



water demand management **bulletin**

www.environment-agency.gov.uk/savewater

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Water Efficiency Awards 2009

The call for entries for the *2009 Water Efficiency Awards* has been issued. The awards aim to increase awareness and share good practice of water efficiency among businesses, public sector and voluntary organisations, and ultimately the public. **The closing date will be 17 April and the winners announced in London on Wednesday 15 July 2009.**

The categories for entry this year (and sponsors) are:

Water Shout Award – celebrating campaigns that change peoples' attitude to the way they use water (Ofwat)

Water Save Award – recognises practical measures that save water and money (Food and Drink Federation)

Water Solve Award – acknowledges smart solutions for sustainable water use (Defra).

Chief Executive Awards – Two organisations, one from the Water Utility sector and a company from the wider business sector, will be selected for the Chief Executive Awards. These awards will reward businesses for their overall outstanding efforts to deliver water efficiency, including water and energy savings, communications and innovation.

The partners for the Awards are Business Link, Envirowise and IEMA (Institute of Environmental Management and Assessment) and the Media partner is Utility Week.

To coincide with the awards launch, the Environment Agency issued details of a survey of UK businesses which is summarised on page 10.

For further details visit www.water-efficiency-awards.org.uk/index.php

Water footprint gathers pace

Global businesses supported by WWF are showing great interest in applying the water footprinting concept. London Business Conference's Water Footprint Summit revealed the reasons why.

In 2002 the concept of the water footprint was developed by Professor Arjen Hoekstra at the University of Twente who, using ecological footprint as a template, produced a practical and encompassing indicator of water use. The water footprint of a product refers to all freshwater used to produce the product, measured over the various steps of the production chain.

The idea of the water footprint grew out of the virtual water concept introduced by Professor Tony Allan (visit www.sbpconferences.com/presentations/Water2008/Day2/Morning/AntonyAllan.ppt to see his recent look at water challenges facing Europe) in 1998 and subsequently quantitatively defined by Hoekstra.

The virtual water concept was used to convey the message that a water-scarce country can save water by importing virtual water such as in the form of water-intensive food products.

The water footprint shifts the perspective, showing that the consumption of a water-intensive product relates to water use and associated impacts in the country where the product was produced.

The interest then shown by WWF and some of the world's major corporations has meant that, by 2007, the water footprint has become a widely accepted means of estimating a businesses' water use impact in its supply chain, in its own operations and in the stage of product use by customers.

To facilitate this interest a *Water Footprint Network* has been established to bring

together expertise from academia, businesses, civil society, governments and international organisations.

Its mission is 'to promote sustainable, equitable and efficient water use through development of shared standards on water footprint accounting and guidelines for the reduction and offsetting of impacts of water footprints'.

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Momentum

All this was revealed at London Business Conference's two day *Water Footprint Summit* 2008 event in December. With the content-rich www.waterfootprint.org website and further *Global Water Footprint* events in the USA (26-27 February 2009, www.water-footprint-usa.com) and Brussels further momentum appears guaranteed.

A notable catalyst is that businesses are realising that water is a finite resource that is often used inefficiently. This implies there is a significant risk of insufficient water of the right quality for companies to continue to source their products. There is the additional risk of stricter water regulation.

As WWF's Stuart Orr remarked '*those paying attention to water will remain competitive*' (WWF-UK's report *UK Water Footprint: the Impact of the UK's Food and Fibre Consumption on Global Water Resources* demonstrates WWF expertise in this field - http://assets.panda.org/downloads/wwf_uk_footprint.pdf).

M&S's Mike Barry related how the company had begun to see evidence of shortages of water in the supply chain adding '*if Coca Cola, Nestle and others are worried I should be worried too*'.

In an age of climate change and environmental concern, responsible water use is increasingly seen as promoting a positive corporate image.

