property	One free repair is offered per property	Anglian Water, Bristol Water, South Staffordshire Water, Sutton and East Surrey Water

The table below provides a summary of the pipe replacement options available from UK water companies. It is clear from the table below that the majority of UK water companies favour limiting the support provided to a subsidy for each service replacement rather than providing free of charge.

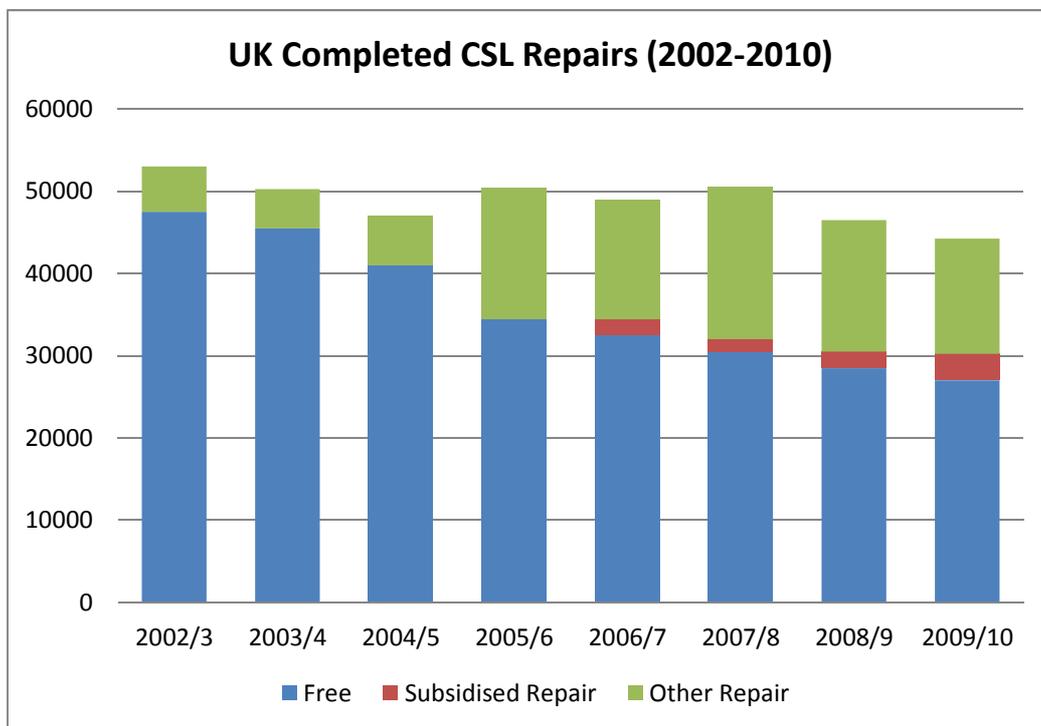
Group	Definition	Water Companies
Free	Free Replacement	Wessex Water, United Utilities
Free Limited	Free replacement up to a specified length	Anglian Water, Dwr Cymru Welsh Water, Severn Trent Water, Southern Water, Dee Valley Water
Subsidised	Subsidised replacement	Sembcorp Bournemouth Water, Northumbrian Water, Portsmouth Water, South East Water, South Staffordshire Water, Sutton and East Surrey Water, Thames Water, Veolia Water Central, Veolia Water East, Veolia Water Southeast, Yorkshire Water
Nothing	No free or subsidised replacement	Bristol Water, Cambridge Water

4.1. Volumes of CSL Repairs in UK

The charts below provide a summary of the volume of customer side pipe repairs and replacements completed by OFWAT regulated utilities between 2002-2010¹⁹. This provides an insight into how the policies are actually being implemented.

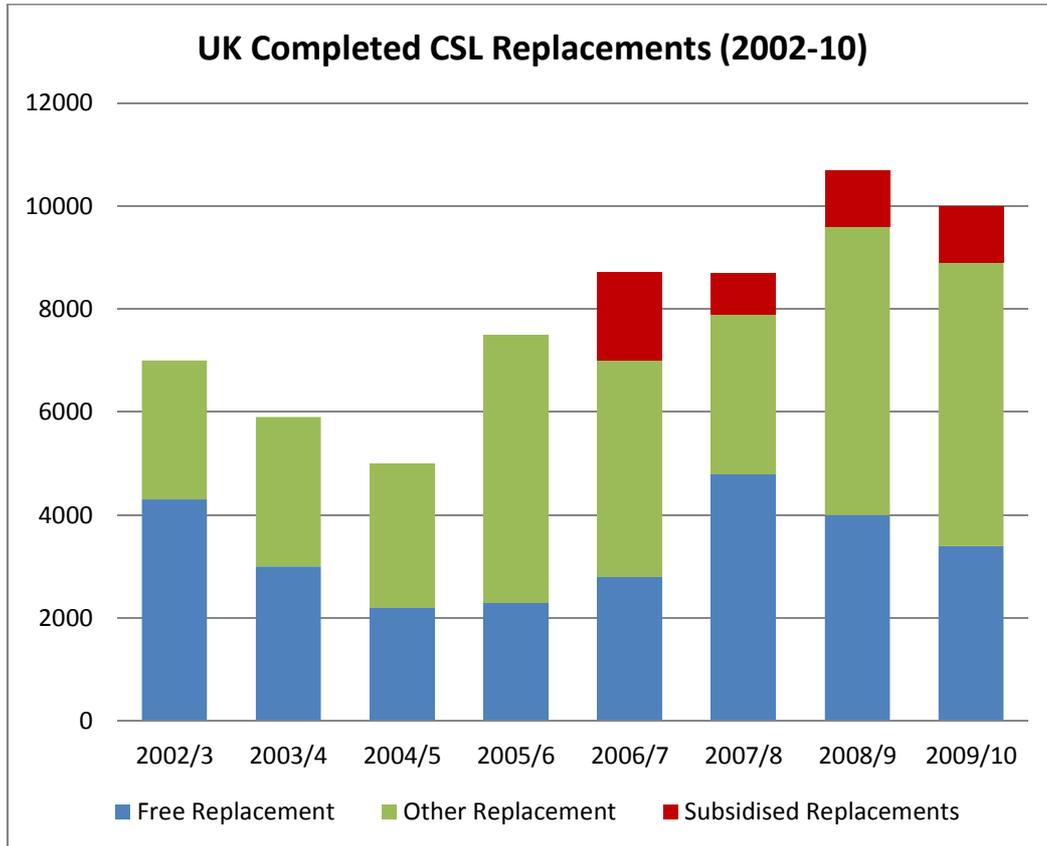
At peak in 2002/3 the number of repairs completed was 52,504. A number of trends can be observed from this chart below:

- Recent trends show a decline in the volume of repairs with 44,709 completed in 2009/10 representing a 15% decrease from the 2002/3 figure;
- The proportion of free repairs has declined year on year, resulting in a significant decline of 43% (20,846) over the period; and
- Overall volumes as a proportion of population are relatively low.



¹⁹ Economics of Supply Pipe Leakage, Water Research Council, 2012

The number of free replacements has also declined over the period with 1,026 fewer free replacements completed in 2009/10 than in 2002/3, representing a 23.5% reduction. Despite an increase in the overall numbers of replacements, the majority of replacements in recent years are either “non-free” or “subsidised”.



Conclusions

The following conclusions can be drawn from the experiences of UK utility companies:

- A proactive customer side leakage programme is an essential in managing customer queries/complaints;
- Utilities have policies in place to offer a free repair or replacement; however the number of free repairs/replacements completed has declined steadily.
- A local repair is the most common solution offered, however this has necessitated the introduction of follow-on policies and procedures to govern multiple repairs. The majority of utilities have a limit of one free repair per property/occupancy.
- Supply pipe replacement is increasingly being adopted as a more cost effective and long term solution with a rise in the overall numbers completed during the period.
- Recently, some utilities have opted to provide a subsidy towards repairs rather than managing directly. Anecdotal discussions have suggested that where the larger leaks have been eliminated the costs and overheads associated with direct management for smaller leaks are more difficult to justify.

Learnings for First Fix Policy

- Although a range of policy limits are applied, the offer of one fix per property/occupancy is the most commonly applied limit -
 - Irish Water intends to apply a limit of one free first fix per property
- Local repair as a leak solution has necessitated the introduction of policies covering repeat repairs and resulted in increased costs and customer inconvenience.
 - Irish Water intends to carry out full replacement of service pipes where this represents the most cost effective option and site conditions allow to maximise the potential for long term savings.
- Reporting of leaks is the most common reason for customers to contact their utility provider
 - Irish Water intends to proactively notify customers in writing who have active constant flow alarms to inform them of a potential issue.

5. First Fix Pilot Scheme

5.1. Objectives

In order to inform the development of the first fix scheme, a pilot scheme of private-side leak repairs has been undertaken to explore the support systems and processes required to successfully deliver a leak repair programme.

Specifically, this pilot scheme sought to address the following:

