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ONLINE



**AMP6**



# AMP6: A Watershed Moment

**AMP6** kicked off in March 2015, with the utility companies moving into the sixth phase of asset management following a long period of tendering and negotiations.

This phase of investment has seen a shift in focus from short term investment, replacing the ageing structures and systems to improve efficiency, to a 'totex' - or total expenditure investment - looking to improve and upgrade the systems for future benefits and in the long-term.

The realignment was set out in an Ofwat report, published in 2013, which showed the methodology Ofwat would use to assess water companies' business plans for AMP6. ↗





The new methodology, which relates to water supply and sewerage in England and Wales, made it clear that the water industry's emphasis was shifting from the 'ticking regulatory boxes' approach of previous AMPs to focusing on value for money for customers.

For the first four AMP periods, water companies' business plans were dominated by the need to meet tough European Union legislation covering issues like wastewater quality and wildlife habitats.

This period will see water companies trying to get the most out of their existing assets and finding ways to minimise cost of operation.

The Ofwat document declared that water companies should be focusing on what it called 'long-term outcomes', which it hopes will encourage innovative ways of working that will deliver services for less money, and with less impact on the environment. As a result, the regulator expects to see substantial efficiency savings being delivered during the five year AMP6 period.

At the same time, Ofwat wants to encourage companies to manage water supplies more sustainably. It believes this will happen because the companies will no longer have a bias toward capital intensive and resource intensive solutions, and because it is introducing incentives to encourage the water companies to trade water and to source it from areas that do not damage the natural environment.

This shift in emphasis is leading to water companies looking for different skill-sets from their supply chains -

expertise that will help make more of existing assets.

The focus on long-term thinking is also being reflected in the way some water companies are looking to procure the firms that will deliver work during AMP6, with many opting for alliances, or for frameworks that run beyond the traditional five year AMP period.

Ofwat gave final approval to a £44Bn spend by water firms over the next period at the end of 2014, saying that the deals struck with the water companies will lead to 5% average fall in bills across England and Wales.

Jonson Cox, Ofwat Chairman, said: "This is an important step in maintaining customers' trust and confidence in the water sector.

"We set out to deliver a challenging but fair outcome. We are requiring companies to meet higher service standards and deliver on their promises to customers.

"We are bringing down bills so customers can expect value for money, while investors can earn a fair return. Companies will need to stretch themselves to deliver much more with the same level of funding as in previous years. We will achieve more resilient infrastructure and better service as a result."

Alongside the asset investment and upgrade, major projects set to take place include Severn Trent Water's Birmingham Resilience Project, Wessex Water's integrated supply grid, and modernisation of United Utilities' Davyhulme wastewater treatment works, with the Thames Tideway Tunnel to be financed and delivered by an independent provider.





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# Utilities industry to enter open waters

**THE** UK water industry is bracing for change. From April onwards businesses and non-household customers in England will have the option to select their own supplier of water and wastewater retail services – a move which will no doubt encourage a more competitive landscape for English consumers. The new regulations will not apply to household customers and non-eligible businesses however.

Currently, only those businesses that consume over five million litres of water - or 50 million in Wales - can pick their provider. But come April most non-household customers of suppliers based wholly or mainly in England will be able to choose both their water and wastewater retailer. These companies will no longer be bound by a minimum amount of water consumption.

It is estimated that around 1.2 million more customers will be able to take advantage of these new freedoms once the water market opens later this year.

Eligibility will be determined by whether premises are used primarily for business - rather than domestic - use, in addition to where an existing water and/or wastewater supplier is based. Those eligible will be able to compare their choice of water and wastewater retailer much like they would any other utility services - gas and electricity for instance.

Customers are free to shop around now for the best deals but will have to wait until April 2017 before the switch over can take place. The Government believe that, through opening up the market, over £200M could be delivered in financial benefits to the UK economy. This will take the shape of reduced bills and result in greater water efficiency and a higher standard of service all-round.


It is also envisaged that suppliers will be able offer more bespoke services to suit individual companies' requirements. Better still, the new open

market conditions will bring with them levels of protection for customers. The power to leave and move to a new contract with a different supplier will work as it does currently with gas and electricity providers.

There is a maximum price or default tariff that customers can be charged for the standard level of service should they decide to remain with their current suppliers. Suppliers will be expected to provide basic guaranteed standards of service (GSS) and they will have to pay a fixed price when these standards aren't met.

Customers will remain with their existing supplier unless they choose to switch to another. Those customers who choose to switch will receive a formal contract of the price and services to be provided and will be afforded the same legal protections as any other agreement for the supply of goods and services.





# Scottish Water boost Glasgow flood protection

A comprehensive £250M upgrade of priority wastewater infrastructure in Glasgow continues apace, as Scottish Water completes two essential schemes to better safeguard 47 flood-prone properties in Springburn.