There is an opportunity to link in with other social and environmental movements such as the *Better Cotton Initiative* (www.bettercotton.org)

By collecting the data required to calculate their water footprints, companies have a framework to understand what is going on in the supply chain in some considerable detail and can identify the risks to water supply and the opportunities to improve the situation.

Several presenters touched on the opportunity to rethink the design of products with water use in mind. IKEA is examining a new lighter construction of cloth that uses 20 per cent less cotton.

Several speakers touched on the similarities and difference with carbon footprinting and the issue of 'offsetting'. Applying carbon footprinting offsetting has meaning as carbon emissions are a global phenomenon. By contrast water scarcity is a local issue and thus offsetting does not solve the local issues.

Big effort

The scale of the effort involved can be gleaned from the fact that M&S have 35,000 product lines, involving 2,000 factories and 20,000 farms around the world. M&S has 75,000 employees and 21 million customers each week using their products. Mike Barry estimates that 60 per cent of the water footprint was in the supply chain and 30 per cent through water use by customers when using their products.

Obviously there is a need to identify the 'hotspots' and this is where the partnership with WWF is proving invaluable. WWF has the expertise and the networks that can identify where impacts on water resources are the greatest in a particular region of the world.

M&S are looking to provide information and devolve responsibility so that suppliers can improve their skills and innovate to reduce their water footprint.

He said that '*there is no magic solution - it is just very hard work*' and warned of jumping in too quickly to avoid cultural difficulties. He saw water footprint labelling on products coming in later rather than sooner.

M&S were only one of many global companies at the conference. Unilever, Coca Cola, IKEA, Pepsico, Nestle, Cadbury Schweppes, Walmart, Mars and Kimberley Clarks amongst others described how they are at various stages of using the water footprint concept in earnest.

Such companies have the internal resources to carry out the daunting investigative work and to address the impacts. The conference heard that the challenge is to assist medium and smaller companies to calculate their water footprint.

UK involvement

UK businesses, UK branches of global companies and UK consultancies are very much in the vanguard of developing and using the water footprint concept.

Amongst many examples, Neil Pendle described how his company, Waterscan, has been helping Whitbread to reduce their operational water footprint at their 556 Premier Inns. It involved not only systematic metering (including leak alarms) within the hotels but also challenging the current design standard for the rooms.

Rainwater harvesting and greywater recycling is being pioneered at their flagship green hotel in Tamworth. The next stage is to look at the water footprint of the supply chain.

Business risk

The risks to business from water scarcity is emphasised in Eurosif's water report – *Critical Water Issues Facing Industries*.

Most sectors involve activities for which water is critical for some stage of production. However certain industries, by their very nature, involve activities that have a greater exposure to water related risks, such as: agriculture, mining, food and beverage, energy, forestry and various water treatment, water supply and sanitation industries.

In general, water-intensive industries in water-scarce countries have the opportunity to import products with high virtual water content rather than producing them domestically. By doing so, it allows real water savings, relieving the pressure on local water sources.

Visit www.eurosif.org/content/download/1255/6707/version/1/file/Water_theme_report.pdf

School footprints

Carbon footprinting can mean taking water into account as BSRIA's *Primary School Carbon Footprinting* report illustrates. It examined a Victorian school, a 1970s school and a post-millennium sustainable school and asked which one has the lowest carbon footprint?

Visit <https://infonet.bsria.co.uk/books-downloads/details/?p=2&i=219185&pa=pdfs&anc=17> for details.

On the margin

The Water Margin – How Strategic Management of Water can Grow Business Value by global management consultant Authur D Little is an excellent resume of the risks to business and the application of water footprinting.

The report highlights that water and carbon have quite different characteristics and impacts. Addressing a company's water and carbon issues requires a balancing act, recognising the differences but also the synergies that can be derived from addressing both in a strategic, coordinated way.

The report can be obtained via www.adl.com/watermargin

Water demands to 2050

In the build up to its *Water Resources Strategy*, The Environment Agency has issued *Demand for Water in the 2050s* that applies four scenarios, developed with Henley Centre Headlight Vision.

