By email to watercustomers@cru.ie

10 February 2021

First Fix Scheme Policy Consultation Paper

On 18 December 2020 you published the above consultation paper and invited feedback. Kennedy Analysis has reviewed the consultation paper and welcomes the opportunity to comment.

For ease of reference, here are some of the abbreviations that we use frequently in this submission:
FFS = First Fix Scheme
CSL = Customer Side Leakage
DMA = District Metered Area
ISV = Internal Stop Valve
CFA = Constant Flow Alarm
GDA = Greater Dublin Area
DI = Distribution Input
PCC = Per Capita Consumption
Draft NWRP = Irish Water's draft National Water Resources Plan (which is currently out for public consultation)

First, we would like to express some general observations about the First Fix Scheme (the FFS).

We have been close observers of the FFS for several years, and have studied the results in the quarterly reports as they are published. The FFS has been unexpectedly successful in reducing customer side leakage (CSL) and has done so at a fraction of the cost expected. As you know, when the FFS was launched in 2015 Irish Water made projections as to how much water it expected would be saved and how much the scheme would cost. It anticipated that, in the first 18 months of operation up to Q4 2016, the FFS would cost EUR50,101,362, that repairs through the FFS directly would save **37Mld** of water and that there might be "significant additional water savings" from self-instigated customer repairs.

In fact, by Q4 2016, only EUR20,287,278 had been spent (just 40% of the anticipated budget), water saved through FFS repairs directly was 46Mld and water saved through customer repairs was 44Mld (totalling **90Mld** of water saved as a result of the FFS by Q4 2016). So the scheme had delivered considerably more water savings for well under half the budget. As you know, the scheme was extended (continuing to spend the original budget). By the end of Q4 2019 (the most recent published report) expenditure was still below budget at EUR44,927,107 yet water saved through FFS repairs directly was 81Mld and water saved through customer repairs was 74Mld (totalling **155Mld** of water saved as a result of the FFS up to Q4 2019). This notwithstanding the fact that the terms of the FFS were quite narrow, meaning many leaks that were identified by the scheme turned out to be ineligible for a free repair - of the 175,000 leaks identified by the scheme only 61,000 have so far been repaired.

It is rare that one comes across a scheme that delivers many times more than the anticipated benefit for less than the allowed budget, but this is one such scheme. The FFS has been highly effective: it has saved unexpectedly large volumes of water for unexpectedly low costs.

The results of the FFS are significant. They tell us that Irish Water had previously significantly under-estimated levels of CSL in Ireland. They tell us that reducing "demand" by cutting CSL is much easier, quicker and cheaper than Irish Water thought. They tell us that householders are much more conscientious than they are sometimes given credit for: householders' contribution to the reduction of CSL has been enormous and the results (in terms of volumes of water saved) far beyond any expectations. By Q4 2019 householders who had been notified of a leak through the FFS (and remember that, in many cases, the householder would have had no knowledge of the leak beforehand) had carried out 43,321 leak repairs (compared to 17,194 leak repairs carried out by Irish Water). This has made a huge contribution to water conservation in Ireland and is something that should, in our view, be more widely reported and acknowledged.

We have felt for several years that certain aspects of the FFS unnecessarily restricted its reach and on the whole we welcome the proposals, as set out in the consultation paper, to broaden the eligibility for the scheme. If this expansion of the scheme is executed well and marketed widely we would expect to see a significant increase in the volumes of water saved through the scheme.

(1) Kennedy Analysis response to the specific questions posed in the consultation paper:
CRU questions 1 and 2:
"*Do you agree with Irish Water's proposal to include unmetered customers into the scheme? Do you have any other observations on this proposal?*"
Kennedy Analysis response:
Yes, we do. The point about equity between customer groups (given that the Excess Use Charges will apply to both groups) is an important one, and would make it unacceptable *not* to include unmetered customers into the scope of the FFS.

From the potential benefits of water savings point of view the case is also extremely strong: over 40% of Irish domestic properties do not have a functioning water meter with automatic meter reading technology, and this huge group is currently excluded from the scheme. There can be no question that it is in the interests of the taxpayer to expand the terms of the FFS to include this large new source of potential water savings.

It is not clear from the consultation paper how many temperature detecting devices will be installed on the pipes of unmetered properties – presumably it is not intended that such a device will be installed onto the service pipe of *every* unmetered property, but rather just those within a region that has been identified through the DMA analysis as having particularly high rates of constant water flow. As such, the likely returns through the FFS in unmetered properties may, in our view, be lower in percentage terms (i.e. average volume of water saved per unmetered property) than the huge returns achieved through the FFS to

date for metered properties. However, given the huge new pool that this proposal will bring within the scope of the FFS, the upside (in absolute terms) is likely to be significant.

We strongly agree with this proposal.

CRU questions 3 and 4: "*Do you agree with Irish Water's proposal to decrease the threshold for leak prioritisation? Do you have any other observations on this proposal?"*
Kennedy Analysis response:
Irish Water is proposing to almost halve the leakage threshold level of eligibility for the FFS. We have reservations about this step being taken at this stage in the FFS. At this stage, we believe that it makes more financial sense to make the other changes referred to above and below which will (a) broaden the eligibility criteria of the FFS programme and (b) improve customer interaction with the scheme.