In total, 34 flood-affected homes in the Elmvale Row region – together with a further 13 households on nearby Avonspark Street – have benefitted from more than £16M of Scottish Water funding.

For the residents of Elmvale Row – many of whom have first-hand flood experience – this is welcome news. Until recently, sodden homes and waterlogged roadways were an unfortunate fact of life. The risk of repeat flooding has been alleviated however, via a two year intervention on Scottish Water's behalf.

The £12.5M Elmvale Row project involved the installation of two enormous storage tanks, providing 13,500cu m of storm water storage to bolster capacity and avoid surcharging – the overloading of sewer infrastructure – where possible.

This was no small undertaking however. Immense in size, each tank had to be hauled into place by way of a 140ft tall crane. Scottish Water entrusted this logistical tightrope walk to delivery partner amey Black & Veatch (aBV), who was similarly

responsible for 400m of pipework and a raft of ancillary public realm works. A storm return system was also installed to channel water stored in both tanks back into the sewer network proper once flood risk has subsided.

Buried now beneath a reinstated grass embankment, the storage tanks are all but invisible – though their presence will provide much-needed peace of mind to residents.

On Avonspark Street and Edgefauld Road it was much the same story. Around £4M has been spent to provide a single 2,500cu m capacity storm water storage tank, again with aBV at the helm.

Chris Wilcock, Flooding Team Leader for the water provider, commented: "Scottish Water is delighted to have completed these two very important projects, which are key parts of our overall investment in our waste water infrastructure across the Greater Glasgow area.

"We are committed to doing all we can to help communities and customers by playing our part in tackling flooding and dealing with the impact of heavy rainfall. "A number of properties in the Elmvale Row and Avonspark Street areas have suffered from recurring flooding over a number of years and we fully appreciate the inconvenience this can cause.

"We know that affected customers will welcome the completion of improvements to our network in the area."

Disruption was unavoidable however, as Joanna Peebles – Scottish Water's Regional Communities Team Manager – explains: "It was impossible to carry out this sort of work without some disruption at both project sites, particularly when a large amount of rock had to be removed at Elmvale Row.

"But we did everything we could to minimise any inconvenience and we kept local residents and road-users informed of our work and liaised closely with them as the work progressed. We would like to thank all affected residents at both projects for their patience and understanding during our work.

"The completion of the projects will give local residents peace of mind that the risk of flooding in the future has been substantially reduced."

With both schemes complete, Scottish Water is now a step closer to realising a pledge made in its 2015-20 Business Plan. All customers are to be removed from the internal sewer flooding register – defined as any property with a 10% or greater chance of flooding per annum – before the 2020 deadline.

# Asset's acceleration aids Cornwall's waste-to-energy power plant



**Asset expertise and Weholite technology are helping Cornwall to create a showcase waste-to-energy power plant to replace the county's shrinking landfill capacity. When complete, the new Cornwall Energy Recovery Centre (CERC) near the village of St Dennis will turn 240,000 tonnes of household waste a year into enough electricity to power 21,000 local homes.**

Two advanced Weholite Modular tanks designed, prefabricated and installed, all within a month of commissioning, will enable main contractors Vinci Environment UK to manage complex waterflow through the site while also meeting strict environmental conditions for the state-of-the-art facility.

Cornwall needs alternative green methods to deal with non-recyclable household waste so the new CERC, operated by SUEZ recycling and recovery UK, will open later this year.

The challenge facing the Asset team was to design tanks that could cope with the high water table on the six-hectare site and withstand main traffic loading on top. Moreover the rectangular structures – measuring 3.5m x 20m x 3m – required walls of varying thickness in order to handle water at different temperatures during the power generation process.

The weight of the thicker modular tank was 40 tonnes as opposed to the concrete design which was more than 260 tonnes. In addition all the inside bespoke components of the tanks were prefabricated in the factory environment providing a solution ready to be installed.

The engineering team at Asset's state-of-the-art plant in Newport, South Wales, used specialised 'finite element' software to simulate conditions on site, which allowed them to design bespoke tanks to meet the client's specific needs.







Weholite's polyethylene solutions were chosen over competitors using more traditional materials – such as concrete – due to the fact that they are quicker to deliver and install, and exceed other materials in resilience and longevity.

Following design, each tank was pre-fabricated in two parts at Asset's Newport factory and assembled on site in Cornwall.

Transporting the load to St Dennis in central Cornwall proved straightforward enough, although the sheer size of the component parts meant the gate to the actual site had to be dismantled and reassembled in order to get to the installation point.

Despite this obstacle, delivery and installation were completed in only two days. Asset had an engineer constantly on-site to ensure the operation ran smoothly and to conduct an air test verifying the installation was watertight.