Innovation scenario

The core drivers of demand are the level of regulation and the resulting technological innovation. This is a world where society expects Government and Scientists to solve the problems of climate change and resource shortfalls so they can carry on living their lives as they wish. Although sustainable development is at the core of the scenario, this is delivered through means other than a shift in societal values.

Market forces scenario

The focus is on growth and consumerism which is clearly reflected in the water demand figures. The scenario shows what could happen to demand where neither society nor Government takes action to control the demand for water (or many other goods). With the focus on cutting costs, water and energy efficiency measures are often forgotten or are at least given a lower priority.

Local resilience scenario

Driven by a need to implement efficiency measures in order to get by. The level of efficiency savings that can be achieved are controlled by the limited technology available and by limited funds for investment in the technology that does exist. The Government has neither the capital nor the political will to invest in strong regulation under this scenario and hence the drive to find improvements is limited. In addition to this, because people's drive to use less (of everything) is controlled by their need to survive rather than their desire to protect the environment, the savings they are prepared to achieve are limited.

Sustainable behaviour scenario

The core driver of demand is society's desire to further sustainable development. Individuals pride themselves in being as efficient as possible and being seen as 'green' is a positive attribute. This does have the result of driving demand down in most sectors. But as it is primarily achieved through good will, the savings could be seen as more vulnerable than those achieved under some other scenarios.

The briefing looks at per capita consumption, population, industrial and commercial and agricultural consumption as well as leakage under each scenario. Forecasts of water use, as shown in figure 1, are given for England and Wales.

Visit <http://publications.environment-agency.gov.uk/pdf/GEHO1208BPBY-e-e.pdf> for details.

Water cycle

The Environment Agency has issued *Water Cycle Study Guidance* whose purpose is to assist local authorities in commissioning water cycle studies. It also provides useful information for water companies, developers and other partners involved in water cycle studies to help them understand why and when they should be part of a water cycle study.

Visit <http://publications.environment-agency.gov.uk/pdf/GEHO0109BPFF-e-e.pdf> for details.

Water pressure

Also in the build up to the water resources strategy, the Environment Agency has issued *Water Resources in England and Wales – Current State and Future Pressures* that gives current data and also highlights the pressures on water environment and water supplies in the future.

The report summarises work to assess the current and future pressures on water resources in England and Wales. This includes the results of Catchment Abstraction Management Strategies, Water Resources Management Plans produced by water companies, river basin and other studies to support the Water Framework Directive and the Habitats Directive, plus work to assess the possible impacts of climate change.

Extracting data from the draft water company water resources management plans, the report shows population growth, household metering levels and per capita consumption to 2035

Visit www.environment-agency.gov.uk/research/library/publications/100582.aspx for details.

Code consultation

The UK Green Building Council's Code for Sustainable Buildings Task Group has issued a *Consultation on a Code for Sustainable Buildings*.

Visit www.brookes.ac.uk/schools/be/oisd/resources/OISD_response_sustainable_code.pdf for details.