These changes will bring unknown numbers of major leaks on unmetered properties (that were previously outside the scope of the FFS) into the scope of the FFS. They can also be expected to significantly increase the conversion rate of the major leaks that have already been identified (in metered properties) into a successful FFS leak repair. It is worth remembering that, to date, of the 174,782 major leaks identified (in metered properties) and notified to customers only 60,515 leaks have been repaired (combining both FFS repairs and customer repairs). There therefore remain over 100,000 major leaks that have already been identified by the FFS (with its current *high* threshold level for leak size and its hitherto exclusion of unmetered properties) but that have not yet been repaired. Many of these will now fall within the remit of the FFS (with its proposed expanded terms). One also hopes, with improved customer communication, that more customers will now engage to the point of leak repair (when previously, at some stage in the process, they stepped back – for example, by failure to return the signed waiver post- the leak investigation stage).

Expanding the scope of the FFS to include significantly smaller leaks (as is proposed) would naturally cost a significant amount of money in terms of (i) the administration involved (identification of leaks, sending of "call to action" letters/customer notification letters plus subsequent reminder letters), (ii) the cost of a leak investigation. Leak investigations in the FFS to date have cost an average of EUR262. The proposal to reduce the threshold level would result in an enormous increase in the number of leak investigations. However, the volumes of water that could potentially be saved through these smaller leaks would naturally be significantly lower, and the cost per 1Mld of water saving would become significantly higher.

At this stage in the FFS, the average cost of saving 1Mld of water has been EUR290,000. As you have stated yourselves, this is extremely good value for money in the context of water supply. The expense of treating water which then leaks into the ground – or, worse still, the expense of expanding water treatment plant capacity/developing new sources to offset "demand" which includes huge volumes of customer leakage - is far higher than the cost of reducing that leakage through the FFS. [*Note: the costs of saving 1Mld through addressing CSL is significantly less than the cost cited by Irish Water in its proposals to justify the proposed Shannon pipeline. Irish Water claimed, in its analysis for the Shannon pipeline, that reducing customer side leakage costs in the region of EUR750,000 per 1Mld.* ***We have***

repeatedly flagged to Irish Water that this aspect of its analysis was hugely overstated, but Irish Water has repeatedly rejected our point, using irrational arguments. *We are happy to provide you with detail on this if it would be of interest*].

It may make sense for the leakage threshold to be reduced at some point in the future but so much low-hanging fruit is about to come within the remit of the scheme for the first time that, in our view, there is no need to take that step now. It would significantly increase the scale of a scheme that has worked very well so far, and would also significantly increase the cost per 1Mld of CSL reduction, at a point when such a step is not, in our view, necessary.

CRU questions 5 and 6:
"*Do you agree with Irish Water's proposal to expand eligibility to include Mixed Use customers with predominant domestic water use in the scheme? Do you have any other observations on this proposal?*"
Kennedy Analysis response:
Yes, we do. The rationale is sound and we agree with the CRU's analysis.

In relation to customers who previously had their progress in the FFS halted due to this "mixed use" limitation, we assume that Irish Water will pro-actively contact them and offer to proceed with their leak investigation/repair? We also suggest that this change be broadly publicised such that any customers that were previously ineligible to avail of the FFS due to this restriction will be aware of the change and may now choose to voluntarily avail of the FFS if they suspect a leak on their supply pipe.

CRU questions 7 and 8:
"*Do you agree with Irish Water's proposal to include unregistered customers into the scheme? Do you have any other observations on this proposal?*"
Kennedy Analysis response:
Yes, we do. This is, in our view, a vital change to the FFS and one that should have been made long ago.

As you are well aware, there exists considerable suspicion in the public mind regarding Irish Water. There are problems with a lack of trust and the opinion that Irish Water is not always transparent. The requirement that customers had to be registered with (and provide their personal data to) an organisation that they may not have trusted was undoubtedly, in our opinion, a significant barrier for the FFS.

We strongly support this proposal and suggest that this change should be broadly publicised such that anyone who has previously chosen *not* to avail of the FFS due to the obligation to first register with Irish Water will be aware of the change and may now choose to avail of the FFS.

CRU questions 9 and 10:
"*Do you agree with Irish Water's proposal to include customers with no working ISV into the scheme? Do you have any other observations on this proposal?"*
Kennedy Analysis response:

Yes, we do. This is another change that we have felt for years would have been an easy way to increase the effectiveness of the FFS. A huge number of the major leaks identified over the past 5 years have been deemed non-qualifying purely on the basis of a lack of a functioning internal stop valve (ISV). It has long seemed to us that this was an obstacle that Irish Water should have found a way to overcome (for example, through the repair/ installation of an ISV by Irish Water's leak investigation engineers themselves, who were on the ground already attempting to complete the leak investigation).

We strongly support this proposal. We assume that Irish Water will pro-actively contact all customers who have previously had their leak investigation halted due to the absence of a functioning ISV, and will offer to proceed with their leak investigation? If necessary and appropriate, we also suggest that this change be broadly publicised so that the public are aware of the change.

CRU questions 11 and 12:
"*Do you agree with Irish Water's proposal to include customers with Shared Service Connection into the scheme? Do you have any other observations on this proposal?"*
Kennedy Analysis response:
Yes, we do. The rationale is sound and we agree with the CRU's analysis.

In relation to customers who previously had their progress in the FFS halted due to this "shared service connection" limitation, we assume that Irish Water will pro-actively contact them and offer to proceed with their leak investigation/repair? We also suggest that this change be broadly publicised such that any customers that were previously ineligible to avail of the FFS due to this restriction will be aware of the change and may now choose to voluntarily avail of the FFS if they suspect a leak on their supply pipe.