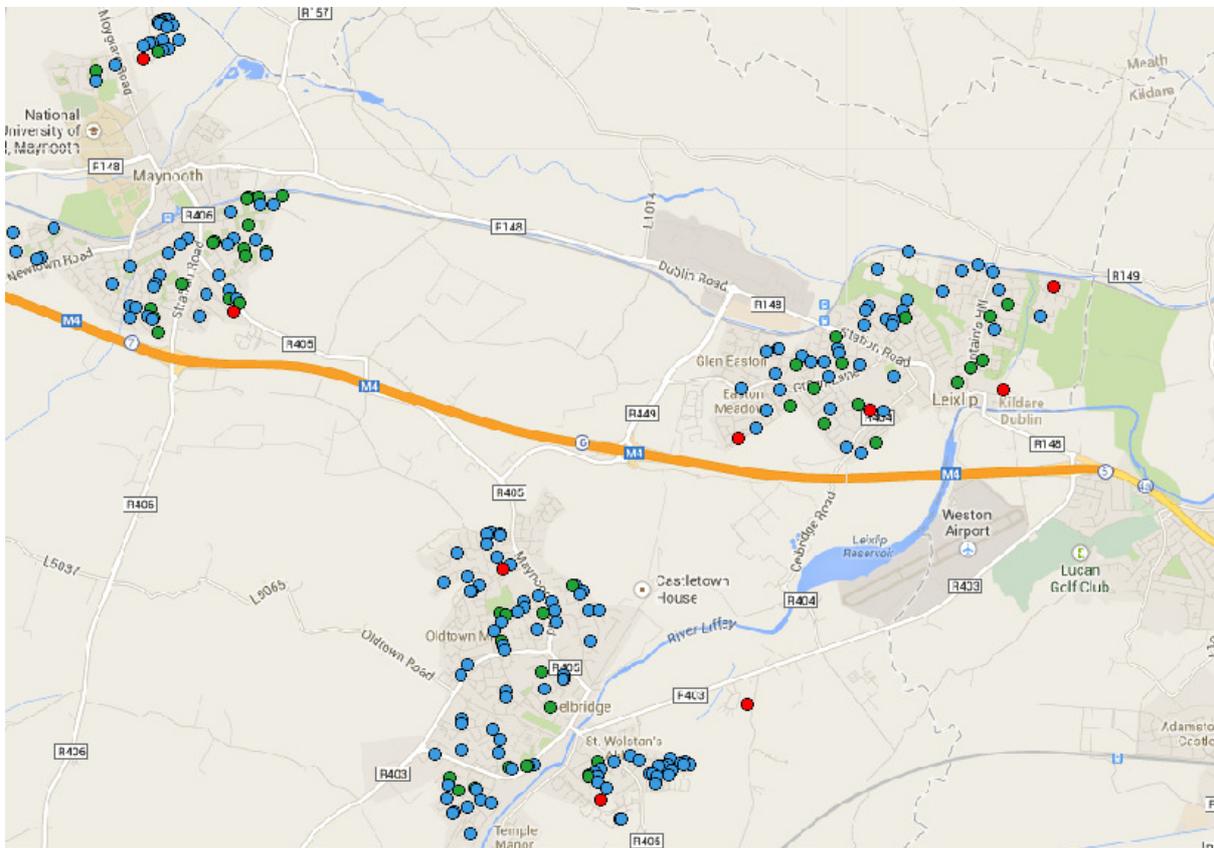
1. Establish if the data used to identify potential leaks is proven to have been valid.
2. Establish if a 3 step approach is appropriate in all cases, i.e. survey (1) followed by leak investigation (2) and repair (3), and how these roles should be resourced.
3. Establish what analysis can be done prior to a site visit to form a preliminary view on the anticipated root cause/solution.
4. Identify questions the call centre may need to ask of the occupier before an inspector visits site to establish if the works are eligible and within the scope of the programme; including a script to identify potential internal plumbing issues or wastage.
5. Gather data to inform guidelines for which types of connections are most likely to require full pipe replacements and which might be more suitable for local repairs.
6. Establish the scope of tasks that should be undertaken at the investigation stage.
7. Trial paper-based job-cards to scope and test the requirements for software systems to be developed.
8. Trial a “waiver statement” to confirm that the owner/occupier grants access to the contractor to work on private property to undertake a leak repair.
9. Identify what HSQE measures are required to support the activities on site.
10. Identify customer communications material required before, during and after the first fix process.
11. Gather data to inform policy decisions on the scope of works permitted under the programme, including the boundaries for pipe replacement or repair. Gather data to identify the breakdown of apparent leak events between those in scope for the programme and those likely to be outside scope.
12. Identify training required of inspectors, repair crews and supervisors, including hygiene awareness and plumbing.

13. Evaluate different methodologies to trace and locate leaks in different circumstances.
14. Identify to what extent (if any) works are required in the public footpath between the property boundary and the meter box, and what (if any) additional licenses may be required.
15. Develop a procedure to check the property after the works are complete to ensure that water supply has been restored and the supply pipework is proven.
16. Identify potential insurance issues that will have to be covered in the course of the main programme.
17. Establish a basis for cost and resource estimates to inform the development of a deployment model.

5.2. Scope of Pilot Scheme

A sample of 348 properties in the North Kildare area (Maynooth, Celbridge, Leixlip & Naas) with recorded constant flow alarms at the time of meter validation was identified for the pilot scheme. Kildare was the location for the first meter installations and as a result many of these meters had been in place for approximately 9 months, thereby providing a good data series. Representatives in the Water Services division of the local authority were briefed on the pilot scheme prior to commencement.

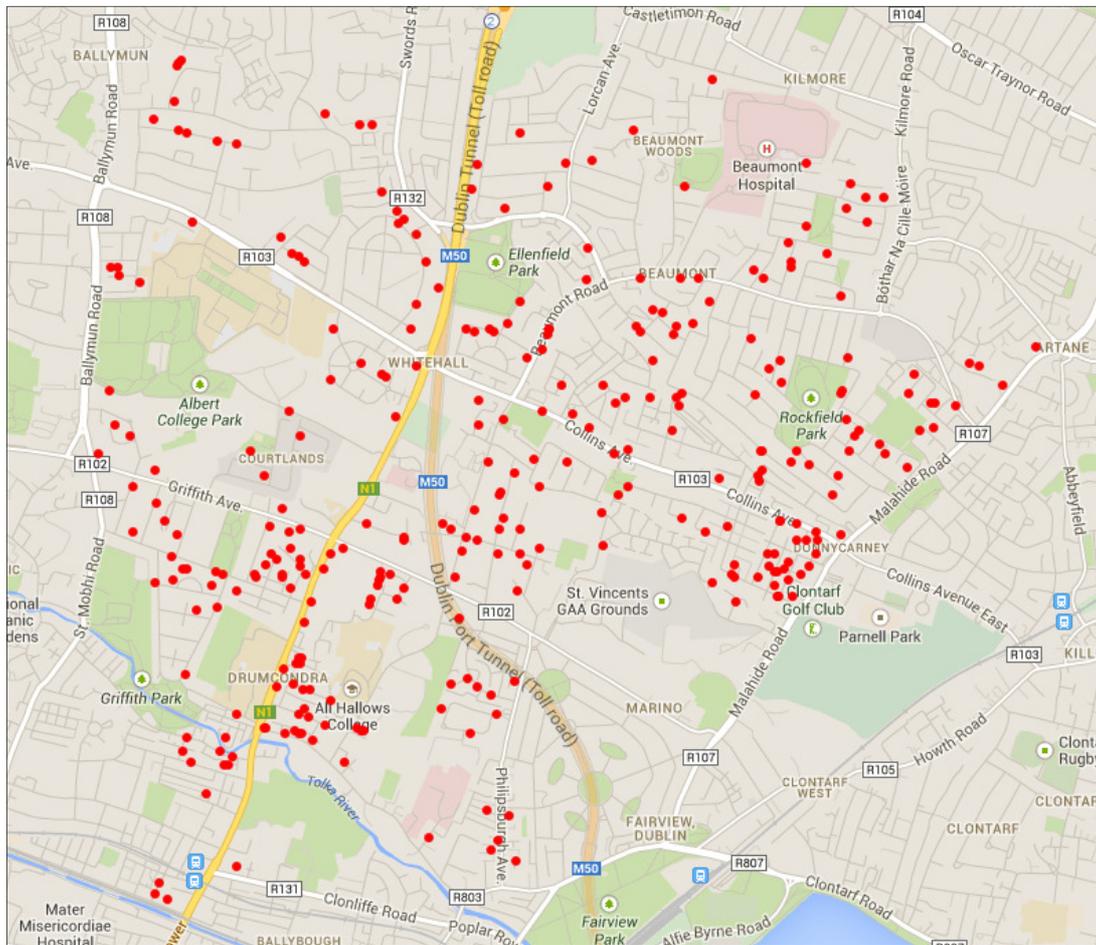
Pilot scheme Area North Kildare with leaks plotted



In September it was subsequently agreed with Dublin City Council to extend the pilot scheme to incorporate 321 properties in North Dublin (Whitehall, Beaumont, Collinswood & Donnycarney). This rationale for this decision was that it would expand the range of pipe and property types examined to ensure that the solution design incorporated a broad range of leak repair scenarios. In addition, the initial indications from leak investigations conducted in

the North Kildare area were that lower than expected numbers of cases were converting to qualifying repairs due to the prevalence of internal leaks/wastage.

Pilot scheme Area North Dublin with leaks plotted



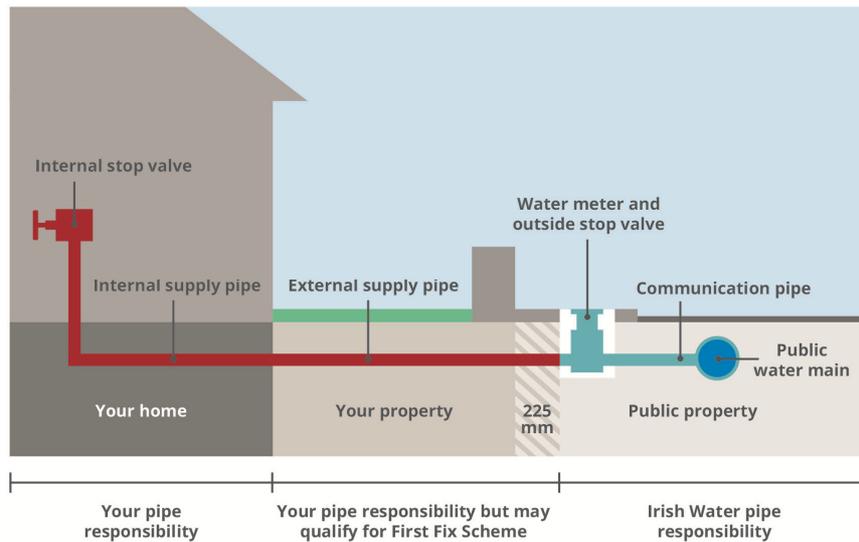
5.3. Pilot scheme Methodology

A target listing of properties for each area in scope was drawn from the validation data gathered during meter installation.

These properties were then loaded into the Temetra reading system to create a meter reading tour. An Irish Water Field Engineer conducted a drive-by meter reading to gather current consumption data and any active alarms. The properties with active leak alarms were then issued with a letter to advise them of an abnormal usage pattern which could be indicative of a leak, and were requested to call the Irish Water contact centre. Customers who did not respond to the initial notification letter after 21 days were issued with a reminder note.

Customers were then requested to supply their contact details to enable scheduling a leak investigation. An initial visit was conducted by an Irish Water Field Engineer to try and identify the cause of the leak alarm. Where there was no obvious source of leakage identified the customer details were then passed to the contractor to schedule a non-invasive leak investigation. At the appointed time and date, the contractor completed a series of checks to identify the cause of the leak. This involved the use of acoustic listening devices to trace pipework and to locate any leaks. In each case the contractor investigated to a point of resolution to either identify an internal or external cause for the alarm. In each case the customer was informed of the outcome of the investigation.