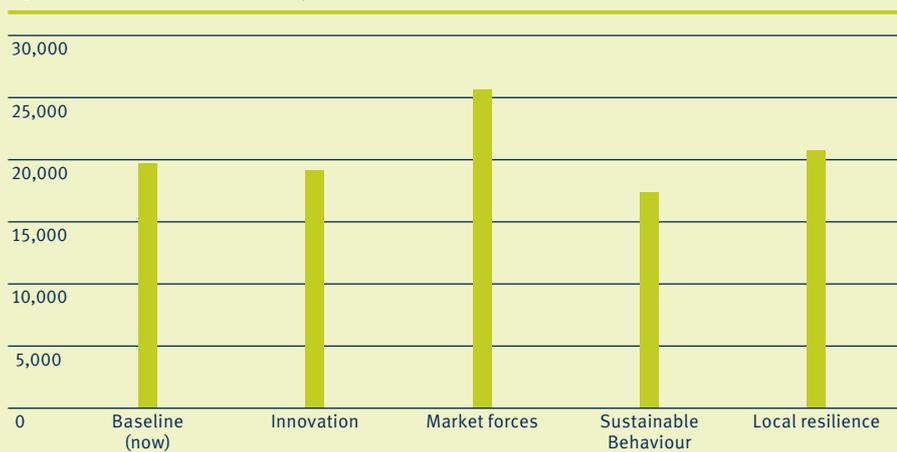
Government delivery

The Government, through the Centre of Expertise in Sustainable Procurement, has issued its first *Delivery Plan Update*. It shows carbon emissions and water consumption trends against targets for each Government Department.

Government is currently forecasting a slight shortfall against the target for water in 2020, but is confident that further work by departments to identify projects to deliver savings should ensure that this target is met.

Visit www.ogc.gov.uk/ogc_-_transforming_government_procurement_centre_of_expertise_in_sustainable_procurement.asp

Figure 1. Total scenario demand by 2050 (Ml/d)



SBWWI on metering and leakage

The decision to include both metering and leakage in their December conference was welcomed as it illustrated the mutual benefits of a metering strategy and effective leakage control, especially for dealing with supply pipe leakage. The SBWWI annual conference is a forum for the supply chain, water companies and regulators to discuss issues and exchange views.

The number of meters being installed or replaced is due to double in the next AMP period. **John Batty** of Blue John Marketing had extracted the following national figures from the draft water company business plans. He added that a piecemeal approach to metering is inefficient – a co-ordinated approach would reduce installation and reading costs.

Projected metering activity AMP4-6

	millions		
	AMP4	AMP5	AMP6
Renewed	1.1	2.1	2.3
Optional	1.3	1.5	1.3
Selective*	0.3	2.0	1.6
Total	2.7	5.6	5.1

* including compulsory meters

There are, as WRC's Andy Godley pointed out in his introduction, many factors to be taken into account when considering where to install a meter.

Presentations from **Jeremy Downer** of Sutton & East Surrey Water, **Richard Chalk** of Severn Trent Water, **Neil Warren** of Northumbrian Water and **Neil Harper** of United Utilities showed that external meters were generally preferred but that a meter *'needs to be located in the best place to do its job'*. The balance has often altered in the past as external factors have changed.

It was during the panel session looking at company policies of installing internal and external meters that the issue of supply pipe adoption arose.

In future there is the possibility of water companies taking on responsibility for customer supply pipes and this has been given support in several of the water companies' *Strategic Direction Statements*.

An early indication of when this could happen would be beneficial as, given the huge number of meter installations planned, it could have implications as to where companies install their meters.

John Parr from Sensus Metering, representing the supply chain, asked water companies to be more upfront in

the procurement process. He added that it would be helpful to spell out the number of meters required at the earliest opportunity so that the suppliers can confidently gear up to meet the accelerated demand.

The 'credit crunch' was mentioned a number of times and several comments suggested that a slow down in the housing market could reduce the number of meters being installed in new properties, and limit opportunities for change of occupier metering. However, there is evidence that the number of optants is increasing as people look to reduce their expenditure.

Logistics

Two presentations put forward the case that meter installation and replacement programmes benefit from a 'logistics' (*'having the right thing, at the right place, at the right time'*) approach.

Paul Glass of Anglian Water and **Martin Warrington** of Multipart, a logistics company, said that the benefits of the partnership were:

- productivity up 20% and administration costs 15% down
- great customer service with about 0.05% complaints
- increased speed of data upload to send fewer errors and data issues

Hanif Price and **David Brend** from Morgan Est then highlighted the inconsistent approach across the industry on where to locate meters and how this affects future reading activity. There are different budget constraints on meter location decisions, different appointing rules and different working practices to 'cut in' the meter. The philosophy of 'early solution' is the key to delivering customer service and, again, logistics is the key.