CRU questions 13 and 14:
"*Do you agree with Irish Water's proposal to amend how it communicates with the customers under the First Fix scheme? Do you have any other observations on this proposal?"*
Kennedy Analysis response:
We agree that customer communication needs to be looked at closely. Customer engagement with the FFS is far lower than Irish Water had anticipated when it launched the scheme. Low levels of customer engagement with the FFS is a major obstacle to the scheme's efficacy, as can be observed in the low conversion rate of notification letters issued (174,782) to leak investigations completed (87,247). As you note yourselves in the consultation paper, many customers who received a First Fix Scheme notification letter simply did not respond to the letter and, as a result, huge volumes of water continue to be lost through leaks because the public chooses not to engage with Irish Water. A lot of this, we suspect, is linked to a broad lack of trust in Irish Water among the general public. We suggest that Irish Water could take some of the following actions to try to improve the situation.

(a) Give comfort on personal data

If possible, Irish Water may want to consider making clear in notification letters that any information or personal data provided by the customer to Irish Water through the course of

its FFS interaction will be used only for the FFS and will not be shared with any other departments within Irish Water or used for any other purposes.

(b) Satisfaction Survey

Irish Water might consider carrying out a satisfaction survey of those people who have taken part in the FFS. If the results are negative then clearly there are issues to be addressed. If they are positive then Irish Water might want to consider including the results of that survey in the notification letters sent to householders, to give them some comfort as to what they are signing up for.

(c) Redrafting of the Waiver

A matter that we have had concerns about for some time is the wording of the "*First Fix Scheme Leak Repair Offer Terms and Conditions*" (generally referred to as the waiver) that householders have to sign before a leak repair can be undertaken. You have identified that there has been a serious problem with people not returning the signed waiver and so not being able to proceed with a repair. We suggest that this problem could be partly addressed by overhauling the wording of the waiver to make it less daunting.

The waiver is currently 11 pages long, the wording is technical/legalistic and it is likely, in our view, to be intimidating to many people.

One should not lose sight of what is being asked of people if they sign the waiver and agree to proceed with the FFS: waiting in for Irish Water to arrive and do the works, waiting until Irish Water gets round to reinstating the ground after works are completed (which Irish Water gives no commitment to do within any set time frame), preparing the area in advance of the works (they must clear any plants, shrubs, obstacles, fixtures and other objects "*that might, directly or indirectly, obstruct or cause damage to, or be damaged by, the Works*" and they further have to agree 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*" (except for negligence – but this would involve the householder having to prove negligence). A risk-averse legally-minded householder may be unwilling to voluntarily expose themselves to the risks involved in signing this waiver and proceeding with a leak repair.

Naturally, Irish Water needs legal protection against potential unreasonable claims from householders in relation to leak repair works but, if at all possible, the waiver should be drafted in simple terms and (given the value to Irish Water of being able to undertake this work) it should be as generous as possible in order to encourage people to sign and return it. There are many changes that could be made in this regard.

For example, at the moment Irish Water is only required to use its "*reasonable endeavours to procure that the Works are performed efficiently*". It says that it will make good the work "*in due course*" (no time frame given). This is bound to be off-putting. Given the inconvenience to the householder of having this work done on the one hand, and the value to Irish Water of undertaking the work on the other, Irish Water should be willing to agree that it will get the work done as fast as it can, with minimal disruption. If the document does need to remain legalistic then it should commit to using its "*best endeavours*" to complete all works as soon as possible.

There are several provisions that are highly onerous from the householder's point of view – for example, under clause 8.2, if Irish Water's leak repair work turns out to be defective, and the defect is due to the material used by Irish Water (as opposed to the manner in which the works were carried out), then Irish Water is only required to repair the defect if the material or part which is defective is still under warranty *and* such warranty "*covers the entirety of the costs of Irish Water in remediating such defect*". This, in our view, is extremely unreasonable. Whether or not there remains a valid warranty (not to mention whether the warranty covers the full remediation costs) are matters entirely outside of the householder's control. It is bizarre and unreasonable, in our view, to expect any householder to sign up to such a provision and would surely put most legally-minded householders off signing the waiver.

There are many more such examples, and we are happy to discuss further if this would be helpful.

(d) Slight Rebrand?

Perhaps a slight re-branding of the First Fix Free scheme is called for – for example, the combination of the First Fix Free scheme with a new "Leaky Loo Scheme" (see below). This could be an opportunity to visually "distance" Irish Water from the scheme to avoid a knee-jerk negative reaction from people receiving customer notification letters with Irish Water's logo on the envelope. The envelopes containing the letters might bear the logo of the new combined scheme itself, instead of the Irish Water logo, which might encourage more people to actually open the letters that they receive rather than instantly dismissing them due to negative associations with Irish Water.

(2) Other points arising from the consultation paper itself:

Below we comment on several matters that were not posed as specific questions in your consultation paper, but which we have a view on.

Section 4 of the CRU consultation paper: cost estimates, deliverables and proposals:

Section 4 of the consultation paper sets out proposed deliverables for the future FFS. We have several thoughts on this.

The forecast spend for 2020-2024 is only EUR35.9million. We are concerned that this may be insufficient if the proposed changes do, as is expected, significantly increase uptake of the scheme. Our concern would be compounded if Irish Water were indeed to proceed with its proposal addressed in your questions 3 and 4 above: if the leakage threshold level for eligibility to the FFS were to be dropped so significantly then the cost per 1Mld of water saved would increase dramatically (the administration/leak investigation/leak repair costs would remain the same, but the volumes of water saved per repair would be much smaller).

We note that you set out estimated annual deliverables and we have some thoughts about these. You estimate that significantly fewer notification letters will be issued in the next 5-year period than in the last (125,000 vs 174,782). This is clearly very difficult to predict, and would depend on how the re-issue of fresh notification letters to customers who had engaged with the scheme previously but were found not to be eligible (e.g. due to a faulty ISV or a shared service connection) is handled. If these are included within that number, and

if the scheme is broadened (as is proposed in this consultation paper), we would expect that the number of notification letters might well increase, not decrease.

