

NEW REVELATIONS ABOUT DUBLIN'S LEAKAGE LEVELS AND IRISH WATER'S HIGHLY UNAMBITIOUS LEAKAGE REDUCTION TARGETS

(A) Dublin's problem is not a lack of water: Dublin's problem is that most of the water put into its supply system pours straight through holes in its ancient, corroded pipes into the ground and never reaches Dubliners' taps

The Project Need Report assumed leakage in Dublin of 33%: it has since emerged that Dublin's total leakage is almost certainly at least 57%. So **more than half of the precious treated water put into Dublin's water supply system pours through holes in its ancient, corroding pipes straight into the ground and never reaches the taps**. Dublin's water pipes are so full of holes that there is a danger of *contaminated* groundwater leaking from the water-logged ground around the pipes back *into* the pipes carrying "*clean*" water to Dubliners' taps. This requires **extra disinfection** of the water before it is put *into* the supply system to counteract the **risk of contamination**. Further, the state of Dublin's water pipes is such that **major flooding incidents caused by burst water mains are inevitable** as pressure is normalised.

Dublin's 57% leakage levels are far from normal or acceptable. The OECD carried out a study in 2016 observing leakage levels in cities across the world. **Only 4 cities had leakage levels over 40%: all of them were in Mexico** (Dublin did not take part in the study). Earlier in the life of the Shannon project Dublin City Council presented water analysis for 6 comparable countries/cities including their leakage rates. They found that the leakage levels for the countries that they selected were:

Country/city	Approximate leakage rate
Denmark	6%
The Netherlands	6%
Germany	7%
Sydney, Australia	8.5%
Lithuania	15% (in 2000)
United Kingdom	23%

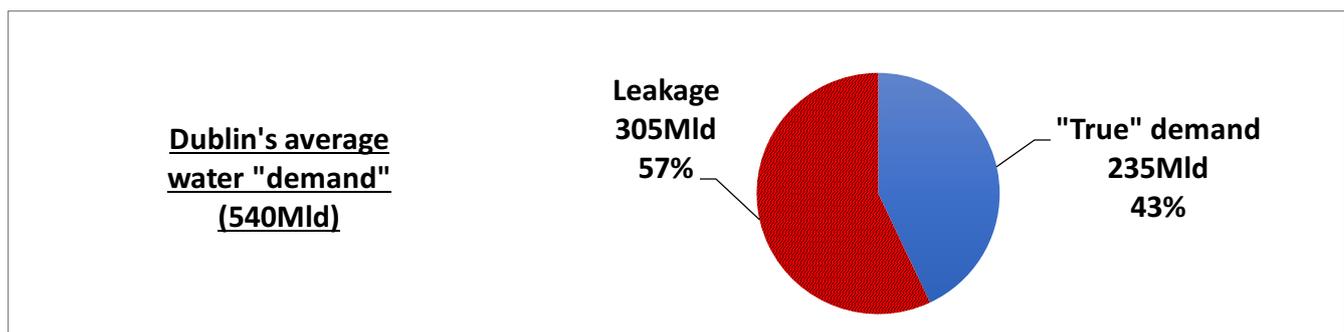
Irish Water's default comparison city when it comes to leakage tends to be London, so it is worth remembering that *London is one of the worst leakage performers among developed world cities* – indeed Thames Water (London's water provider) was fined by its regulator yet again in July of this year for "unacceptable" leaks. Leakage levels in the UK in 2012 ranged **from 14% to 27%** depending on the region - **well under half of that in Dublin**.

A water pipe network that is so corroded and full of holes is not normal or acceptable for a developed world city attempting to attract inward investment - which forward-thinking investor would choose to relocate to a city with low quality water and where water mains bursts are an inevitability while your current mains replacement targets persist?

(B) Leakage in Dublin is so extreme that it makes up by far the biggest portion of Dublin's "demand"

"Demand" (as the term is used by Irish Water) includes **"true" demand** (i.e. water actually *used* by domestic and business consumers) and **"leakage" demand** (i.e. water that is put into the supply system but leaks out of the pipes into the ground before it reaches the taps).