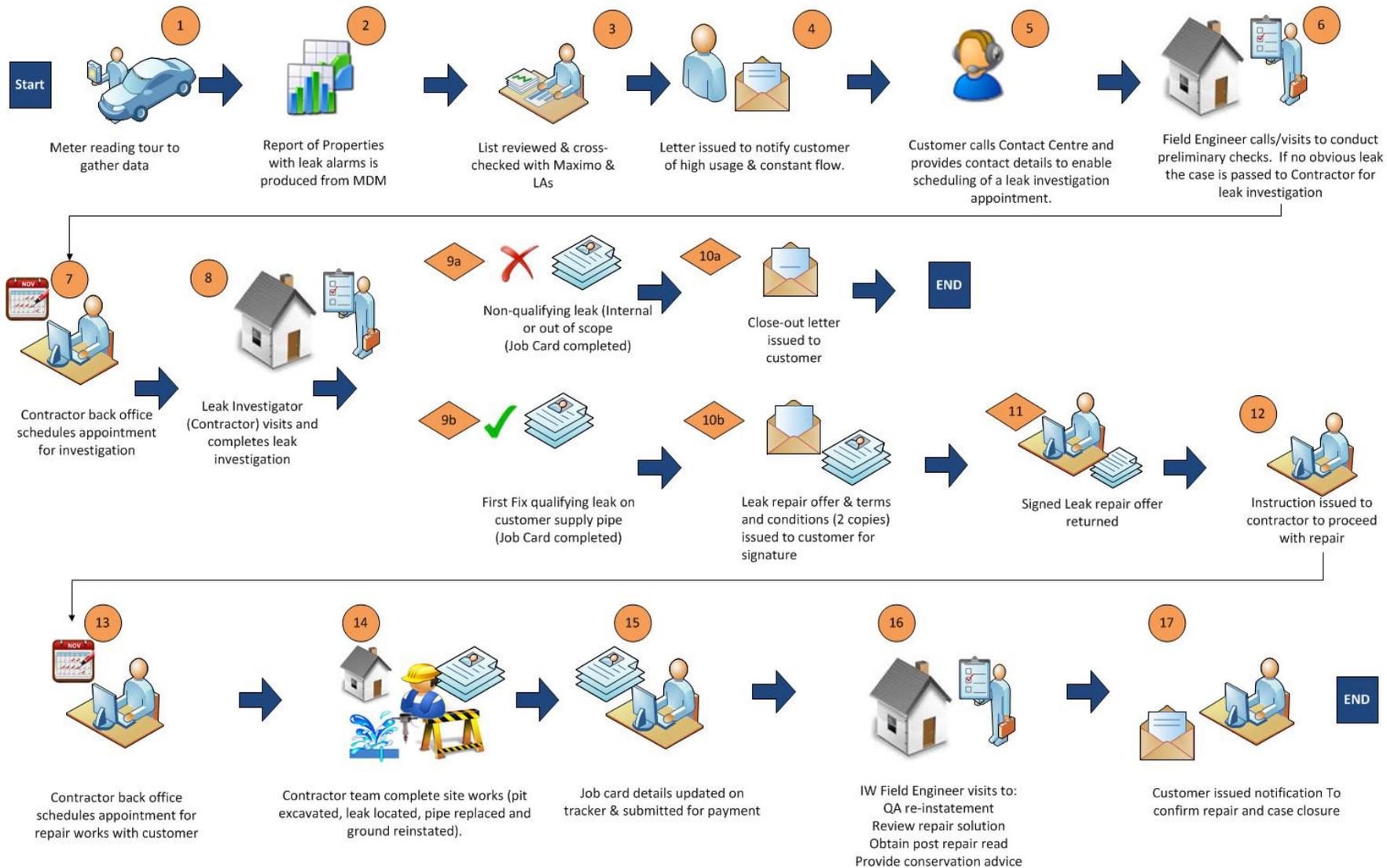
Where a qualifying leak was identified on the external supply pipework the customer was issued with a leak repair offer which contained the terms and conditions under which the repair would be completed. Where a non-qualifying leak was identified (internal to the property) the customer was issued with a letter to confirm that the leak was outside the scope of the repairs being undertaken. (Shown in diagram below)



Once the customer returned a signed copy of the leak repair offer to Irish Water, the case was updated and passed to the contractor to schedule a repair. An Irish Water Field Engineer was present on-site as repairs were planned and undertaken to ensure that the most appropriate solution was devised by the contractor and to address any issues which arose. Once the repair was completed, the supply pipe was tested to ensure that there were no further leaks on the external supply pipe.

An Irish Water Field Engineer completed a close-out report on the leak repair works and obtained a post repair meter reading to confirm that the leak alarm was no longer active and that consumption had returned to normal levels. This end to end process is illustrated overleaf.

First Fix Trial Works Customer Journey



5.4. Leak Investigations

There are two key components in this process which require high levels of customer interaction (1) leak investigation and (2) leak repair. The first of these, leak investigation is described below to provide an understanding of the work involved.

Many of the customers contacted had numerous questions around leakage, first fix and billing so the first activity completed in all cases by the crew was to explain the purpose of the visit and the process that would be carried out to identify the source of the leak alarm. It was noted that the greater the level of cooperation gained from the customer at this point, then the more likely that they might disclose historic problems or works undertaken which could help to identify possible causes of leakage.

The crew then proceeded to check whether the supply pipe from the internal stop valve (ISV) to the outside stop valve (OSV) held 100% of the water in it i.e. the meter should stop when the ISV is operated. If the pipe between the ISV and OSV was holding 100% of the water, then the outage was internal. Where this was the case, the investigators explained this to the customer. They would then request that the customer showed them all water based devices (taps, toilets, and water based appliances) in the property. The investigators then attempted to find the cause the internal leak/wastage. The purpose of this was that by the time the investigators finished the investigation that the customer had an indication of the location of any leak(s). In most cases, these could be easily managed with some professional plumbing advice.

Where the supply pipe between the ISV and OSV did not hold 100% of the water, the investigators then used a combination of a Pulse Wave Generator (PWG) and a Ground Microphone to determine the location of any leak, which could still be external or internal. The crew used the ground microphone to trace the pipework by listening for the pulsating sound produced. The crew worked together with one listening along the line of the pipe while the other turned the OSV on & off. The purpose of this technique is to hear the pipe “empty” and “with flow” at a number of points along the line. The area with the greatest noise indicated the location where

the water was forcing its way through a void in the pipe. The crew also traced other utility services, such as electricity and gas, as these are critical to the design of any proposed repair solution.

5.5. Leak investigation Challenges

A total of 380 customer engagements were completed during the pilot scheme period and these highlighted a number of challenges which need to be considered in the design of the enduring policy and solution.

- Approximately 68% customer response rate to initial notification letters. Reminder letters were issued where no response was received within 21 days which increased the response rate to 82%. Consideration is required on the appropriate action where the customer does not respond to multiple notifications.
- Customer responses were spread over an 8-week period – resulting in a drip-feed of work and multiple visits to the same area.
- Customer expectations – some customers perceived that since Irish Water identified the problem, then Irish Water caused it and are therefore responsible for fixing (irrespective of the location of a leak).
- Un-appointed house visits by Field Engineers achieved very low penetration rates due to customers not being at home – limiting the information gathered and efficacy of this activity;
- Difficulties were experienced in contacting some customers, particularly for rented accommodation where an agency had been used to complete the letting process.
- The schedule of investigations is determined by the customer's availability which makes clustering of work more difficult, resulting in increased travel time and inefficiencies. Missed appointments also resulted in unplanned contractor downtime.

- Access to ISVs (concealed behind walls, cookers, kitchen units) or not available
- Investigation taken to resolution as the customer expects a conclusion (~ 2hrs)
- Limits of acoustic detection methods – interference from traffic, echoes from service ducts, rain, surface types, low pressure & smaller leaks. Some investigations were required outside standard working hours to avoid noise interference
- Additional water based appliances (water coolers, ice-makers, filters) between ISV and meter add further complexity to investigations.
- Some customers were not willing to accept that a leak is internal/out of scope resulting in some complaints/aggressive behaviour.
- Some customers requested a report for their insurance company to support a claim.
- Locating leaks, particularly at joints/point of entry to house. These can result in a “dry hole” and an out of scope leak (under porch/other side of foundation).

Time taken

The time taken to complete leak investigations was recorded along with the travel time to provide a basis for estimating rates. The average total time per investigation is approximately 2 hours. It is expected that when volumes increase and greater clustering of work can occur that 6 investigations per day can be complete.

Snapshot of appointments scheduled week beginning September 9th

	Start Time	Duration	Travel distance	Travel Time
River Forest Leixlip	09:05	01:05	Start	0

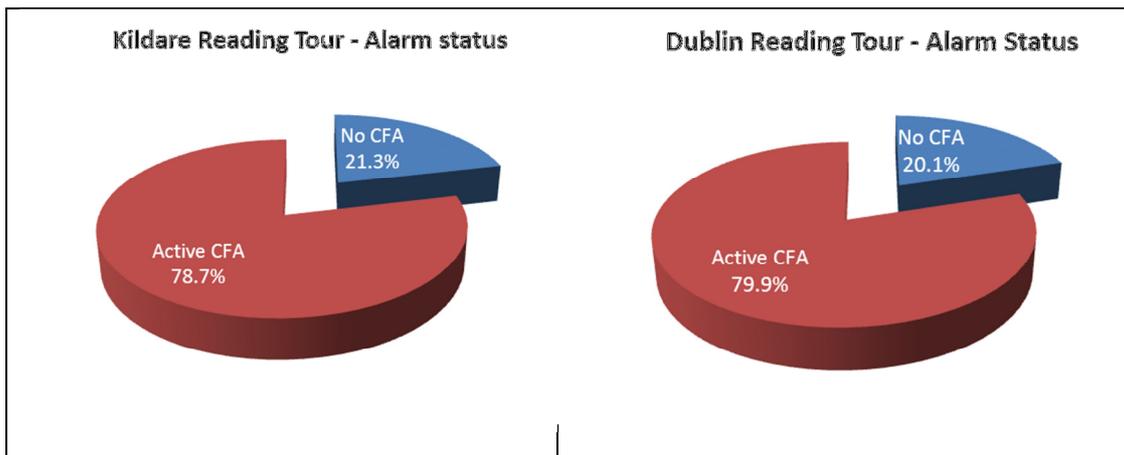
Lakelands Naas	10:55	00:45	28.8	40
The Grove Louisa Valley Leixlip	13:00	No Show	28.8	40
Willowbrook Primrose Gate Celbridge	14:45	00:45	6.4	10
The Elms Castletown Celbridge	18:00	01:45	44.4	50
Saint David's Terrace Naas	09:30	01:20	Start	0
Oak Glade Blessington Road Naas	11:00	01:55	3.0	10
Parklands Court Maynooth	13:40	01:20	23.8	35
Glen Easton Lawns Leixlip	15:50	01:00	8.2	12
Celbridge Abbey Celbridge	17:10	01:05	6.8	15
Rinawade Lawns Leixlip	18:30	01:20	7.7	20

5.6. Pilot Scheme Metrics

Sample Size

A total of 671 properties were identified for inclusion in the pilot scheme based upon active constant flow alarms (CFA) at the time of meter validation. Meter installation in the Kildare pilot scheme area began in September 2013 and in the Dublin pilot scheme area in November 2013. At the start of the pilot scheme in each area a meter reading tour was completed to identify the number of properties that still had an active constant flow alarm.

Overall 79.3% of properties still had active alarms (78.7% in Kildare and 79.9% in Dublin).