Vasilios Samaras, technical director at Asset International, explained: "This is an important project for Cornwall that will ensure a more sustainable solution to dealing with its household waste and diminishing landfill capacity. We were pleased our contribution provided a quality solution and saved the main contractor time."

Once opened, the CERC will provide a waste treatment facility that will serve the whole of Cornwall and comply with a number of requirements stipulated by the Environment Agency.

**For more information about Weholite  
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# Sewer infrastructure for the 21st century

Welsh Water has made public its partnership with a pioneering infrastructure initiative to ensure an efficient, environmentally and economically sustainable sewerage system for generations to come.

Chaired by Welsh Water's Director of Environment, Tony Harrington, the innovative '21st Century Drainage Programme' brings forth more than 40 organisations - from government bodies and water regulators to academics, local authorities and environmental experts. Together, each organisation has a mandate to safeguard health concerns, support local communities, and preserve the wider environment - both in the immediate and long-term future.

With climate change and population growth an ever-present concern, the '21st Century Drainage Programme' will work to cultivate a scientifically robust plan of action to better meet the infrastructure needs of an increasingly pressurised society.

Tony Harrington, Director of Environment at Welsh Water and Chairman of the '21st Century Drainage Programme', was on-hand to explain: "Welsh Water is proud to be playing its part in this innovative programme, and it's a privilege to be chairing the partners. Without adequate drainage, communities and businesses cannot grow, and we cannot properly support our environment. Today's report aims to set out the successes and challenges of the past and the scale of ambition for the future. This includes how we should design our sewers in

the future and tackle issues such as long-term sewer deterioration and potential ownership models for all drainage assets."

Tony continued: "We operate an extensive network of pipes and sites, with over 800 wastewater treatment works and 36,000km of sewers - enough to stretch to Australia and back if laid end-to-end - and ensuring the long-term sustainability of our network is a huge challenge. We also face the daily problems of sewer blockages caused by the wrong things being flushed down the toilet or poured down the kitchen sink. These cost our business around £7M every year and can flood homes and pollute local streams.

"Welsh Water's unique model with no shareholders means we've already been able to make innovative steps to future proofing our network, including the RainScape project - which reduces the risk of local sewer flooding by removing surface water from our sewers - and implementing our largest ever science and innovation programme that will play a part in helping us all secure a healthy and vibrant environment for years to come. We're also working with customers and communities through our award-winning behavioural change campaign 'Let's Stop the Block' to challenge customers to think before they flush."

Sewer blockages are a persistent and costly nuisance. Each year, hundreds of homes and businesses are swamped, while fresh watercourses and pristine beachfronts are contaminated, thanks to the

improper disposal of waste. On average, 28,000 such blockages occur each year, all of which are completely avoidable.

Imogen Brown, Head of Waste Water Networks for Welsh Water, had this to say: "We deal with over 2,000 sewer blockages every month and the majority of these blockages are caused by everyday items put down the toilet such as wet wipes, sanitary towels and cotton buds, as well as fat, oil and grease that people put down their drains. Some packaging wrongly labels things like wet wipes and sanitary products as 'flushable' when in fact they will cause blockages further down the pipe. A lot of people aren't even aware that these items can cause sewer flooding and pollution in their homes and communities."

The 'Let's Stop the Block' campaign is Welsh Water's solution to the problem. The initiative is an earnest attempt to engage with and educate frequent flushers on what not to flush. If consumers can be given a consistent message, perhaps that will make the difference.

Imogen concluded: "Anyone who has suffered a flood in their home because of a blocked drain or sewer will know the damage and personal upset that it causes. With the collective support of enough people, we will be able to reduce the blockages, floods and pollution that cause so much distress. Reducing these blockages will also mean that our not-for-profit company will also be able to invest more in other improvements on behalf of our customers."



# Building for Future Generations

IN 1992, the Brundtland Report for the World Commission on Environment and Development defined sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The water treatment industry, by its very nature, executes the objective of making the most of one of the world's natural resources; water. Many available underground water sources such as boreholes or deep wells, if treated appropriately, can be utilised for potable or industrial water processes. Often only simple filtration, mineral reduction or conditioning is all that is needed, but sometimes a quite sophisticated treatment process, such as total mineral elimination may be the only option.

Depending on the raw water chemistry and process requirements, direct treatment of the water, without the need for other pre-treatment or filtration, could provide the desired quality. This has a direct impact on the local and global environment as it enables the use of water that would not be viable if left untreated, without the addition of chemicals.

When designing a new build or renovation, all potential water supplies should be considered; it may even be prudent to use a range of supplies for different applications. For example, the water that can be used in cooling

systems can be drawn straight from natural water sources or even sewers (Google uses sewer water to cool its data facility in Douglas County, Georgia). It's often a simple case of looking at all the possible options, weighing up their cost, financial and environmental, and going with the ones that tick the right boxes.