CCWater's **Andrew White** gave details of the Corr Willbourn report on customers' attitudes to charging and metering and the subsequent work carried out by ORC International:

- customers were unhappy with rateable value charging
- 57% of customers consider metering to be fair
- 58% support trend for increased metering
- 40% support and 27% oppose compulsory metering.

Rising block tariffs

- 33% support introduction, 31% oppose
- 41% believed a rising block tariff would make them reduce water usage, 22% disagreed

He observed that such tariffs were not an answer to affordability.

Seasonal tariffs

- 27% support introduction, 45% oppose
- 33% believed seasonal tariffs would make them reduce water usage, 31% disagreed

He relayed customers' reluctance to support social tariffs as they are seen as subsidies.

To address the affordability issue, CWater's preference is for the government to use the tax and benefit system. Andrew Walker said failure to do so would ration water below safe levels and increase debt. He stressed that demand management tariffs should only be applied to water supply; to apply them for wastewater charges would exacerbate cross subsidies.

Leakage

The Environment Agency's **Nicola Poole** set the scene by showing the leakage forecasts from the draft water company water resource management plans that show only a slight fall from current values (as shown in figure 2). She insisted that *'we need continued progress on leakage control'*.

Defra's **Peter Jiggins** insisted that it should be possible to explain to customers difficult concepts such as the economic level of leakage (ELL). He also said that, as more consumers are metered

at the boundary, the cost implications of supply pipe leakage become more significant.

There was an encouraging presentation from Bristol Water's **Simon Bennett**. The looming Transport Management Act had suggested increased difficulty and expense in finding leaks in the road and pavement.

However, by taking the initiative, Bristol Water had developed an excellent relationship with local authorities and highway agencies. By explaining the implications for the water company, nearly all the repairs (97 per cent that have a planned duration of 3 days or less) now come under the 'Minor Works Notice' with agreed blanket early starts for leaks. This means that the company has been able to meet their standards of service and have incurred minimal financial penalties.

Watershed's **Jo Parker** has been managing UKWIR's *21st Century Distribution Networks* project and is involved in the *Urban Futures* www.urban-futures.org and *Smart Pipes* www.iem.bham.ac.uk/geotechnical/benhamada.htm projects.

She made a plea for innovation by saying 'if you keep on doing what you've always done ... you'll keep on getting what you've always got! She then asked whether there are better ways of doing things.

In the joint presentation, Wessex Water's **Nigel Martin** continued the theme by saying it is difficult for practitioners not to be constrained by traditional thinking.

There is the challenge of training and skills with a requirement to deliver a competent network requiring minimal

maintenance. At present there is a high workforce turnover and no truly nationally recognised certification standard that adds value to the labour force.

He asked delegates to contribute to the debate at www.21stcenturywatersupply.com

WRC's **Joanne Hulance** summarised the UKWIR project on the *Impact of Mains Rehabilitation*. The general conclusions were that a reduction in nightline leakage is more likely when the length of mains replaced increases becoming significant with replacement levels above 75 per cent. Repair rates to mains, communication pipes and stop taps significantly reduced post renewal. Distribution losses are also significantly lower on utility's pipework post-rehabilitation and there was no evidence of leakage/repairs increasing after three years.

Back to basics

Martyn Speight gave publicity to Lloyds and their *Water Industry Registration Scheme (WIRS)* (www.lloydsregister.co.uk/wirs.html) that is aligned to similar schemes on electricity and gas.

Under the scheme they perform technical assessment of the service providers who elect to be assessed for accreditation for contestable works associated with the installation of water infrastructure.

He said we should go back to basics. He asked 'why should we produce bad design and why design in extra fittings? There are a lot of bends in a short space and wall mounted boxes are simple to take apart

while stub flanges that are cheap are too short'.

We should use labour with appropriate competence. Many contractors cannot demonstrate competence and we would not get away with it in the gas industry. Finally he asked 'are leakage tests being witnessed and checked'?

