WATER INDUSTRY INSIGHTS

Michael Butler
Technical Manager

NATURAL RESOURCES

AMP7 Preview

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MAKING COMPLEX EASY

AMP7 PREVIEW

From sustainable to frontier – the change in leakage economics for AMP7

In July 2017, with one small paragraph of text in a 282-page PR19 methodology consultation document, Ofwat changed the economics of leakage in England and Wales forever.

Their challenge of a 15% reduction in leakage or upper quartile performance changed the way that leakage targets would be set - the outcome was draft determinations that will see leakage reduce nationally by 17% in the next five years. Now Leakage managers around the country had to change their mind set, from attaining an economic leakage target to how to economically achieve their leakage target.

The change in leakage targets was predictable with reports on the sustainable economic level of leakage (SELL) highlighting limitations with the existing methodology which were not incentivising efficiency - meaning leakage levels hadn't really dropped since the large reductions seen in the mid 90's. Since then, population growth has started to cause areas to be in water balance deficit and customers are viewing leakage levels as wasteful. All companies either met or outperformed their targets for 2015-16, which, as the Ofwat consultation document stated, "might suggest they were not sufficiently stretching". So, the writing was on the wall for the SELL approach, but this raised new questions; How do you achieve the new Ofwat reduction targets with the money available? How do you achieve a change of mind-set from maintaining leakage levels to reducing them? How do you achieve this when there is no one silver bullet that will fix it all over night?

One thing is clear, doing 17% more of the same won't achieve the reductions required, and, in fact may not be possible given the constraints on leakage detection and repair resources. So, a different tack needed to be explored - one which incorporates innovation and the use of new technologies, all based on a firm footing of one of the most respected leakage sectors in the world.

This challenge is reminiscent of that put in front of Sir David Brailsford when he became the coach for British Cycling. Brailsford is a champion of "marginal gains" and, in a BBC interview in 2012, he commented, "The whole principle came from the idea that if you broke down everything you could think of that goes into riding a bike, and then improved it by 1%, you will get a significant increase when you put them all together." During the 2004 Olympics Great Britain won four medals for cycling. Four years later they won 14, and maybe more importantly, set a foundation that allowed the success to be repeated in 2012 and 2016.

Brailsford didn't seek to reinvent the whole bicycle, he looked to build on the existing foundation - with some of the best and most experienced engineers in the world looking to simply improve each part. He also collected and used data in new ways, seeking every opportunity to make improvements.

Similarly, the mindset of leakage needs to be changed. Gone are the days where immediate leakage savings alone are the central metric. Given that leaks are far more likely to grow rather than reduce, fixing them earlier will stop an increase in night line. Fixing a leak that is small today might not "save" much water, but the future leakage that it "avoids" will be significant. With the new methodology to calculate leakage which will be used during AMP7, all leaks will impact the leakage figure, meaning that their efficient resolution will be needed to reduce the number of days that a leak impacts the night lines.

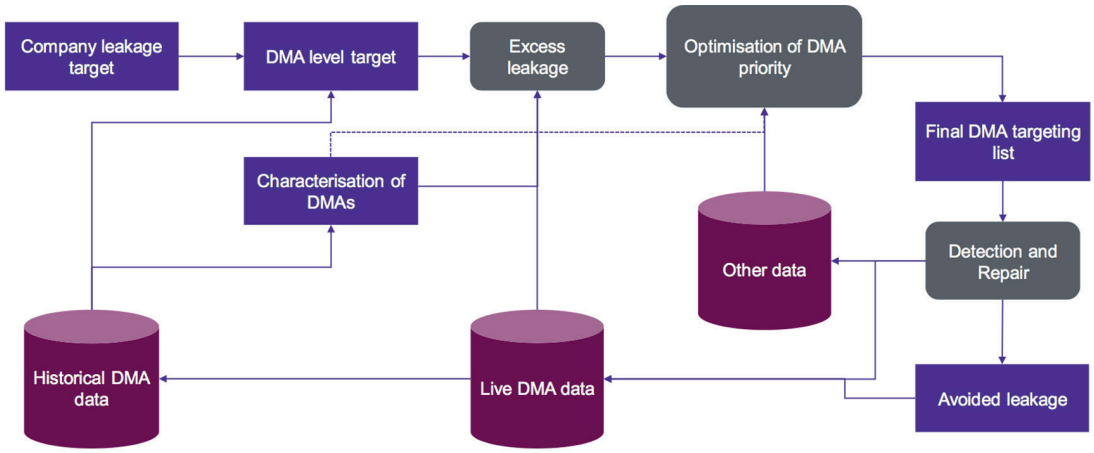

Figure 1 - FLO

How will we achieve this significant challenge in leakage? Firstly, we need to break down leakage activities into their component parts. RPS has developed a model based on the 'life of a leak' which we break down into four parts - Prevent, Predict, Detect, Repair - this allows us to review each activity that goes into fixing a leak. This model was presented at a Leakage Innovation Workshop hosted by RPS in September. The most efficient way to reduce leakage is to Prevent it from occurring in the first place. Secondly, the ability to Predict where leakage is likely to happen ensures we can target resources efficiently. And thirdly, using the right technique to Detect leaks as early as possible facilitates fast and efficient repair, and ultimately leakage avoidance.

As with Brailsford, data plays a key part in the improvement of these areas, and when used appropriately provides actionable insight not only to leakage managers, but to also to operatives on the ground. Data gaps can also be identified and therefore filled, allowing for further improvements in the future.

Focusing on the Predict element of the model, leakage operatives must be sent to areas that will provide the most benefit to achieving the overall target, the methodologies developed for SELL seem like a good place to start, and then building on what was there before. The methods that have been developed over the last decade still provide important and useful information, however, they should be used in a different way. Instead of using these tools to set the target, these can be used to meet the targets as efficiently as possible, while also considering and integrating other emerging technologies. This is the principle behind RPS' Frontier Leakage Optimisation (FLO) see Figure 1, above. FLO was developed as part of a collaborative project with 6 water companies, looking at how leakage economics should be adapted for the next AMP.

FLO works in the opposite way to SELL, taking the company target and disaggregating it to deliver DMA level targets based on historical performance, characteristics of the DMA and the current company leakage situation. From this, the leakage above target and the potential future leakage is calculated. The priority for each of the DMA is then optimised based on the time of the year, historical detection success, available resources, DMA situation and cost implications. This process is then repeated at regular intervals to ensure that the target is appropriate, and the optimisation of the priority list ensures the most efficient DMAs are targeted. A further enhancement, that is currently being developed, is the identification of the most efficient type of detection method for a DMA given the current season and leakage level.

The data collected is fed back into FLO to allow improvements to be made on a continuous basis. With new methods for collecting data, especially around detection activities, using enhanced listening sticks, permanent noise loggers and mobile phones, this data will further improve over the next 5 years.

The benefit of this method is that not only is the historic data captured and used in leakage economics for the last decade still valid, but it allows for new methodologies to be integrated, and data enhancements to be made which will improve the overall system. FLO works around the potential flaw in the SELL methodology as it doesn't set a target based on historic performance that might not be stretching, but instead outlines a method where the stretch target can be achieved in an affordable and efficient manner. Marginal changes in how this targeting process is done has the potential, when combined with all the other improvements, to significantly change the efficiency of leakage and deliver the target reductions required. Ultimately, this will enable the delivery and achievement of the stretch leakage targets during and beyond AMP7.

For more information on optimisation of leakage reporting, performance and strategy, please contact, Michael Butler, e: michael.butler@rpsgroup.com