Both pilot scheme areas showed a high level of correlation between validation reads and billing reads. The difference in alarm status between the two reads is most likely attributable to the limitations associated with validation reads which are based over a very short time period and customer initiated actions to address leaks identified in the intervening period. A number of homeowners in the Kildare pilot scheme area confirmed that they had undertaken a repair during the period between installation and the pilot scheme commencement.

Removing the properties which no longer had an active CFA left a total target population of 532 properties. A notification letter was issued to each of these

properties (See Appendix 1 for sample) and customers were requested to contact Irish Water within 21 days. The overall initial response rate to these notification letters was 68.25%. There was a notable similarity between the response rate in the two pilot scheme areas with Kildare 68.25% and Dublin 68.22%.

Where no response was received after 21 days a reminder letter was issued and 43% of these generated a customer response. Overall between field visits and mail notifications 82% of customers contacted engaged in the process providing a sample of 436 properties; however this engagement occurred over an extended period of approximately 8 weeks.

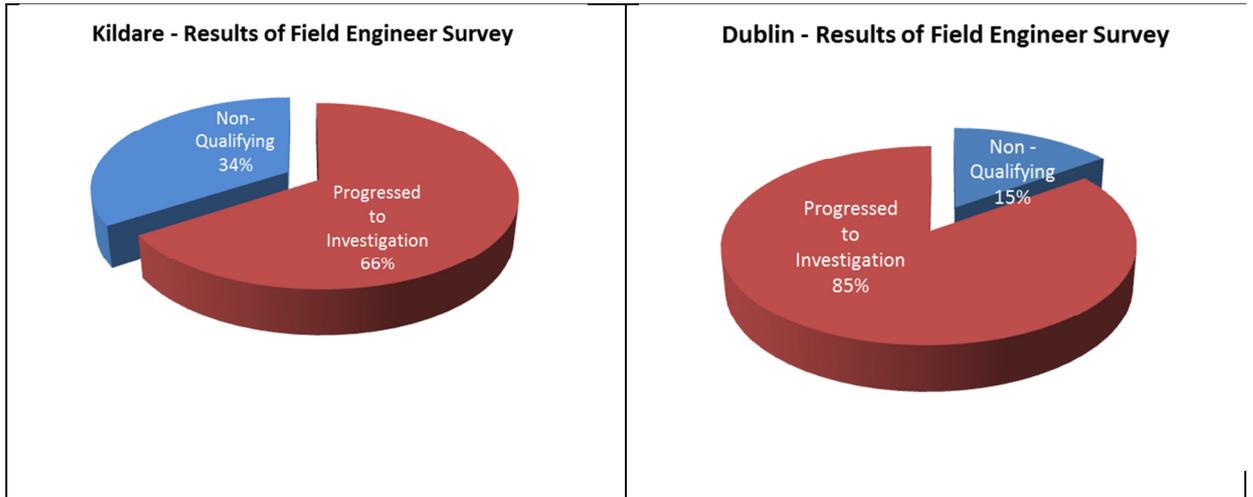
Screening Activities

The first step of the process involved an initial engagement by an Irish Water Field Engineer to screen out non-qualifying leaks. In Kildare, this was undertaken as an un-appointed field visit on a door-to-door basis. Although this did identify 100 non-qualifying cases for first fix due to the cause being internal to the property, it proved to be an inefficient and time consuming approach which would not be scalable for the enduring solution.

Therefore, screening activities in Dublin were conducted via telephone with the customers. Although this did not achieve the same level of engagement with the customers, it did identify 24 cases which were non-qualifying. This exercise was also used to develop a checklist of questions for the contact centre to enable them to work with customers to triage calls.

The main reason for properties being screened out from the process at this stage was due to internal plumbing issues, mainly faulty toilet cisterns and attic ballcocks resulting in constant filling. In most cases the customer could identify these simply by listening for the sound of constant flow of water in the house.

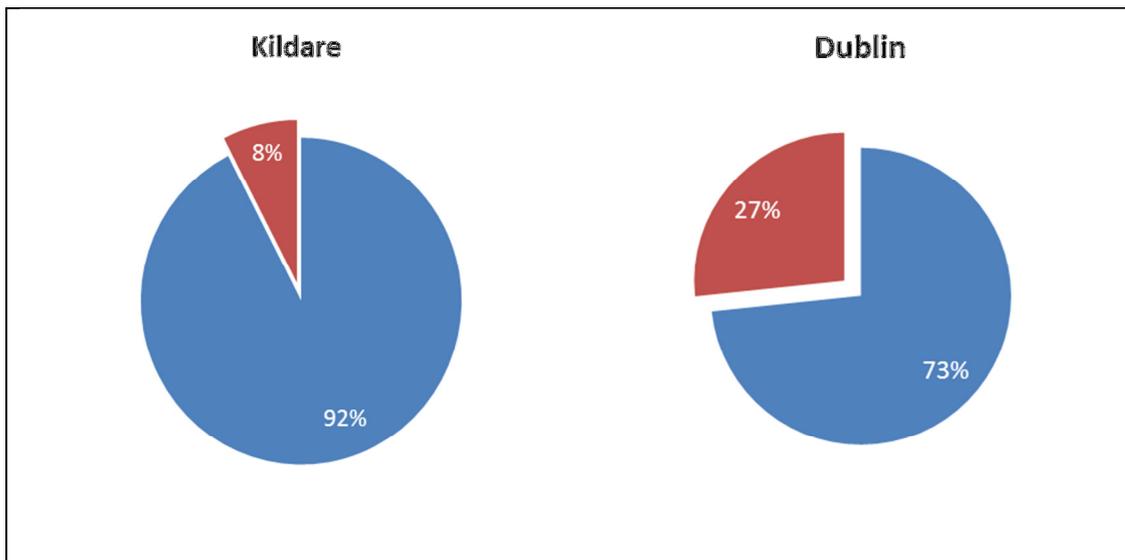
The graph below shows the proportion of properties that were categorised as non-qualifying due to internal wastage based upon a Field Engineer visit.



Where a cause for the CFA could not be identified at this stage it was passed to the contractor leak investigation team to schedule a survey.

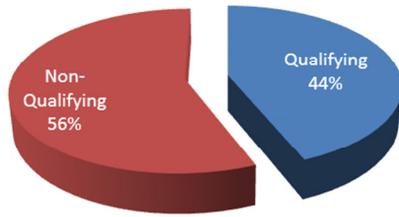
Leak Investigation

A total of 281 cases were passed to the contractor leak investigation crews, with 146 in Kildare and 135 in Dublin. Of these, an investigation has been completed in 92% of the Kildare cases and 73% in Dublin, giving a total of 234 completed leak investigations.

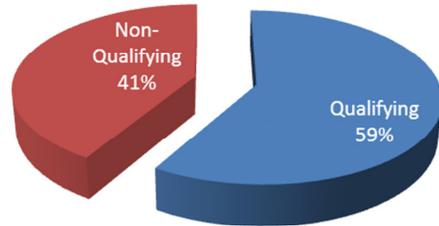


Of the leak investigations completed 44% in Kildare resulted in a qualifying leak being identified. In Dublin this conversion rate was significantly higher with 58.5% resulting in a qualifying repair. The higher conversion rate in Dublin was expected due to older supply pipes and the materials used copper and lead being more susceptible to corrosion. The pipe material in Kildare is 99% hydrodare which is modern plastic material.

Kildare - Leak Investigation Outcome



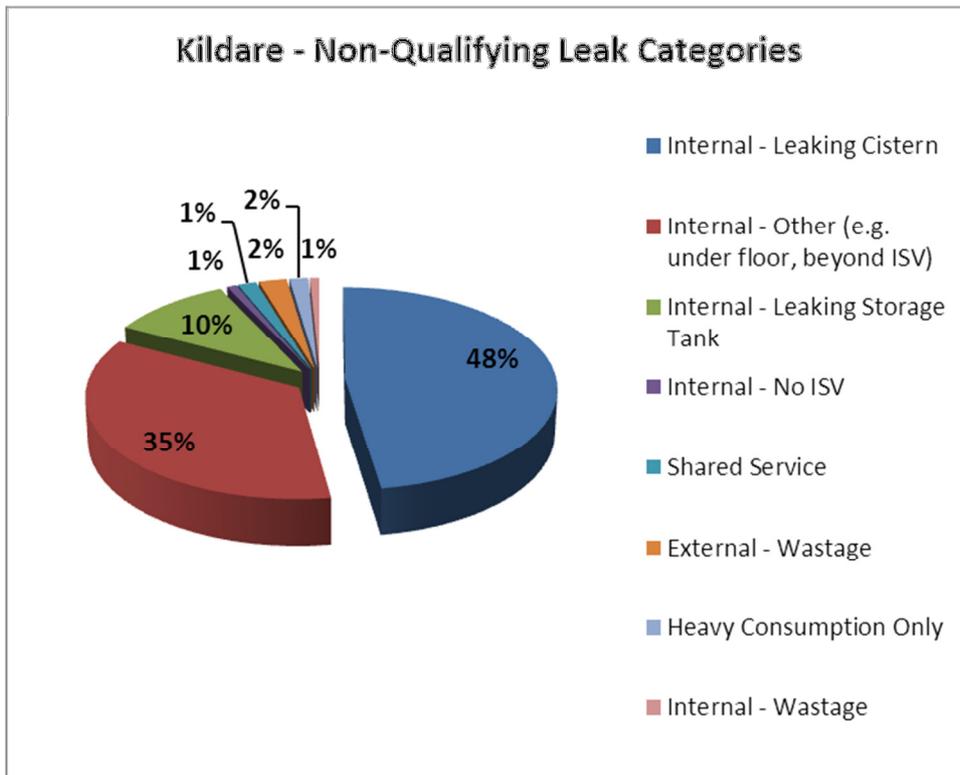
Dublin - Leak Investigation Outcome



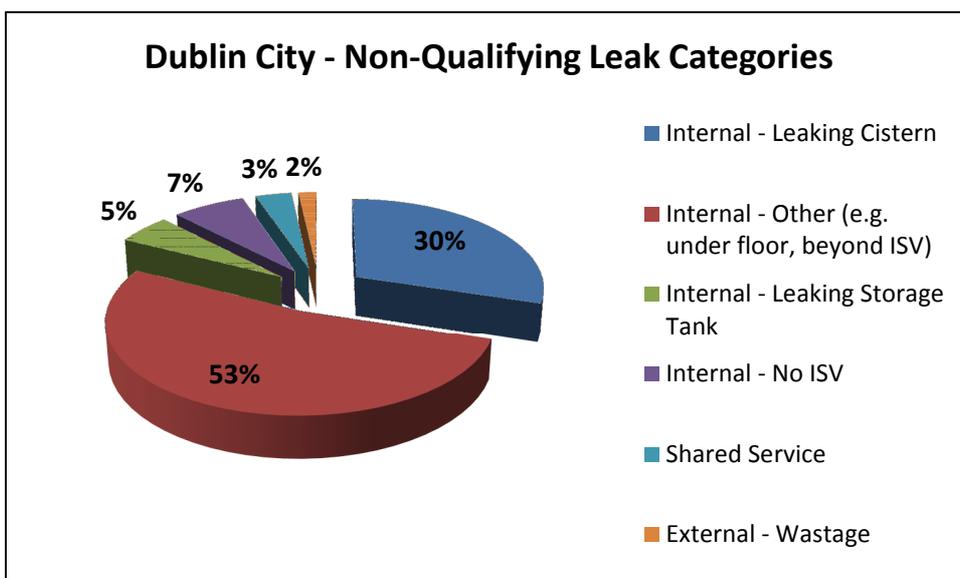
The table below provides a breakdown of the non-qualifying leaks by category. The volume of internal plumbing issues resulting in wastage was not anticipated and this is a significant finding from this pilot scheme.