We are not sure why the ratio of notification letters:leak investigations and the ratio of leak investigations:leak repairs are expected to be lower in the upcoming 5-year period than in the previous 5-year period to Q4 2019. On our analysis, if the changes proposed in this consultation paper are made (i.e. Irish Water becomes more effective in improving customer interaction with, and expanding eligibility for, the scheme), then the opposite should be the case. It is worth noting: it would be a significant negative if the number of leak investigations (which each cost around EUR262) increased from 87,247 (in the five-year period to Q4 2019) to 107,000 (for the five-year period 2020-2024) but the number of leak repairs only increased from 17,194 to 17,500. This would represent a conversion rate up to 2019 of 20% but a conversion rate for 2020-2024 of just 16%. This would be a poor result – a leak investigation that does not result in a leak repair is wasted money – and with the proposed expansion of eligibility to the scheme it is difficult to understand why this would be anticipated (a major cause of previous leak investigations *not* being converted into leak repairs was the high proportion of non-qualifying leaks, which will be significantly reduced by the proposals in the consultation paper).

We would propose that, rather than setting absolute numbers for "estimated annual deliverables" it may be more appropriate to set target conversion rates, i.e. a conversion of notification letters to leak investigations of X%, and a conversion of leak investigations to leak repairs of Y%. The absolute number of leaks found (through constant flow alarms (CFAs) and the equivalent) is something that Irish Water has no control over. Conversion rates, however, are something that Irish Water does have some control over and should be incentivised to improve.

We would also propose that Irish Water is set a target in relation to the cost per 1Mld of water saved. Contractors themselves should also be remunerated (in part) on the basis of the volume of water saved, not just on the basis of the number of leak investigations/repairs undertaken. This gives them a strong incentive to "convert" the identification of large leaks into actual water savings, prioritising their attention on larger leaks as appropriate. We have read about this approach being recommended in the UK and it is logical to us.

(3) Further possible expansion of the FFS beyond the proposals made in the consultation paper

More than one free fix

Has Irish Water identified the proportion of leaks that have been repaired under the FFS and subsequently start to leak badly again (to the point of triggering a CFA)? Under the existing terms of the FFS the householder would generally not be entitled to a second free repair, but if the numbers of repeat bursts/leaks are high it may be appropriate to consider expanding the scope of the FFS so that more than one free leak is offered (note: this was contemplated in the 2015 First Fix policy document, which identified that many UK water suppliers began with offering just one repair and expanded that to offer more than one – see page 13 of that policy document).

A "Leaky Loo Scheme" to address some internal plumbing losses

As you know, many of the leaks identified by the CFAs turn out to be internal to the property and outside the scope of the FFS. As things currently stand, Irish Water can do comparatively little about those leaks. We suggest that consideration should be given to the costs and benefits of Irish Water addressing some of those internal leaks.

As you are no doubt aware, there is increasing focus in the UK on the very high volumes of water being lost through leaking toilets. A recent position statement from Waterwise.org.uk (available here: https://waterwise.org.uk/wp-content/uploads/2019/10/Leaky-Loo-Position-Statement-1.pdf) notes the following:

- A leaking toilet wastes 215 – 400 litres a day
- Data from Thames Water suggests that 8% of all toilets are leaking
- Householders are often not even aware that their toilet is leaking
- Around 70% of leaking toilets can be fixed by a plumber on the first visit

This is an issue that you are already aware of: in Irish Water's First Fix policy document (2015) it noted that the First Fix pilot scheme had identified that faulty toilet cisterns accounted for 42% of leaks identified within dwellings.

You will also be aware that water suppliers in the UK offer various schemes through which they visit households, offer water saving advice, and provide free water saving devices (such as tap aerators and cistern displacers). Some water suppliers undertake small leak repairs (such as fixing leaky loos) for free during a home visit – the view being that this is cost beneficial to both the water supplier and the customer.

We recommend that consideration be given to the introduction of a "Leaky Loo Scheme". We wonder whether it might be possible to operate it alongside the FFS. In this way, water repair contractors could kill two birds with one stone: when their team attends a property to undertake a FFS leak investigation they could also provide a "Leaky Loo Scheme" household assessment (with specific water saving advice), offer small repairs for free and, if considered appropriate, provide free water saving devices. We note that it is already common for the repair crews undertaking leak investigations to enter the property to investigate potential large plumbing losses. We note also that the crews give some degree of advice and information on addressing internal leaks. This would suggest that broadening the scope of this existing practice (to include, for example, some free internal repairs at the discretion of Irish Water) and wrapping it up into a new "Leaky Loos" scheme that could be marketed alongside the FFS may well be feasible.

As mentioned above, this might also allow the possibility of a partial re-brand of the First Fix Free scheme to "distance" Irish Water from the process in an attempt to increase customer engagement with the scheme as a whole.

Importantly, it would also provide an incentive for customers to take up the FFS – if it comes alongside the potential of free minor internal repairs and free water saving devices. Initially, therefore, it would be our view that a Leaky Loo Scheme should be offered only in tandem with the existing FFS in order to promote customer engagement with, and uptake of, the FFS.