Holistic approach

The leakage panel session demonstrated that an integrated approach to managing leakage could deliver great benefits. By co-ordinating procurement procedures, applying better overall design, having skilled leakage operatives, accredited contractors and proper monitoring systems in place there would be less chance of new connections leaking and a likelihood of fewer leaks in future.

This was evident from comments made by delegates.

Buying the cheapest components can be counter productive and it is important that all the components procured for leakage control should fit together.

Quality control is better in the gas and electricity industry than in the water industry. Concerns were raised about the mindset of the industry, specifically the attitude that 'if you think you can't then you won't'.

There was also concern that new networks do leak and lots of items being put in the ground will not last 50 years and even steel bolts relax over 100 years.

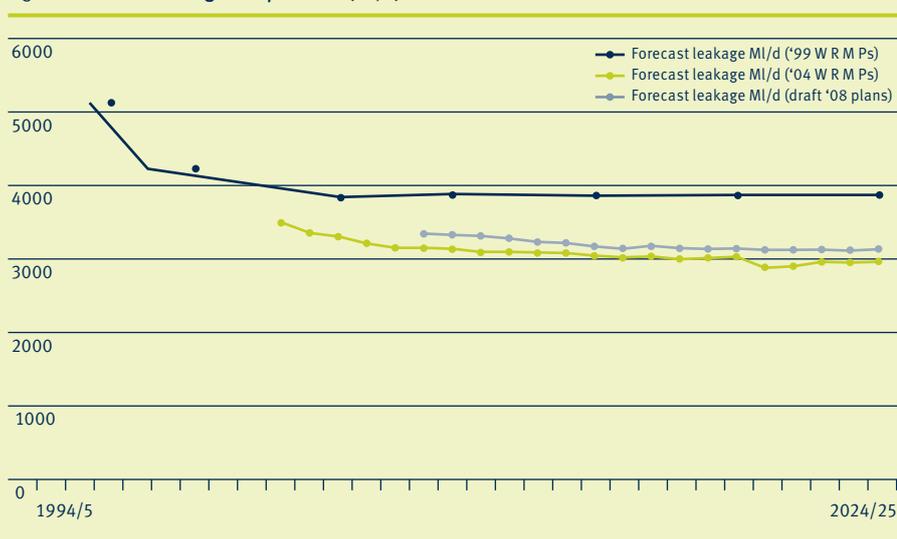
Bristol Water's Frank van der Kleij quoted from the UKWIR study that looked at leakage in the UK and the Netherlands. It confirmed that leakage in the Netherlands was very low and a prime reason is a design approach to have fewer bends and joints and to plan to install pipes at the same level without stop taps.

Additionally, pipes were generally laid under the pavements in sandy soils. It also appeared that much of Europe did not favour step tests for leakage control and in Germany they were not allowed at all.

Southern Water, in valuing customer relations, has adopted a one hour response to reported visible leaks and has areas below the ELL.

The presentations can be downloaded via www.sbwwi.co.uk

Figure 2. Forecast leakage comparisons (Ml/d)



Intelligent metering update

The SBWWI leakage and metering conference afforded the opportunity to take stock of the progress of the Intelligent Metering Initiative.

George Archibald, chairman of the IMI, outlined the development of the *Intelligent Metering Initiative* (IMI) whose purpose is to help the water industry understand the potential value of intelligent metering.

He said that the IMI had fed information into recent consultations and inquiries.

The purpose of the IMI is to:

- address the challenges of establishing an intelligent metering infrastructure
- help the industry optimise its metering strategies

Membership of the IMI includes Defra, WaterUK, OFWAT, Environment Agency, UKWIR, Waterwise, Consumer Council for Water, WRc, SBWWI, I&P Services, Artesia Consulting, Northern Ireland Water and eight water companies.