Dublin's "true" demand amounts to well under 50% of what Irish Water terms "demand". **Dubliners only actually use around 43% of the water put into the water supply system every day, as can be seen in the following chart.**



(C) Irish Water's leakage reduction targets are unambitious and inadequate

Irish Water continues to propagate the false claim that its leakage targets are "ambitious". It claims that it is targeting a reduction in leakage from 38% to 20% which target is, it claims, "in line with those set for the majority of water utilities in the UK..... for the past 25 years UK water companies have been targeting a 20% leakage rate and are only now beginning to see leakage rates in the low to mid 20%". **This statement does indeed make its leakage targets appear ambitious: however, the statement is wholly invalid and highly misleading.**

Leakage within a water supply network is split into (i) **distribution side leakage** (also known as unaccounted for water, UFW) and (ii) **customer side leakage**. Leakage in the UK is reported as "**total leakage**" being distribution side leakage **plus** "supply pipe losses from consumers' pipes"¹. By contrast, the figures that Irish Water cites for Dublin are **distribution side leakage figures only** – they do not include any of the water pouring into the ground on the *customer side* of the network. Dublin's distribution side leakage was **38%** but its customer side leakage was almost certainly at least **19%** - its **TOTAL leakage is therefore almost certainly at least 57% - not 38%**. **Irish Water is comparing London's "total" leakage with Dublin's distribution-side-leakage alone, which is mathematically and logically invalid.**

What is more, its 20% target for distribution side leakage is itself *highly misleading*. This 20% "target" is the targeted volume of distribution side leakage **expressed as a percentage of Irish Water's predicted 2050 average demand (which figure is highly uncertain and is already known to have been overstated due to Irish Water's accidental use of the wrong data on non-domestic demand).**

Naturally, when expressing leakage *as a percentage* of predicted demand, the *bigger* that predicted demand figure is then the *smaller* leakage appears *as a percentage of it*. When that predicted demand figure is extremely *uncertain* (as is the case here) and is *already known to be overstated* (as is the case here) then expressing a predicted figure for leakage as a percentage of that predicted figure for demand is **valueless**. The only measure of Irish Water's target leakage reduction that is *not* impacted by the uncertainty of predicted data 33 years into the future is a measure of the targeted **reduction of the absolute volume of water being lost through leaks**, i.e. *comparing the absolute volume of water (in Mld) being lost from the system today with the absolute volume of water (in Mld) that Irish Water target will be lost from the system in 2050*. **On this measure, Irish Water's targets are extremely unambitious when compared with recent leakage reduction achievements in the UK and elsewhere.**

Irish Water aims to reduce Dublin's *absolute volume of leakage* from 245.5Mld¹ in 2011 to 170.4Mld¹ in 2050 - i.e. a reduction in the absolute volume of leakage of 75.1Mld. To put this in percentage terms, in order to compare with reductions elsewhere, **Irish Water aims to reduce Dublin's leakage by 31% in 39 years**. This target is far from "ambitious" when compared with recent reductions in leakage achieved in the UK and across the EU (as cited in the 2015 EU Reference Document "*Good Practices on Leakage Management*"):

- London's leakage was reduced by **30% in only 6 years** (Source: Thames Water)
- Scotland's leakage was reduced by **55% in only 10 years** (Source: Scottish Water)
- Lisbon's (Portugal's capital city) leakage was reduced by **64% in only 8 years**
- Leakage in the Reggio Emilia province in Italy was reduced by **50% in 8 years**
- Malta's leakage was reduced by over **83% in under 20 years**.

The leakage reductions in the UK are even more significant given the fact that they were starting from a base level of leakage *significantly* below that in Dublin. The law of diminishing returns makes clear that **leakage recovery in Dublin should be significantly easier given the very high base from which it is starting** – indeed Irish Water has stated "*It should be noted that finding and repairing leaks is very expensive with ever lower leakage reductions being achieved (for the same expenditure) over time as the situation improves*". On this basis, recovery of water through addressing leaks in Dublin should be significantly cheaper and easier than has been the case in recent efforts in the UK.