Introduction of potential incentives to encourage householders to address non-qualifying internal leaks themselves:

As you have identified, in the course of the FFS to date an enormous number of leaks that were identified by the CFAs turned out to be non-qualifying leaks i.e. they were not eligible for a repair under the terms of the FFS. A key metric to observe in this regard is the number of leak investigations completed to date (87,247) vs the number of leak repairs created (21,123). The leak investigations represent customers with a major leak who were willing to engage with the FFS. The leak repairs created (which is not the same as the leak repairs completed – some people stopped interacting with the FFS at that stage and did not go on to have a repair) represent leaks that were found to qualify for a repair under the FFS. **Over the life of the scheme up to the latest published report 76% of the leaks that were investigated were found to be non-qualifying leaks and were not able to avail of the scheme**. In 2019 alone, as you identify in your consultation paper, over 90% of leaks that were investigated were found, upon investigation, to be non-qualifying leaks.

This represents a huge volume of known water wastage on the properties of householders who are willing to engage in the scheme (a key hurdle in itself), but that Irish Water has been unable to address. If the FFS had *not* excluded those leaks from its remit, the volume of water recovered would have been very significantly higher than has been the case so far.

There is clearly huge value in being able to broaden the terms of the scheme to enable these non-qualifying leaks to be repaired, and the proposals in this consultation paper have the potential to address a significant proportion of those non-qualifying leaks. For example, as you have identified in the consultation paper, 27% of non-qualifying leaks failed to qualify because they did not have a functioning ISV.

However, by far the biggest reason for a leak not qualifying under the terms of the FFS was that the leak was *inside* the dwelling (as opposed to being on an external supply pipe).

This consultation paper makes no proposal in relation to this enormous element of non-qualifying leaks. Internal leaks represent a huge potential source of water recovery and there would be value in considering ways to tap into that. There are many possible options that might be considered.

One such possibility, as mentioned above, is that once a leak investigation has taken place and the leak is found to be non-qualifying (by reason of the leak being internal to the property), the householder could be offered a "**Leaky Loos" team visit,** the scope of which would need to be determined (and would need to be at Irish Water's discretion) but might include the fixing of some internal leaks for free.

Another possibility (which, again, would probably have to be at Irish Water's discretion such that it could be applied first only to large leaks) might be a **cost-sharing scheme**, to incentivise householders to repair an internal leak.

Another possibility might be to introduce a scheme similar to the "Greenredeem" one operated by Thames Water which **rewards customers** for cutting use/leakage by allowing

them to accumulate online points that can be converted into shopping vouchers/free coffees/charitable donations.

(4) Importance of information-sharing of key findings from the FFS across other Irish Water divisions

The unexpectedly successful result of the FFS revealed (i) that Irish Water's previous assumptions about the levels of CSL in Ireland were wrong (by a significant margin), and (ii) that high volumes CSL can be saved much faster than previously anticipated, at a fraction of the previously assumed cost.

New information/knowledge like this is important and must be widely shared within Irish Water. The FFS results must be broadly disseminated and their implications understood in the context of the work undertaken by other departments:

(a) It needs to be reflected in the breakdowns of water demand contained in reports/documents that are published by Irish Water (and, in turn, the CRU) on a regular basis,

(b) Irish Water management must be aware of the findings so that they do not make public statements that are inaccurate,

(c) It must be shared with departments leading major projects: several projects that Irish Water is currently proposing (including the proposed Shannon pipeline project and the draft National Water Resources Plan) require the projection of future water demand. **Projection of future water demand requires, as the first step, an accurate breakdown of the elements of current (or base-year) water demand**. The findings of the FFS are important in this regard. The anticipated success of the FFS is also important in terms of the projection of futures water demand within these projects. Similarly, these major projects consider the relative costs of developing new water supply sources vs. reducing demand through cutting leakage. The analysis for the Shannon pipeline proposal assumed that reducing CSL would cost EUR750,000 per 1Mld saved – but, in fact, water saved as a result of the FFS to date has cost just EUR290,000 per 1Mld. It is vital that this new knowledge on costs is fed into the analysis for major projects like this.

The unexpectedly fruitful results of the FFS show that, at a national level, CSL has historically been significantly underestimated by Irish Water. This fact can be observed from the many breakdowns of "demand" that Irish Water has published in various reports and documents. It can also be observed from the analysis that Irish Water has published in relation to the proposed Shannon pipeline project (see below) and from comments made by its then MD, Jerry Grant, in April 2018 when Kennedy Analysis was before the Joint Committee alongside Irish Water to discuss the proposed Shannon pipeline. Kennedy Analysis had made the point that the early FFS results proved that the base-year (2011) level of CSL in the Greater Dublin Area (GDA), as estimated by Irish Water for the purposes of its Shannon pipeline analysis, was much too low (the Shannon pipeline analysis assumed that 2011 CSL had been 40.8Mld; we set out the mathematical analysis to show, that based on the results of the FFS up to that point, the 40.8Mld figure could not possibly have been correct and that the 2011 level of CSL must almost certainly have been at least 100Mld). We also pointed out that water savings through the FFS had been much higher than anticipated, which would have an impact on future demand projections. Jerry Grant was highly dismissive about the idea that

CSL savings could have any meaningful impact on water demand. He said: "*If 20% of [non-domestic demand, inclusive of CSL] is leakage, that represents 7% or 8% of total water production. If we could, in turn, find 20% of that, it would represent 2% or 3% of total water production. That is the reality in respect of 800,000 domestic dwellings in the midlands and eastern region. Any fast thinking, logistical study of what one might reasonably get back from these, working with each of them as private citizens in control of their own plumbing systems and their own behaviours, would say one would be doing a brilliant job if one could save 1% of that water. To suggest there is a Holy Grail in domestic leakage is unbelievable*".