Non-Qualifying Leak Category	Dublin City	Kildare	Total
Internal - Leaking Cistern	29.8%	47.7%	42.2%
Internal - Other (e.g. under floor, beyond ISV)	52.6%	35.2%	40.5%
Internal - Leaking Storage Tank	5.3%	10.2%	8.6%
Internal - No ISV	7.0%	0.8%	2.7%
Shared Service	3.5%	1.6%	2.2%
External - Wastage	1.8%	2.3%	2.2%
Heavy Consumption Only	0.0%	1.6%	1.1%
Internal - Wastage	0.0%	0.8%	0.5%
Total	100%	100%	100%

The graph below shows the breakdown of non-qualifying leaks in Kildare.



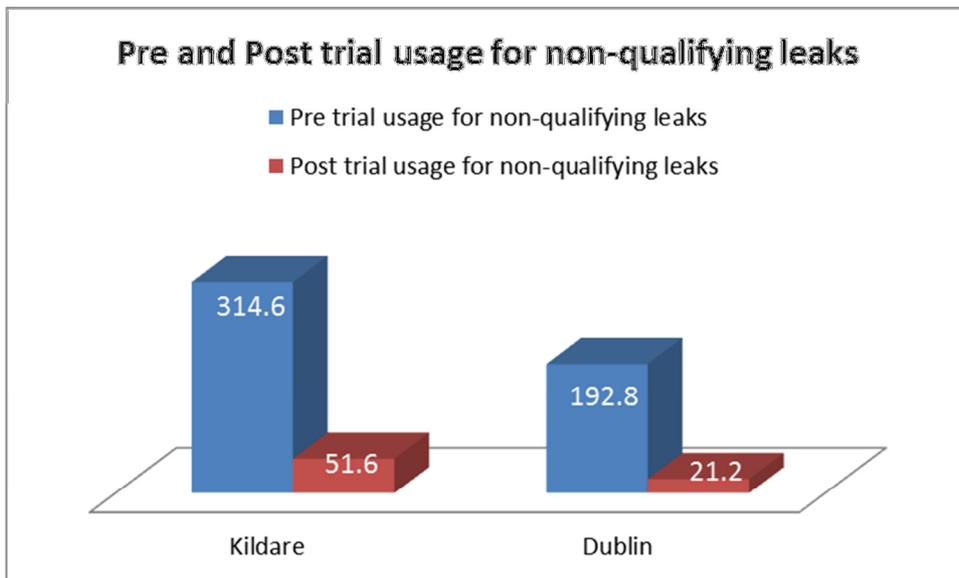
The graph below shows the breakdown of non-qualifying leaks in north Dublin.



Significantly, the many of these leaks required a relatively simple and non-intrusive fix – which challenges a commonly held perception that customer side leaks are pipework related. In addition, many of these leaks could have been identified by customers with appropriate support materials.

Notably, the volume of water attributable to properties with non-qualifying leaks is substantial with 314,600 l/day in Kildare and 192,800l/day in Dublin. If these properties are returned to an estimated “normal” average consumption of 325l/day as a result of the problem being identified for the customer this would result in water savings of 263,000l/day in Kildare and 171,000l/day in Dublin - a total saving of 434,600l/day.

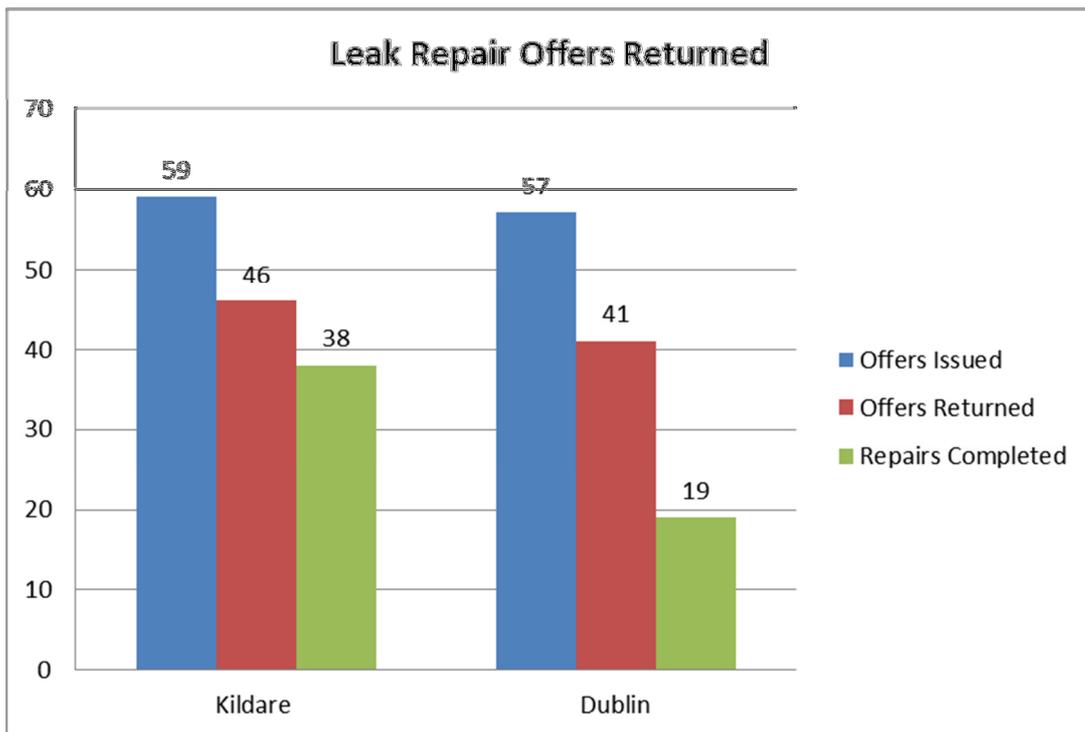
The graph below shows the expected reduction in water consumption associated with non-qualifying leaks following a customer initiated repair.



Leak Repair

Where a qualifying leak was identified the customer was then issued with a leak repair offer which contained the terms and conditions under which the repair will be completed. The customer was given 30 days to return a signed copy of the offer document. Return of a signed copy is a pre-requisite for a work instruction being passed to the repair crew.

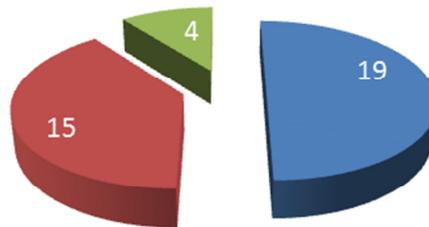
The graph below shows the pipeline of leak repair offers for each area. The leak repair offers in Kildare were issued earlier resulting in a higher number of responses and repairs completed.



A total of 38 repairs were undertaken in Kildare, the breakdown of the outcomes is shown in the graph below. The volume of water associated with the 34 repaired leaks in Kildare was 273,400l/day. It is estimated that by returning each property to an assumed normal usage of 325l/day results in a water saving of 261,000l/day, equivalent to 7,600l/day per property.

Kildare - Breakdown of Repairs

■ Local Repair ■ New Service ■ Reclassified as Internal (Non-Qualifying)



In Kildare, 50% of leaks were resolved through a local repair solution. This was typically the option used where upon excavation the pipework appeared to be in good condition but a fitting or joint had failed. Replacement of the fitting was deemed sufficient to resolve the leak.

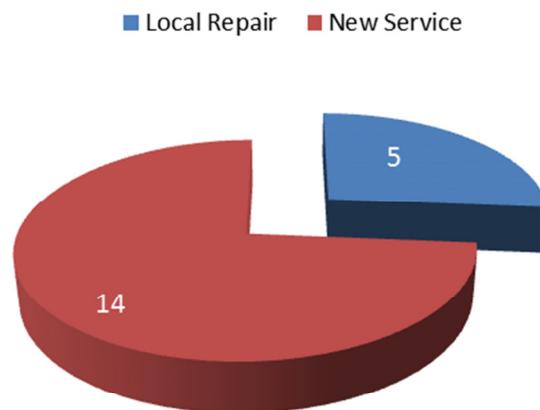
In 39.5% of the repairs undertaken a new service pipe was fitted. This was largely achieved by moling a new channel for the supply pipe as this is a less intrusive option and minimises the amount of damage to surfaces and re-instatement required. The average length of supply pipe replacement was 11.1 metres.

In 4 cases (11%) the repair crew undertook excavations at the designated point but were unable to locate a leak resulting in a “dry-hole”. In all of these cases the leak was identified as being located close to the property/foundation wall. In each of these cases the leak was subsequently confirmed to be on the internal side of the foundation but the sound of the leaking water hitting the foundation wall travelled externally resulting in an area of activity being detected externally. These false soundings are a feature of acoustic leak detection as there can be a number of

causes of noise transference (pipe ducting, underground obstacles). In each of these cases, the customer was informed that the leak was internal and therefore out of scope. This is a risk that needs to be highlighted to customers prior to undertaking repair works due to the potential for customer complaints.