It is also worth noting that the analysis for this project has already been **proven** to have contained **shockingly unambitious customer side leakage targets**: the analysis assumed that it would take **39 years to recover 19Mld of water** through repairing customer side leakage - this has already been **proven** by the Q3 2016 First Fix results to have been **wildly underestimated: 31Mld of water was recovered in the first 18 months alone**.

(D) Short-sighted failure to repair and replace water mains has led to burst mains and major flooding incidents

Irish Water's own press releases show that even after a "major" mains replacement project was launched in 2007 **only 140km of Dublin's mains were replaced in 6 years**. By contrast, Thames Water replaced **1,868km of mains in 4 years in London alone**. This was an average mains replacement of 467km per year in London versus 23km per year in Dublin

¹ "In England and Wales, leakage is treated water lost from the distribution system. It includes water lost from the companies' distribution networks and supply pipe losses from consumers' pipes." (Source: OFWAT)

(where the leakage problem was far more extreme). **London replaced its mains at a rate 2,000% faster than that in Dublin** despite the fact that London's leakage rates were *less than half* those in Dublin.

Irish Water has confirmed that over the past ten years only around EUR100million has been spent on addressing leaks *nationally*. This is an average spend of **only EUR 10million per year on fixing leaks for the entire country** which is a shockingly low figure given the scale of the problem - it equates to **only 0.8% of the projected EUR1.2billion cost of the Shannon project**. Irish Water's press releases reveal the woefully inadequate mains replacement programmes that Irish Water has undertaken in towns and cities across the country in the past couple of years, spending comparably tiny amounts of money on a problem that demands a truly significant financial investment: only **EUR 6.6million** for the "mains rehabilitation" programme in Limerick City, **EUR 4.1million** for Tullamore Town, **EUR 2.86million** for Mullingar, **EUR 15.8million** for Cork City – **compare these figures to EUR 1.2billion (twelve thousand million Euros) that will be spent on the Shannon pipeline – a pipeline that would not be needed at all if an appropriate proportion of water mains were replaced.**

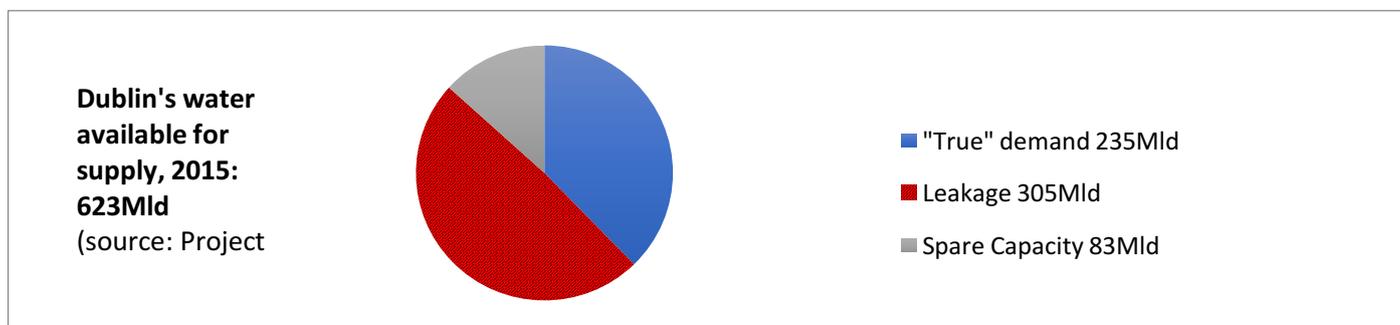
The state of the water pipes in Dublin (along with the rest of the country) means that **major flooding incidents caused by burst water mains are a virtual certainty** as pressure in the water supply system is normalised. What is more, the extreme extent of the corrosion to the pipes means that **repairing those bursts is extra complicated and takes far longer than it should** - after the recent mains burst in Louth/Meath Irish Water's own press release stated: **"three attempts to fix the 50 year old pipe failed over last weekend as the corrosion and warping of the pipe meant that any available standard fittings were not sufficient. A bespoke piece of pipe and fittings were manufactured in Belfast".**

Allowing Ireland's water pipes to have reached such an extreme state of disrepair is a shocking failure which Irish Water remains unwilling to appropriately address.