The IMI are about to issue four UKWIR reports available via www.ukwir.org.uk

- *Cost-benefit analysis* – that highlights areas of uncertainty in the costs and benefits of intelligent metering
- *Data requirements specification* – a common specification would allow cost reductions in intelligent metering technology
- *Communications protocols* – there is too much diversity in current meter installation policies and installed metering asset bases to facilitate IMI today.

- *Metering evidence and roadmap gap analysis* – there is a lot of research out there, it is now imperative that industry experts apply their knowledge, skills and experience to develop solutions to the problems identified to enable metering to advance as efficiently and as smoothly as possible.

He said that costs/benefits are at the heart of what we are doing, but many of the benefits are still speculative. We have to reduce costs as current practice is spasmodic and high cost. We have to take on a different metering policy and discuss with manufacturers to get the equipment the industry wants.

Above all George Archibald concluded that, given the diversity of company policies and the lack of common specifications the whole subject of smart water metering requires a greater political steer.

Dene Marshall then gave an outline future of IMI projects. Following discussions with stakeholders over eleven possible projects the following were selected as the five priority projects:

- difficult cases - metering flats and shared supplies
- evidence base of the impact of metering on demand
- quantify the costs & benefits of metering

- capabilities of current and close to market technical solutions
- customer needs and attitudes (and identify how to maximise customer acceptance benefits)

The IMI is currently putting the funding in place for the coming year and should finalise the second year's programme in February.

Electric action

By contrast Jason Brogden, Engage Consulting, gave the energy industry perspective on intelligent metering.

He noted that there is full competition in the energy sector and not the intense regulation of the water sector.

He concluded there is no business case for smart meters in the current market. It has required Government intervention as the carbon and environmental benefits make the case for GB plc.

Smart Metering Operational Framework Proposals and Options, published in August 2007, set out the smart metering framework.

On 28 October the Government announced that it had mandated gas and electricity smart metering to all households by the end of 2020 to align with the renewables targets.

It will use the powers granted in the Energy Bill given Royal assent on 26 November 2008.

He said *'we have certainty it is going to happen but no certainty on how'*. A high level statement on the market model, expected in the new year, should make this clearer.

A delivery programme will be required that needs Ofgem and Government leadership. It is accepted that solutions may need to be compromised for fast go-live but must not lose sight of the original vision.

He added that interoperability is key as, once installed, a smart meter should not need to be replaced when a customer changes energy supplier. This means having solutions capable of implementation today, but flexible enough to support innovation in the future.

He quoted from the Environment Agency commissioned report from Engage Consulting that considered the opportunities for aligning water metering with energy smart metering (<http://publications.environment-agency.gov.uk/pdf/SCHO0508BOBG-e-e.pdf>).

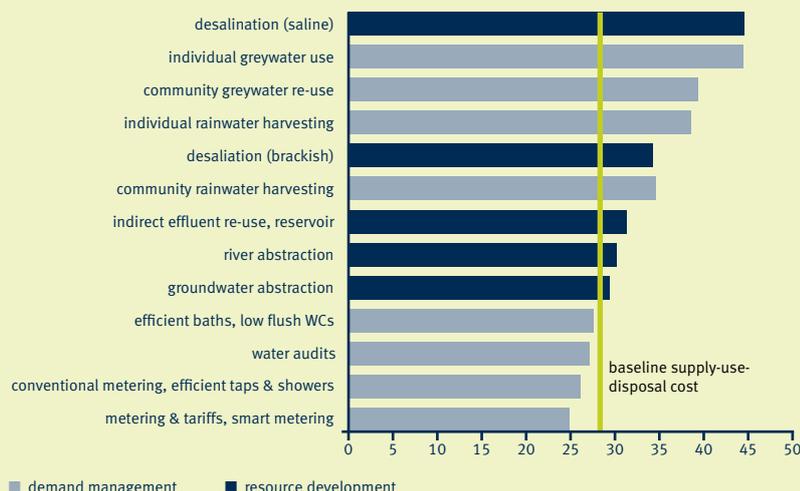
It stated that, as regards the potential alignment with water there are currently no technical barriers, subject to suitable commercial/access arrangements being in place.