His statements betrayed a lack of awareness of the implications of the FFS results at that point in time (i.e. a lack of understanding of the true volumes of water being lost through CSL and its contribution to overall "demand"). They betrayed a lack of knowledge that the FFS was yielding significantly more savings than had been anticipated. He suggested that no more than 2% to 3% of total distribution input could be saved through the FFS. This hugely underestimated the reality, as shown by the FFS results.

One can only assume that Mr Grant had not been briefed on the findings of the FFS ahead of his appearance before the Dail Committee that day, resulting in him making statements to the Committee that were known (from the FFS results) at that point in time to be inaccurate.

This suggests poor information-sharing within Irish Water which is not good practice. Key results, and related conclusions, cannot be treated in isolation. New evidence/knowledge must be shared widely and efficiently.

<u>FFS results show that the analysis for the proposed Shannon pipeline project was wrong – indicative of lack of effective information sharing</u>
(a) The cost of reducing CSL is much lower than Irish Water assumed:

The FFS results show that reducing "demand" through addressing CSL is a much more financially viable option than Irish Water assumed in its analysis for the proposed Shannon pipeline project. The analysis for the Shannon pipeline project assumed that saving 1Mld of CSL would cost EUR750,000. In fact, the average cost per 1Mld of water saved as a result of the FFS is EUR290,000. We have flagged this point to the Shannon pipeline project team in the past but they dismissed the point (on the basis of illogical arguments), claiming that their original cost estimate was still valid. We are happy to provide you with more detail if it would be helpful. It is vital that accurate cost estimates are used in the analysis for a project as important as this so that taxpayers' money is spent in the most efficient way.

(b) The base-year (2011) level of CSL, as an input for the projections of future water demand in the Shannon pipeline project analysis, was wrong and must be corrected:

As mentioned above, in projects that require a projection of future water demand Irish Water must first establish the base-year level of the different elements of water demand and then it can estimate how each of those elements of demand will grow or decrease over the projection period, in order to calculate the long-term projection of total water demand. It is absolutely vital, therefore, that the elements that make up the base-year demand are calculated as accurately as possible.

The four key elements of water demand for the purposes of these projections are:

(1) non-domestic demand

(2) **domestic demand** (water actually used by households, as opposed to water leaked on the private side)

(3) **customer side leakage** (CSL) which is made up of two parts:

(i) internal losses (i.e. losses from internal pipework), and

(ii) supply pipe losses (i.e. losses from the external supply pipe)

(4) **network leakage** (known as unaccounted for water).

For the purposes of the Shannon pipeline project, Irish Water has made projections of future water demand in the Greater Dublin Area (GDA). As you may be aware, in the course of the Shannon pipeline analysis Irish Water went from reporting domestic demand and CSL as two separate entries (in the 2015 Project Need Report) to reporting them as one combined entry (in the 2016 Final Options Appraisal Report) – but they can be disaggregated into the two constituent parts and this is important for the analysis of likely future demand.

In the 2015 Project Need Report Irish Water stated that the base-year (2011) demand for the GDA was believed to be made up of the following elements:

	Volume (Mld) in 2011
Domestic Demand	190.3
Customer Side Leakage	40.8
Non-domestic demand	126.5
Operational use	3.6
Unaccounted for Water	178.1
Total average demand	**539.3**

Irish Water knows that the total average demand in 2011 was 539.3 (because it knows how much water, on average, it had to put into the water supply system every day in 2011). But it does not know with accuracy exactly how much of that water is "used" by the different elements of demand. As such, if evidence comes to light to show that one of the elements in that base-year breakdown was wrong it is very important to correct it, as it has knock-on effects for the other elements.

The assumption was that CSL amounted to 40.8Mld of water. That 40.8Mld represented *all* customer side leakage, i.e. leakage lost from all properties (not just metered properties), from leaks both external to and internal to the property. It covered not just the large leaks that would trigger a CFA but also the many smaller leaks that would not trigger a CFA. Total CSL is much broader than just those leaks that fall within the remit of the FFS.

We can calculate (from the Q4 2019 results of the FFS) that, despite low customer take-up, and despite its limited remit, the FFS has already saved around **54Mld** of water in the GDA. As spelled out above, this water represents only a small fraction of *total* CSL that existed in the GDA in 2011 (the base-year for the Shannon pipeline analysis). Irish Water's assumption, therefore, that the total volume of CSL that existed in 2011 was 40.8Mld cannot possibly be

correct. The total volume of CSL that existed in 2011 must have been multiples of that figure.

Several years ago, as part of the consultation process for the Shannon pipeline proposal, we flagged this to Irish Water. We had studied the early results of the FFS and observed that, even at that early stage, the FFS results proved that the base-year 2011 level of CSL in the GDA could not possibly have been as low as 40.8Mld. **We extrapolated from the latest results at that time (Q2 2016) that 2011 CSL must almost certainly have been at least 100Mld.**

Irish Water dismissed our point in its entirety and stood by its (undeniably wrong) original analysis, working on the basis that CSL in 2011 was just 40.8Mld. Irish Water's justification for dismissing our point was nonsensical: it related to the fact that CSL savings get swallowed up by the system through increased localised pressure which can lead to an increase in leaks on the distribution network and an increase in local domestic demand (due to increased pressure at the taps in the vicinity) and therefore do not translate to a directly equivalent reduction in DI. We do not dispute their point: of course it is true that FFS savings do not instantly translate to an equivalent reduction of DI – but this generic point applies equally to reductions in domestic demand and non-domestic demand, and has absolutely no bearing on the point that we were making, which was simply that the ***base-year data*** **was wrong and must be corrected**.