Water treatment has more to contribute to the Design and Build concept than water sources, though. By including the right plant in the original construction, water treatment can prolong the life of a multitude of machinery and engineering, including boilers and heating systems.

What about grey water? There is no reason for it to be sent to main sewers for utility sewage treatment with discharge costs (black water) when processes such as filtration and reverse osmosis can treat it successfully for reuse in many different scenarios.

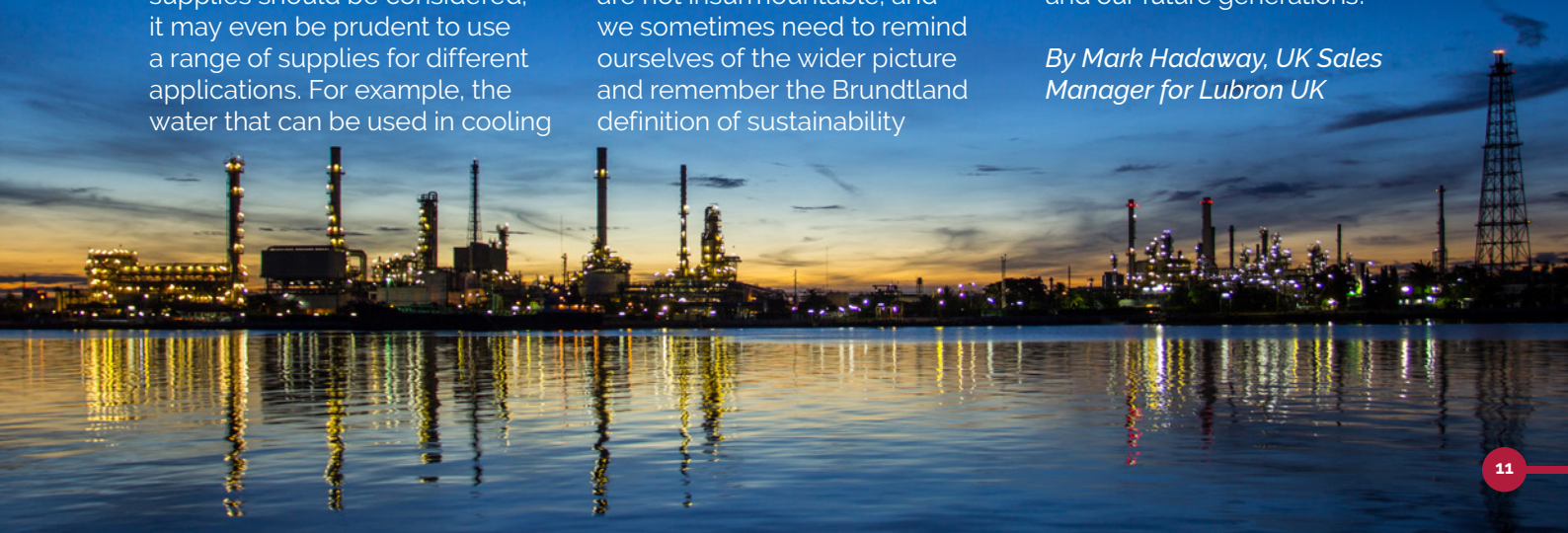
Depending on the building's purpose, it can be difficult to estimate the quantity, or indeed quality, of grey water that will be produced, particularly if the building will be a cross-sector, multi-occupancy let. This, in turn, leads to difficulties in calculating the cost-efficiency of installing and maintaining the appropriate plant to treat the grey water. These complications are not insurmountable, and we sometimes need to remind ourselves of the wider picture and remember the Brundtland definition of sustainability

before we discount possibilities. More and more, buildings are being designed to have central services, used by and paid for by all tenants, which allows the volumes of water to be treated be larger and therefore more cost effective and sustainable.

We've looked at the construction industry's sustainability from an end-product perspective, but let's take a step back in the process and consider the manufacture of materials. The industrial demands on water supplies in the manufacture of steel and concrete, for example, are very high. The use of clean, drinkable water in the manufacture of these and many other materials is often unnecessary and as part of the procurement process responsible purchasers should be asking questions about the sustainability of the products they are buying.

It's a lot to think about, and it really does need the entire construction industry to be taking sustainability seriously, in everything they do. From a water perspective, harnessing intelligent water technology without impacting on the environment and sustainability are about being outward looking, always seeking the best option and then looking deeper for a better one. It is not always the cheapest solution, but what price should we put on the future of our planet, our planet's resources, and our future generations?

*By Mark Hadaway, UK Sales Manager for Lubron UK*







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