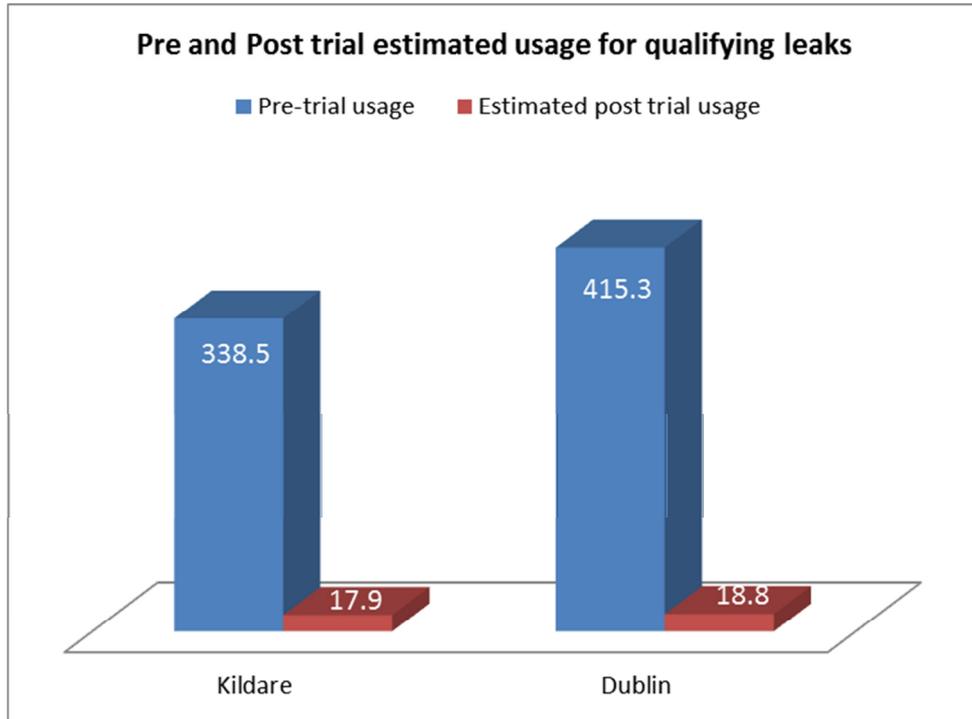
In Dublin, a total of 19 repairs were completed and the breakdown of the repair type is shown below. The volume of water associated with these 19 repaired leaks was 193,400l/day. It is estimated that by returning each property to an assumed normal usage of 325l/day results in a water saving of 187,200l/day, equivalent to 9,850l/day per property.

Dublin - Breakdown of Repairs



The composition of pipes in Dublin area has a much higher proportion of metal pipework e.g. copper and lead. These pipes are older and are therefore more likely to have damage and wear and tear. In these situations a full service replacement was determined to be the best solution to resolve the leak and protect against future occurrences. The average length of supply pipe replacements in the Dublin area was shorter at an average of 8.4 meters.

The total water estimated water saving associated with the completed repairs of qualifying leaks in both Kildare and Dublin is 448,000l/day.



Timings

One of the significant learnings from the pilot scheme was the time taken by customers to respond to notifications and to agree to a scheduled leak investigation appointment date. The average time from notification to completed leak investigation was 30.7 days. This duration was largely due to delays in customers responding to the initial notification letters and then scheduling an appointment approximately 10 days from the contact date.

On average the time taken from notification to a completed repair was 47 days, implying an additional 16 days from a confirmed qualifying leak to a completed repair. This included the time to issue the leak repair offer, the customer returning a signed copy and scheduling of a repair appointment. This suggests that once a problem is confirmed that customers are motivated to achieve a quick resolution.

Summary Pilot Scheme Metrics

The table below provides a summary of the key metrics from the pilot scheme as of 24th October. A number of leak investigations and repairs remain to be completed and it is planned to complete these during the remainder of 2014.

Description	Kildare	Dublin	Total
No. of properties with active CF Alarms	274	258	532
Customer responses	230 (83.9%)	207 (80.2%)	437
Surveys/Investigations	222	158	380
No. of qualifying leaks	59	58	117
Estimated water saving from repair of qualifying leaks (m ³ /day)	320.6	396.5	717.1
Number of non-qualifying leaks	152	65	217
Estimated water saving from customer repair of qualifying leaks (m ³ /day)	263	171.6	434.6
Estimated total water savings (m ³ /day)	583.6	568.1	1,151.7

Note: Estimated water savings are based on an assumed usage of 325 litres/property per day

5.7. Key Learnings

A number of key learnings were obtained from the pilot scheme which will be incorporated into the first fix scheme to be implemented in 2015.

- The pilot scheme revealed that a significant proportion of leaks were related to internal plumbing or wastage issues and therefore did not qualify for a first fix repair.
 - **Learning** - Process revised to include customer internal leak check prior to request for a leak investigation to eliminate internal non-qualifying leaks.
 - **Learning** – Potential for significant volumes of water loss due to internal leaks, all customers to be notified where there is a constant flow alarm.
- Customer education/support is critical in eliminating internal plumbing issues, as once guided many customers could identify the causes of leakage.
 - **Learning** - Customer notification materials revised to include guidance on internal leakage. Additional support materials to be included on Irish Water website.
- Communicating the correct scope and limits of the scheme is critical to managing disputes over responsibility for repairs and possible complaints.
 - **Learning** - Customer notification materials revised to include qualifying pipework diagram, this will also be included on the Irish Water website.
- Leak detection is complex and there are several underground factors which can contribute to difficulties in precisely locating leaks. This can result in “dry-holes” at the time of repair with potential for customer complaints.
 - **Learning** – Leak repair offer documentation updated to highlight this risk.
 - **Learning** – Contractor training materials updated to ensure that this risk is communicated effectively to customers in advance of works.
- Grouping of work into an efficient schedule is complex as customer availability to provide access determines when works can be undertaken.
 - **Learning** – Ensure notifications are issued in sufficient volumes to enable geographic clustering of work.
 - **Learning** – Longer lead times need to be factored into resource plans.
 - **Learning** – Rules required for number of missed appointments permitted
- Prompt customer close-out required to provide confirmation that constant flow alarm is no longer active after repair.
 - **Learning** – Process revised to include Field Engineer post repair inspection and meter read.

- o **Learning** – Additional customer communication material required.

5.8. Pilot Scheme Imagery

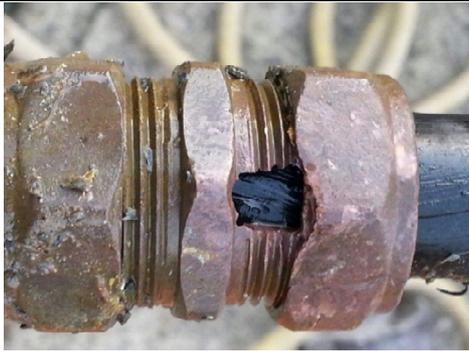
<p>Investigation – Adapted standpipe for PWG</p> 	<p>Leak repair - Setup</p> 
<p>Moling a new service</p>	<p>New PE Supply Pipe Fitted</p>



Leak - Poor Quality Fittings



Leaks – Poor Quality Plumbing



Leak - Poor Quality Joint

Leak - Poor Quality Plumbing



Leak on Copper Pipe

Leak on Lead Pipe



Maynooth - Pin-hole Leak (1.4m³)



Fine Spray 1.4m³ Leak – Rubble Infill



Leak on copper fitting - Leixlip



Moled solution – launch and reception pits



Leak at point of entry



Specialist surfaces



Leak on existing DCC Boundary Box



Pressure Test – Post Repair



6. Implementation

6.1. Implementation

Based on the experience gained from the pilot scheme a number of modifications have been made to the pilot scheme works process, which is shown overleaf. Based on the high proportion of internal leaks detected customers will be provided with advice to assist with them in detecting internal leaks. It is assumed that 20% of constant flow notifications will not require an Irish Water investigation due to the customer being able to identify the source of the issue. Materials to highlight the issue of customer side leakage will also be added to the Irish Water website to encourage customers to be proactive in addressing leakage.

Under the First Fix Leak Repair scheme it is estimated that approximately 77,000 Constant Flow Notification letters will be issued to Customers in the period to the end of 2016. It is expected that this will result in the completion of over 55,000 leak investigations. Whilst it is only possible to estimate the proportion of cases that will be found to have leakage on the External Supply Pipe (which will convert to returned leak repair offers), based on the limited sampling from the Pilot Scheme it is estimated that approximately 23,000 repairs will be completed under the 'repair' phase of the First Fix Leak Repair scheme.

Leveraging the existing resources and infrastructure in place for the metering programme reduces the overall setup costs for the First Fix scheme. Taking these savings into account is estimated that additional resources to inspect, manage and administer the delivery of the scheme will account for €4.6m (9%) of expenditure. VAT and other charges are estimated to account for €5.3m (11%) of expenditure.

Key Risks

A number of key risks could impact upon the estimated categories of expenditure:

- The estimated expenditure breakdown has been modelled based on the experience gained during a limited pilot scheme in two areas. Variations in pipe composition, ground conditions and house type could result in significantly different levels of qualifying leaks.

- A high level of customer engagement has been assumed at 90%. The response rate in the pilot scheme 82% was achieved against the planned introduction of volume based charging so it is unclear what impact (if any) the capped charging model will have.
- The average response time of customers following notification will have impact upon the number of investigation and repair crews that can be sustained and the overall volumes delivered. The model assumes a lag-time of 21 days between notification and response time.

Appendix 3 – First Fix Leak Repair Scheme Offer Terms & Conditions

IRISH WATER

FIRST FIX SCHEME LEAK REPAIR OFFER

TERMS AND CONDITIONS



First Fix Leak Repair Scheme Offer incorporating Terms and Conditions

For the purposes of these Terms and Conditions:

“Dwelling” means a building or part of a building used by a person as his or her place of private residence (whether as his or her principal place of residence or not).

“External Supply Pipe” means the water supply pipework serving the Property, which pipework runs between the point that is (i) 225mm outside the boundary to the Property and the point (ii) just before such pipework enters the Dwelling (the latter point being determined at Irish Water’s discretion, acting reasonably). External Supply Pipe excludes:

external plumbing systems, standpipes, irrigation systems or other external water supplies; and/or

pipework that exceeds 15 metres in length; and/or

pipework that runs under buildings or structures on the Property; and/or

pipework with an inside diameter exceeding 25 millimetres.

“First Fix Leak Repair Scheme Offer” means the offer by Irish Water to carry out Works on the External Supply Pipe, subject always to acceptance of these Terms and Conditions.

“Property” means a Dwelling and includes the curtilage to that Dwelling.

“Works” mean all of the works of every kind (both temporary and permanent) including all investigatory, survey (including the taking of photographs), design, excavation, reinstatement, resurfacing and making good works which, at Irish Water’s discretion, are necessary for, or incidental to (either directly or indirectly) the investigation, design, execution and completion of first fix leak repair works to the External Supply Pipe (which works may, on occasion, result in the complete replacement of the External Supply Pipe or a section of it), including the remedying of any defects.

Introduction

Under the Water Services Act 2007, owners are required to ensure that, amongst other things, the water distribution system (pipework and related fittings) within their Property is maintained in such condition, as to ensure that water leakage does not occur. Owners are therefore responsible for any remedial repairs and renewals required to the pipes within their Property.

However, reducing leaks and conserving water is important for Irish Water. Therefore, notwithstanding that such pipework is not its responsibility, Irish Water intends to assist owners who are customers in addressing leaks in the External Supply Pipe. It will do so by identifying and, where possible, repairing leaks in such pipework free of charge.

The owner's Property has been identified as potentially having a leak on the External Supply Pipe. Irish Water is now willing, subject to these Terms and Conditions, to assist the owner with the repair of that leak. Irish Water requires the owner's confirmation, acknowledgment and acceptance of these Terms and Conditions prior to undertaking any Works. The owner may accept the First Fix Leak Repair Scheme Offer (and these Terms and Conditions) by signing and returning the attached 'Acceptance Form' to Irish Water. If the owner does not accept this offer, then Irish Water reserves its rights under the Water Services Acts 2007-2014 to require the owner, at the owner's cost, to repair the leak (insofar as it is the owner's statutory responsibility to do so).