In relation to Irish Water's point above (that CSL savings results in increases in local pressure in the supply system and as such can result in an increase in local domestic/non-domestic demand and an increase in UFW due to water leaking out of leaks at a higher rate) it is vital that those repercussions are reflected within the relevant elements of water demand projections: if CSL is cut enormously but this causes an increase in local water pressure and a consequent increase in UFW then it is vital that both those lines of the demand projections reflect that(i.e. CSL *must* go down if it can be proven that CSL has indeed been reduced and the UFW line in the water demand projections must go *up* if it is considered that this will be an impact of the CSL reduction).

This error in Irish Water's analysis for the Shannon pipeline project is important and *must* be corrected. The base-year CSL level must be increased (to an accurate level, that can be extrapolated more precisely once latest FFS data is interpreted) and an assessment must be made as to which other element(s) of water demand need to be reduced as a result. Perhaps the most likely one is the domestic demand element. Perhaps it falls between domestic demand and UFW. Either way, it is hugely important to get the base-year levels correct.

This may be frustrating for Irish Water, which no doubt went to great lengths to estimate its original demand breakdown. This error shows not only that Irish Water's methodology in calculating CSL was inaccurate: it shows that its methodology in calculating at least one other element of base-year demand was also inaccurate. However, if new evidence arises that proves that those original estimates was incorrect (as is the case here) then **they *must* be corrected**, no matter how inconvenient that might be.

FFS results show that the domestic demand analysis for the draft NWRP is wrong – indicative of lack of effective information sharing

As you are aware, Irish Water's draft NWRP is currently out for public consultation. In its analysis of projected domestic demand (including CSL) it assumes that, from 2019 onwards, there will be **zero** further CSL savings through the FFS. This, as you will agree, cannot possibly be correct. The comments in the draft NWRP of the status and results of the FFS betray a lack of awareness of the current status of the FFS (i.e. its proposed expansion) and a lack of understanding of the past, and anticipated future, results. Again, this suggests that communication about the FFS between Irish Water departments is poor.

The draft NWRP states (at page 61): "*The First Fix Free scheme was initially very successful, but uptake has reduced to relatively low levels since the domestic charges were abolished*. *The savings associated with the First Fix Free scheme to date are estimated to be **120Mld** (gross leakage savings). However, it must be noted that gross leakage savings do not translate directly into reductions in overall demand for the following reasons:*
- savings are continuously offset by the Natural Rate of Rise (the rate at which leakage would increase if it is not managed) and new leaks within properties or on other supply pipes
- CSL savings are at the ends of long distribution network [sic], and water saved results in small increases in service to other customers who may have low water pressure in their supplies
…
***For this iteration of the NWRP, the CSL element of domestic demand is considered to remain static**, based on empirical data trends from the "First Fix" scheme to date*"
(note: the emphasis in bold is ours).

To spell that out: the draft NWRP, for which projections of Ireland's future water demand over the next 25 years form the crux of the project, is assuming that there will be **zero** reductions in CSL over the course of the entire 25-year period from 2019 to 2044.

We do not need to spell out how inappropriate that assumption is. It is almost certain that it has already been proved wrong – we assume that the FFS has reduced CSL in the past year (although the results have not yet been published).

We are 100% confident (as, presumably, are you and the FFS department within Irish Water) that CSL savings in Ireland in the coming years will be above zero. Yet the team within Irish Water which is running this flagship project (the draft NWRP) is under the impression that the FFS will yield no reductions in CSL from 2019 onwards.

What is more, for the GDA water supply region specifically, despite the fact that

(i) Irish Water *knows* (and it is noted in the document) that average PCC (which for the purposes of the draft NWRP *includes* CSL) in the GDA is currently **122 l/p/d**,
(ii) Irish Water states in the draft NWRP that it is assuming that there will be **no change in PCC** over the 25-year period of the plan,

the calculation of projected 2044 domestic demand is made using a PCC for the GDA of **133 l/p/d**.

This 133 l/p/d is the average of the PCCs from various water resource zones across the country. Using an average nation-wide PCC when better, more granular (WRZ-specific), information is available is (i) inappropriate, (ii) not best practice, and (iii) contradicts with the statement that Irish Water is assuming that there will be no change in PCC over the 25-year period of the plan. It will likely result in inappropriately *low* 2044 domestic demand projections for WRZs in which the average PCC is, as a matter of fact, *above* 133 l/p/d and in inappropriately *high* 2044 domestic demand projections for WRZs (like the GDA) in which the average PCC is, as a matter of fact, *below* 133 l/p/d.

Irish Water's bizarre approach results in the anomalous situation where, for the GDA, despite

(i) Irish Water's statement that it is assuming no change in the PCC (including CSL) over the 25-year plan (which in and of itself is highly questionable given the anticipated results of the FFS),

(ii) the fact that in the UK (and the EU generally) there is a major focus on, and expectation of, significant reductions in PCC ex- CSL (as you know, PCC in the UK does not include CSL) over the coming decades - water suppliers are expected to factor significant PCC (ex-CSL) reductions into their long-term demand projections in the UK, and

(iii) the fact that reductions in the CSL element of PCC are, in fact, certain to be achieved (through the FFS)

(the combination of which should lead to the assumption that there will be a notable *decline* in *both* elements of PCC (genuine domestic water use and CSL) in the GDA between 2019 and 2044), the analysis used in the draft NWRP to calculate 2044 domestic demand is effectively assuming that PCC (including CSL) will *increase* from 122 l/p/d to 133 l/p/d. This is entirely inappropriate and, again, appears to reflect a lack of communication between the National Water Resource Plan project team and the FFS team.