(E) Dublin's spare capacity is constrained by Dublin's leakage levels, *not* by insufficient water

Spare capacity is the difference between the amount of water *available* for supply at Dublin's water treatment plants and the amount of water that those plants actually put into the supply system every day. As leakage is reduced within a water supply system so "spare capacity" is increased. For example, Paris is often cited as a city with a very large spare capacity in its water supply, but it is vital to note that Paris has very low leakage rates of around 5%: **if Dublin's leakage rates in 2015 had been 5% (as in Paris) it would have had 152% spare capacity.** The "total leakage" rate for water suppliers in the UK in 2012 ranged from 14% to 27%, with an average of 20%². 20% leakage is *well above* that in other comparable EU cities. **Even if Dublin's leakage in 2015 had been 20% then Dublin would have had 112% spare capacity which is ABSOLUTELY ENORMOUS.**

The chart below shows the amount of water that was *available* for supply in Dublin in 2015 (623Mld) and how that available water was split between "**true**" demand (i.e. water actually *used* by domestic and commercial consumers on the average day), **leakage** (i.e. the amount of water that *poured out of the pipes into the ground* on the average day) and **spare capacity** (i.e. the amount of "spare" water that was available at the water treatment plants) – it is easy to see that as leakage decreases spare capacity increases.



² Source: Irish Water Final Options Appraisal Report Appendix J, "Preliminary Options Appraisal - Consultation Submissions Report", page 35.

Irish Water's messaging about Dublin's spare capacity is inaccurate and highly inconsistent:

(1) According to the data in the Project Need Report (**March 2015**) Dublin had **over 15% spare capacity**³.

(2) Four months later, a **10 July 2015** press release cited Jerry Grant as follows: "*Currently in Dublin, water supply is operating with spare capacity of **around 10%***".

(3) Irish Water's business plan published **three months later** in **October 2015** stated: "*there is **less than 2%** spare drinking water capacity in Dublin*". This was unquestionably FALSE.

(4) Seven months later Minister Simon Coveney stated in a Dail debate on **24 May 2016**: "*Since Irish Water became the national water utility in January 2014, it has made significant progress in addressing some of the problems... **Dublin's spare water capacity has increased from 1%-4% to 10%** which is a welcome move towards the 15% target of Irish Water.*"

(5) In a presentation to the Joint Oireachtas Committee on **12 January 2017** Jerry Grant, together with the Group CEO and Group FD of Ervia, stated that the spare capacity in Dublin at the end of 2016 was **10%**.

(6) **One month later**, on **15 February 2017**, Jerry Grant told a Joint Committee meeting that Dublin's spare capacity was "**about 8%**". He did not mention that Dublin's water supply was already set to increase by a further 6% (from 623Mld (2015) to 658Mld (2026)) through *ongoing* projects.

(7) A **July 2017** Irish Times article citing "*a slew of statistics from Irish Water seen by the Irish Times*" was still incorrectly reporting that Dublin has a spare capacity of **only 2%**, reflecting Irish Water's false and inconsistent statements on this "headline issue".

Each of these statements about Dublin's spare capacity avoids the key point: the single key issue limiting Dublin's spare capacity and undermining Dublin's water supply system is the fact that most of the water put into Dublin's water supply system flows through holes in its ancient, corroded pipes directly into the ground instead of reaching Dubliners' taps. If Dublin had "normal" leakage levels it would have an absolutely enormous spare capacity and a highly resilient water supply system relying only on its existing raw water sources.

³ Being 83Mld (the spare water available over average demand of 540Mld) expressed as a percentage of the average distribution input/average demand, amounting to 15.4%.