Irish Water shall not be carrying out any Works or repairing any internal leaks within the Dwelling. Subject to these Terms and Conditions, any First Fix Leak Repair Scheme Offer made by Irish Water shall be limited solely to leaks in the External Supply Pipe. Owners should note that it may not be possible to locate or repair any or all of the leaks on the External Supply Pipe and thus no guarantees can be provided by Irish Water in this regard.

1. ACCEPTANCE OF FIRST FIX LEAK REPAIR SCHEME OFFER AND DATE FOR ACCESS

- 1.1 Any reference to Irish Water in these Terms and Conditions and the attached acceptance letter(s) shall, unless the context requires otherwise, be read and construed as a reference to any contractor(s) that Irish Water has engaged to carry out the Works.
- 1.2 The making or issue of a First Fix Leak Repair Scheme Offer in respect of any Property is, at all times, a matter for the discretion of Irish Water.
- 1.3 Following receipt of a First Fix Leak Repair Scheme Offer from Irish Water, the owner shall have a period of 30 business days to accept such an offer by completing the attached Acceptance Form and returning it to Irish Water. Following acceptance of the First Fix Leak Repair Scheme Offer the owner shall agree with Irish Water the date for permitting access to Irish Water to carry out the Works. If the owner does not agree to the first date for access as proposed by Irish Water, or such alternative date(s) as are proposed by Irish Water (acting reasonably) then Irish Water may revoke its First Fix Leak Repair Scheme Offer. If a suitable date for access to the Property has not been agreed with the owner within sixty (60) days of the return of the attached Acceptance Form then the First Fix Leak Repair Scheme Offer shall be automatically revoked and withdrawn.
- 1.4 Even though the First Fix Leak Repair Scheme Offer is limited to pipework which does not exceed 15 metres in length, Irish Water may in its discretion (and taking into account the costs associated with the extension of the First Fix Leak Repair Scheme Offer) elect to extend such First Fix Leak Repair Scheme Offer to pipework serving the Property which exceeds 15 metres. In such circumstances the definition

of External Supply Pipe shall be deemed to include pipework that exceeds 15 metres in length.

2. RIGHT OF ACCESS AND AUTHORITY TO PERFORM WORKS

The owner permits (and shall procure that each occupant of the Dwelling shall permit) Irish Water to have access to the owner's Property to perform the Works on the date(s) and time(s) as agreed with Irish Water.

3. PREPARATORY WORK TO ALLOW THE WORKS TO BE CARRIED OUT

Prior to commencing the Works, the owner will be responsible for removing plants, shrubs, fixtures and any other object(s) which may, directly or indirectly, obstruct or cause damage to, or be damaged by, the Works. The owner agrees that Irish Water will not be liable for or in connection with any loss or damage caused to such objects or by any removal activities associated with such objects.

4. OWNER REPRESENTATIVE

The owner agrees that, during the carrying out of the Works (including the remedying of any defects pursuant to clause 8 hereto), an adult representative of the owner will be present at the Dwelling to turn the water fittings on and off as necessary.

5. EXCAVATIONS AND RESURFACING

General

The following provisions shall apply to the performance of the Works and any reinstatement works carried out as part of the Works. Irish Water will use reasonable endeavours to procure that the Works are performed efficiently but owners shall accept that the Works (including any related reinstatement, resurfacing and making good works) may not be completed in a single business day. As part of the Works Irish Water shall, as a matter of course, be required to make excavations in the ground in order to access the External Supply Pipe. After excavations have been made Irish Water will, in due course, carry out reinstatement, resurfacing and making good Works. In carrying out reinstatement, resurfacing and making good Works an exact match to the surface that was in place prior to the excavation Works cannot be guaranteed and Irish Water will only reinstate the surface area that has been directly excavated as part of the Works. The agreed scope and nature of reinstatement, resurfacing and making good works to be carried out as part of the Works when the External Supply Pipe is laid beneath (a) Natural Ground, or (b) Tarmac or Concrete or a (c) Modular Surface, is detailed in 5(a), 5(b) and 5(c) below.

(a) "Natural Ground"

means a surface that is composed of rough and/or unmade ground, grass fields, grass verges, agricultural land, cultivated grass, allotments, cultivated gardens (including lawns), gravel and/or hard-core surfaces and cleared demolition ground excepting any surface that is determined by Irish Water to have a particularly specialist or distinctive colour, texture or surface finish. As part of the Works, any trench that has been excavated in Natural Ground will be backfilled with material from the excavation up to the surface level, except where the trench is within one meter of the paved edge of a road, in which case the excavated area will be backfilled with imported materials. Irish Water will not accept liability for loss or

damage resulting from the removal or re-planting of plants or grasses or other natural features.

(b) “Tarmac or Concrete”

means a surface that is composed of concrete whether mass or reinforced, "Bitmac", asphalt, tarmacadam or similar surface products excepting any surface which is determined by Irish Water to have a particularly specialist or distinctive colour, texture or surface finish. As part of the Works any trench that has been excavated in Tarmac or Concrete will be backfilled with imported material and surfaced with tarmac or concrete (or, in Irish Water’s discretion, an alternative surface material). It is acknowledged and agreed by the owner that on a Tarmac or Concrete surface, the area of new tarmac or concrete over the excavated area may create a patch effect and may be of a different colouring, texture or finish to the surface that was in place before the Works were carried out. Irish Water will not re-surface (or accept liability for the costs of resurfacing) any area of Tarmac or Concrete outside of that direct area which has been subject to excavation for the purposes of the Works.

(c) “Modular Surface”

means a surface that is composed of pre cast concrete block paving (including slabs/blocks), slabs and cobble lock (or equivalent), with each unit or piece of such surface being a ‘Module’, excepting any surface which is determined by Irish Water to have a particularly specialist or distinctive colour, texture or surface finish. As part of the Works any trench that has been excavated in a Modular Surface will be backfilled with imported material and the Modular Surface will, in so far as it is reasonably practicable to do so, be relayed in a safe and level manner (reusing the Modules that were taken up as part of the Works). Irish Water will not accept any liability for any Modules that are damaged or broken during the course of the carrying out of the Works. If some of the individual Modules are broken during the course of the Works then, at Irish Water’s discretion during the carrying out of reinstatement Works, those Modules will be replaced with either (a) other type modular units which may not match or replicate (in colour, size, material or shape) those Modules that were in place prior to the Works commencing or (b) concrete infill (for reasons of safety).

5.1. For the purposes of these Terms and Conditions and the Works the term **‘Specialist Surface’** means any surface which is not Natural Ground, Tarmac or Concrete or a Modular Surface. In circumstances in which a First Fix Leak Repair Scheme Offer is issued by Irish Water and accepted by an owner in relation to External Supply Pipe that is laid under a Specialist Surface, the owner confirms and agrees to take full responsibility and liability for all reinstatement, resurfacing and making good Works in respect of such Specialist Surface. In such circumstances clause 5.1.1 of these Terms and Conditions will apply to those Works:

5.1.1. **Specialist Surfaces: Owner to carry out reinstatement, resurfacing and making good works:** In these circumstances, the term “Works” (and the execution and completion of the Works) in these Terms and Conditions shall be read and construed as if any references to reinstatement, resurfacing and making good works relate only to the provision of backfill to the excavated area up to the surface level, together with a temporary finish (which will not be the same as the finish that was in place prior to the Works being carried out). All responsibility and liability for any further or additional re-instatement, re-surfacing or making good works in respect of

the Specialist Surface will rest with the owner. The agreement of the owner in relation to the carrying out of re-instatement, resurfacing and making good Works on the Specialist Surface will be specifically recorded on the attached Acceptance Form. The owner acknowledges and agrees to be solely and entirely responsible for the timely execution and completion of all such further reinstatement, resurfacing and making good works (including all of the costs thereof).

- 5.2. The owner agrees that to return the affected area to its original condition, especially for Specialist Surfaces, the owner may need to arrange for further work to be carried out by third parties. Irish Water accepts no liability in connection with such further work, including the costs of carrying out such further work and/or the costs of associated materials.

6. LIMITATION OF LIABILITY

- 6.1. Other than in respect of (a) death or personal injury (and nothing in these Terms and Conditions seeks to limit the liability of Irish Water in the event of death or personal injury attributed to Irish Water) caused by the carrying out of the Works or (b) the liability of Irish Water as described in clause 6.2 below, the owner agrees that Irish Water's sole liability and the owner's sole remedy in connection with the proposed Works shall be the carrying out of the Works by Irish Water plus the remediation of any defects in such Works in accordance with clause 8 below. The following provisions of this clause 6 are in addition to and not intended to undermine the limitations set out in this clause 6.1.
- 6.2. The owner agrees that Irish Water will not be liable for any loss or damage in relation to the Property arising from, or in connection with, the carrying out of the Works (including the remediation of defects) except to the extent that such loss or damage arises from the negligence of Irish Water.
- 6.3. The owner agrees that Irish Water will not be liable for any loss (including costs) or damage caused during the period while the owner is waiting for the Works to be carried out or where it is not possible to carry out the Works (either at all or in their entirety).
- 6.4. Unless it relates to the work required to remediate a defect for which Irish Water is responsible under clause 8 below, the owner agrees that Irish Water will not be liable for any loss or damage after the Works are carried out (including for example (but without limitation) settlement of the ground which is caused by the ground drying out because any leak has stopped).
- 6.5. The owner agrees that Irish Water will not be liable for any direct, indirect or consequential loss or damage, including loss of use, economic loss (including loss of profit or loss of revenue), or additional cost.
- 6.6. The owner agrees to indemnify Irish Water against any and all claims in connection with Irish Water's entry on to the Property (or any neighbouring property to which access is required) for the purposes of carrying out the Works (including the remediation of defects), except in respect of any valid and proper claims that the owner is entitled to make against Irish Water under these Terms and Conditions.
- 6.7. Irish Water does not warrant or guarantee that the Works to the External Supply Pipe have repaired or will repair all of the leaks within the pipework on the owner's Property (including, for example, those leaks on pipework within the Dwelling) or that the Works will reduce the owner's water consumption.
- 6.8. Irish Water shall not be liable if it is unable to carry out any its obligations pursuant to a First Fix Leak Repair Scheme Offer due to industrial disputes or any other cause outside the control of Irish Water, including but not limited to (a) acts of God, explosion, flood, lightning, tempest, fire or accident; (b) war or threat of war,

sabotage, riot, protest, insurrection, civil disturbance or disorder; (c) acts, restrictions, regulations, laws (including by-laws), prohibitions or measures of any kind on the part of any governmental authority; (d) import or export regulations or embargoes; (e) defaults of suppliers, contractors or sub-contractors; (f) any act or omission of any nature whatsoever on the part of the owner or an occupier of the Dwelling; (g) any act or omission of the owner or occupier of any neighbouring property or land to which access is required for the purposes of the Works.