As an aside, you will note that the draft NWRP (which was published in December 2020) states that total savings through FFS to date are estimated at 120Mld. This is wrong. Total savings through FFS are, as you know, 155Mld.

The points above underline our concerns: a lack of communication between different departments within Irish Water regarding the implications of the results of the FFS is causing major projects like the draft NWRP to be based on assumptions that must be known, within other departments at Irish Water, to be wrong.

It is vital that communication of the FFS is improved and that major projects do not proceed on the basis of an inaccurate understanding of the CSL situation in Ireland.

(5) Point of concern: the Q3 and Q4 2019 reports state that the FFS had to be partly put on hold during those periods due to budget constraints

The FFS budget is very small within the overall scheme of Irish Water's budget and its results have proven to be excellent value for money. We were alarmed, therefore, to read in the Q3 and Q4 2019 reports that the scheme had been put partly on hold during those periods because "*to ensure the yearly budget allowance was adhered to, it was necessary to take steps to reduce the monthly expenditure over Q3 and Q4 to keep within the budget and this*

has resulted in lower investigation outputs [and lower repair outputs] being achieved". What is more, no notification letters at all were sent to customers during Q3 and Q4 2019.

This sort of disruption will naturally have reputational (and other) knock-on effects for the scheme. The scheme must be run in a professional manner: consistency and continuity are vital. Steps should be put in place to ensure that a disruption like this due to budget issues does not happen again.

(6) The need for accuracy in the wording used to describe leakage levels and leakage savings

It is important, in both the CRU's and Irish Water's reporting of matters relating to the FFS and leakage more generally, that great care is taken to accurately report the situation so as to minimise the chance of inaccurate statements being reported in the press. We would counsel against the risk of inappropriately negative messaging about householders' attitude to water use. It must be remembered that, in relation to the First Fix Scheme, householders have done an absolutely outstanding job – they have repaired over twice as many leaks as Irish Water. This is impressive and was not anticipated. Yet this is rarely (if ever) reported in the media. When reports are published stating, for example, that a small group of households represent a very high percentage of domestic demand great care must be taken to ensure that the word "domestic" is included – we have seen reports in the past suggesting that tiny percentages of households represent very high volumes of "total water demand" which is inaccurate and misleading. Such statements, when made, should clarify that this high proportion of water use among very small numbers of households almost certainly relates to leaks – and they should clarify whether the relevant householders have been notified about them. It would naturally be unreasonable to encourage negative perceptions of the public for high "use" that actually relates to leaks that householders are not (and could not reasonably be expected to be) even aware of.

This extends also to reporting on reductions in UFW: we note that an August 2020 CRU report (designed to provide interested parties with an update on the key developments in the water sector) stated in its main summary: "*In 2019, the average daily amount of unaccounted for water, which includes water losses due to leaks, was 712 million litres, a reduction from 782 million litres in 2018*". This was an extremely misleading statement: as you know, in 2019 Irish Water significantly narrowed its definition of "unaccounted for water" vs 2018 by excluding many hitherto *included* elements of water loss. It carved out:

(i) water taken illegally/used by the fire services (which is now reported as "unrecorded use" and amounted to 1% of DI or 17Mld in 2019),

(ii) meter under-recording (which on Irish Water's analysis amounted to 2% for domestic properties (total 11Mld) and 5% for non-domestic properties (total 19Mld), coming to a total of 30Mld that was previously included in UFW and is now accounted for in domestic/non-domestic demand accordingly), and

(iii) water used by Irish Water itself at treatment plants etc. This has not been quantified (to our knowledge) and it has never been clear to us: does this include process losses, which as you know are extremely significant, or just water used in offices etc? If it includes process losses at WTPs then it would amount to a very large volume of water – it would also be important to ensure that there is no double counting in Irish Water's water demand projections for its major projects

(for example, in the draft National Water Resources Plan, it is proposed that "process losses" are deducted on the "supply" side of the supply/demand balance from the total volumes of water that can be produced by WTPs – that would naturally be inappropriate (and amount to double counting) if "process losses" have already been added in to the "demand" side of the supply/demand balance as part of non-domestic demand).

Our analysis finds (depending on the answer to our question above on process losses) that, were it not for this narrowing of the definition, unaccounted for water in 2019 would actually have been *higher* than in 2018 (again, we would appreciate your clarity on this issue – we have asked Irish Water but no response has been forthcoming). For the CRU to report that UFW had gone down *without* making clear that this was driven significantly (if not entirely) by the narrowing of the definition of UFW was not appropriate.

We note that, at that time, Irish Water was also on an aggressive PR campaign to report this (apparent) reduction in leakage. It repeatedly made statements on Twitter and in other media that "In 2018 the rate of leakage was 46%, by the end of 2019 it was reduced to 42%". These statements were misleading: the primary (if not the entire) reason that "leakage" appeared lower in 2019 than in 2018 was that Irish Water had narrowed the definition.

Press coverage on the back of the CRU's document was also misleading. For example, on 18 August 2020 the Irish Times published an article with the headline: "*Loss of water through leaks in Irish Water network down 9% in 2019".* The article opened with the following statement: "*The average daily amount of water lost through the Irish Water pipe network decreased by almost 9 per cent last year. New figures published by the Commission for the Regulation of Utilities (CRU) show the level of "unaccounted for" water averaged 712 million litres per day in 2019 – down from 782 million litres the previous year."*

This type of misleading reporting in the media, on the back of CRU statements that are not drafted with sufficient care, does not help alleviate the public's pre-existing perception of a lack of transparency surrounding Irish Water.

(7) Conclusion

We hope that you will find the points made in this submission helpful. Please feel free to contact us if you would like more information.