6.9. Nothing in this clause is intended to exclude Irish Water's liability to the extent Irish law prohibits the above limitations and exclusions of liability from applying.

7. THIRD PARTY INVOLVEMENT

7.1. As part of the Works the owner agrees to procure that each occupier of the Dwelling shall not restrict the access of Irish Water to the Property and shall use all reasonable endeavours to assist Irish Water to get access to any neighbouring property where necessary. Notwithstanding the generality of the foregoing, if access to a neighbouring property (or properties) is required in order for the carrying out of the Works then the owner will procure that the consent of the owner of each such neighbouring property is obtained in advance of the Works commencing (in a form that is acceptable to Irish Water). If access to the Property (or any neighbouring property) is restricted or impeded in any manner (either by the owner or a third party) or if the required consent in relation to access to any neighbouring properties is not obtained and provided to Irish Water 7 days prior to the Works commencing then Irish Water, at its discretion, shall be entitled to revoke the First Fix Leak Repair Scheme Offer in its entirety and Irish Water will be under no obligation to carry out any Works in respect of the Property. In such circumstances (and without prejudice to clause 6.3 above) the owner acknowledges and agrees that Irish Water shall have no liability whatsoever to the owner either in respect of (a) the leak or (b) the failure to carry out any Works.

7.2. If, after commencement of the Works but prior to completion, access to the Property (or any neighbouring property) is restricted or impeded in any manner (either by the owner or a third party) then Irish Water will be under no obligation to carry out any further Works in respect of the Property (including re-instatement Works). In such circumstances (and without prejudice to clause 6.3 above) the owner acknowledges and agrees that Irish Water shall have no liability whatsoever to the owner either in respect of (a) the leak or (b) the failure to carry out any further Works (including re-instatement Works). In addition the owner acknowledges and agrees to be solely and entirely responsible for the timely execution and completion of any necessary reinstatement, resurfacing and making good works (including all of the costs thereof) and hereby agrees to indemnify Irish Water in relation to any and all losses, damages, costs, claims or liabilities that arise from, or are related to, the owner's failure to carry out (or arrange for the carrying out) of any (or any appropriate) re-instatement, resurfacing or making good works.

8. IF THE LEAK REPAIR IS DEFECTIVE, NO LEAK IS DETECTED OR THERE IS AN INTERNAL LEAK

8.1 If a defect occurs in the Works within a 12 month period following the completion of such Works (the date for completion being the date on which Irish Water's contractors notify Irish Water of the completion of the Works), then, subject to clause 8.2, Irish Water will procure the remediation of the relevant defect.

8.2 If the defect in the Works is due to the material used by Irish Water as part of the Works (as opposed to the manner in which the Works were carried out), then the defect will only be repaired if the material or part which is defective is still under warranty (which warranty covers the entirety of the costs of Irish Water in remediating such defect).

8.3 Irish Water does not warrant that, following acceptance of a First Fix Leak Repair Scheme Offer, a leak on the External Supply Pipe will be located. If Irish Water commences excavation works and, after a reasonable period of time, no leak on the External Supply Pipe is detected or an 'Internal Leak' (as defined below) is detected, the provisions of clause 8.3.1 or 8.3.2 (as applicable) will apply:

8.3.1 **No Leak detected:** Irish Water may stop excavation work and carry out reinstatement, re-surfacing and making good works (such reinstatement, re-surfacing and making good works to be carried out pursuant to these Terms and Conditions). In such circumstances Irish Water is under no obligation to carry out any supplemental or secondary works in order to locate a leak on the External Supply Pipe.

8.3.2: **Internal Leak:** If Irish Water determines that a leak is located on the pipework within the Dwelling (an "Internal Leak") then Irish Water may stop excavation works and carry out reinstatement, re-surfacing works and making good works (such reinstatement, re-surfacing and making good works to be carried out pursuant to these Terms and Conditions). In such circumstances Irish Water is under no obligation to carry out supplemental or secondary excavation works in order to locate a leak on the External Supply Pipe or to carry out any supplementary or secondary works to investigate and/or repair an Internal Leak.

8.4 This clause 8 is in addition to and does not detract from any existing statutory rights which the owner may have.

9. NO DEROGATION FROM STATUTORY RESPONSIBILITIES

9.1 The owner acknowledges and accepts that the carrying out of the Works by Irish Water does not limit or reduce the obligations and duties that are imposed on owners by the Water Services Acts 2007 - 2014 (including those which relate to the External Supply Pipe).

10. SEVERABILITY

All of the provisions contained in these Terms and Conditions are distinct and severable, and if any provision is held or declared to be unenforceable, illegal or void in the whole or in part by any court, regulatory authority or other competent authority it will, to that extent only, be deemed not to form part of these Terms and Conditions, and the enforceability, legality and validity of the remainder of these Terms and Conditions will not in any event be affected.

11. DATA PROTECTION

The owner acknowledges that in order for Irish Water to carry out Works, it may be necessary for Irish Water to collect and use data relating to the owner. Irish Water shall comply with all applicable laws, including the Data Protection Acts 1988 and 2003, and data protection obligations in respect of such data. The owner hereby consents to Irish Water collecting and processing such personal data as is necessary for the performance by Irish Water of Works as contemplated by these Terms and Conditions, and acknowledges that this will include allowing the contractors to use such personal data in connection with carrying out of the Works.

12. DISPUTE RESOLUTION

- 12.1 To the extent that an owner has a complaint, then the complaint shall be dealt with, in the first instance, under the complaint handling provisions set out in the Irish Water Domestic Complaint Handling Code of Practice. If the processes and procedures outlined in the Domestic Complaint Handling Code of Practice have been exhausted and any complaint made by the owner remains unresolved then the complaint shall be dealt with pursuant to Section 8 of the Water Services Act 2014 and the procedures published by the Commission for Energy Regulation (the "CER") pursuant thereto (subject to the CER providing a dispute resolution service in relation to the particular complaint).
- 12.2 In all other circumstances (and subject to the owner exhausting the dispute resolution procedures detailed in clause 12.1 of these Terms and Conditions) a dispute between the parties may be referred by either party to the Irish Courts in which case the owner and Irish Water agree to submit to the exclusive jurisdiction of the Irish Courts as regards any such dispute.

13. ENTIRE AGREEMENT

- 13.1. These Terms and Conditions and the Acceptance Form constitute the entire agreement and understanding of Irish Water and the owner and supersedes any prior representations, warranties or arrangements relating to the Works.
- 13.2. No variation of these Terms and Conditions shall be effective unless made in writing and executed by authorised representatives of Irish Water and the owner.

14. GOVERNING LAW

These Terms and Conditions shall in all respects be governed by and construed in accordance with the laws of Ireland



Acceptance Form where External Supply Pipe is laid under a Specialist Surface

Irish Water

Colvill House

24-26 Talbot Street

Dublin 1

Date: ___ / ___ / 2015

Offer to investigate or carry out certain leak repair Works at the Property (as defined below)

External Supply Pipe laid under: Specialist Surface

Dear Sirs,

1. I confirm that I am the owner of the following Property:
[«Address»] (the Property)
2. In consideration for Irish Water agreeing to carry out the proposed leak repair Works for free, I hereby accept the First Fix Leak Repair Scheme Offer made on [] and all associated Terms and Conditions.
3. I hereby acknowledge that Irish Water shall not be carrying out any internal works or repairing any internal leaks within the Dwelling.
4. I hereby acknowledge and agree that the pipework serving the Property is laid under a Specialist Surface (as such term is defined in the Terms and Conditions). In such circumstances Irish Water's reinstatement, resurfacing and making good Works shall relate only to the provision of backfill to the excavated area up to the surface level, together with a temporary finish (which will not be the same as the finish that was in place prior to the Works being carried out). I acknowledge and agree that I will be solely responsible and liable for all further reinstatement, resurfacing and making good works (including all of the costs thereof) in respect of such a Specialist Surface.

Signed by Property owner: _____

Printed Signature of Property owner: _____

Date: ___ / ___ / 2015

* Unless otherwise indicated in this letter of acceptance terms defined in the Terms and Conditions have the same meaning when used in this letter of acceptance.



Acceptance Form where External Supply Pipe is laid under Natural Ground, Tarmac or Concrete, a Modular Surface (or a combination of these surface types)

Irish Water

Colvill House

24-26 Talbot Street

Dublin 1

Date: ___ / ___ / 2015

Offer to investigate or carry out certain leak repair Works at the Property (as defined below)

External Supply Pipe laid under: Natural Ground or Tarmac or Concrete or a Modular Surface (or a combination of these surface types)

Dear Sirs,

1. I confirm that I am the owner of the following Property:

[«Address»] (the Property)

2. In consideration for Irish Water agreeing to carry out the proposed leak repair Works for free, I hereby accept the First Fix Leak Repair Scheme Offer made on [] and all associated Terms and Conditions.

3. I hereby acknowledge that Irish Water shall not be carrying out any internal works or repairing any internal leaks within the Dwelling.

Signed by the Property owner: _____

Printed Signature of Property owner: _____

Date: ___ / ___ / 2015

* Unless otherwise indicated in this letter of acceptance terms defined in the Terms and Conditions have the same meaning when used in this letter of acceptance.

Appendix 4: Leak investigation process

#	Step
1	A leak investigation appointment is scheduled with the customer.
2	The crew attend the property at the appointed time, present their ID cards and explain the leak investigation process.
3	The crew will locate and operate the internal stop valve (ISV).
4	If the dials on the meter continue to turn then water is continuing to flow through the pipe which indicates the presence of a leak on the supply pipe between the meter and the ISV.
5	<p>Where a supply pipe leak is indicated, the crew will then use a combination of a ground microphone and pulse wave generator to listen along the line of the external pipe to determine where the leak is occurring.</p> <p>This technique is based upon sending a pulse through the water in the pipe and listening on the surface at a number of points to trace the line of pipe.</p> <p>The pulse wave generator is then removed and the flow water is restored. The crew then listen along the marked line of the pipe for activity which indicates the location where water is forcing its way through a leak in the pipe.</p>
6	Where the location of a supply pipe leak is confirmed, a sketch is marked-up to provide a repair crew with the information they will require.
7	If, having operated the ISV the dials on the meter stop turning this shows that the no water is escaping and that any leaks are occurring beyond the ISV e.g. internal to the house.
8	With the customer's permission, the contractor will also conduct a visual check of the main water based devices (taps, toilets, overflows) in an attempt to identify the source of any internal plumbing issues.
9	Once the investigation is complete the contractor will populate a job-card to record the details of the investigation and close the work order.
10	The customer is provided with a card to summarise the outcome of the investigation. This will clearly indicate whether the customer is being referred for an external supply pipe repair under the First Fix scheme or whether they need to arrange for an internal repair.

Appendix 5: Customer Communications