He warned that the water sector might well have *'missed the boat for now'*.

Visit www.imi-metering.co.uk for the latest news of the IMI and the published reports can be ordered via www.ukwir.org.uk

Figure 3. Carbon life cycle costs water supply and demand options

The Environment Agency's Andy Turner presented the following figure showing that metering & tariffs and smart metering is an effective option. Simple demand management measures – particularly those which reduce hot water use – have significant potential to not only save water and energy, but also to reduce the carbon footprint throughout the water system. See (<http://publications.environment-agency.gov.uk/pdf/SCHO0708BOFV-E-E>) for details.



Working on tariffs

The Environment Agency's Tariff Trial Workshop afforded the opportunity to hear how the three main tariff trials in the UK are progressing.

The Environment Agency's **Trevor Bishop** opened proceedings by saying *'we believe that tariffs are not the panacea to water efficiency, but could be a very important tool in tackling demand. We do not have a definitive view on which is the best tariff to use, but we are very interested in the evidence from the trials being conducted. Together we need to build a robust evidence base – it is vitally important to continue to share the evidence and experiences gained from trials'*.

Both Dene Marshallsay's and Andrew White's presentations reflected the issues they had raised at the SBWWI conference (see page 4).

Lydd

First to report was Ian McAthy on the Folkestone & Dover Water pilot study at Lydd Town (fully metered) with New Romney (55 per cent metered) as a 'control area'. The study comprises of three phases:

Phase 1 – a smart communication trial

Phase 2 – a stepped tariff trial

Phase 3 – a water efficiency trial

Phase 1 – all customers in Lydd have been receiving smart water bills since January 2008 to improve awareness of usage and provide comparative data. The bill also provides a link between water usage and wastewater and energy savings for domestic activities.

Phase 2 – the stepped tariff comprises:

- 80m³ 'essential use' allowance per household per year charged at 75% of current volumetric rate
- 'luxury use' over 80m³, charged at twice current rate.

There are additional volumetric allowances for high occupancy households and those with special medical requirements as well as protection for vulnerable customers. The study, launched April 2008 for 937 properties in Lydd, is calculated to be revenue neutral at 7.5 per cent reduction in water usage.

Phase 3 – the water efficiency trial consists of a limited offer to all metered customers in Lydd and New Romney. There is a further offer to install water efficiency devices in about 250 homes.

Water on Tap

Water on Tap is a five year collaboration

between South East Water, Kent County Council, Hill Reed Homes and the Environment Agency in Ashford. It also has three elements:

- water efficiency trials of the new Kent Building Design Code
- impact of variable tariffs
- trial of new meter technology.

Sandy Elsworth listed the water efficient fittings and appliances. They are aerated shower heads (max 10 l/min), flow restrictors (max 5 l/min indoors and 10 l/min outdoors), dual/low flush toilets (2.5/4 litres or 3/4 litre), A+ rated washing machine (7.8 l/kg, 39 l per cycle spec) and rainwater butts.

Houses are still being built and sold and are equipped and charged as follows:

- 44 houses (already built). No additional water efficiency, standard tariff
- 100 houses in total, of which 47 already occupied, efficiency features and standard tariff
- 100 houses in total, of which 36 occupied, efficiency features and variable tariff applied.

Sandy Elsworth gave out some very preliminary results based on relatively small sample sizes:

- contribution to total consumption from toilet use is independent of whether property is water efficient or not, despite the lower volume per flush
- baths are used more frequently in water efficient properties, and the volume per use is larger in the water efficient properties than the control group
- water efficient properties use their washing machines considerably more than the control group
- dishwasher frequency of use is unrelated to property group
- internal tap use is not strongly related to house type
- two properties in the water efficient group identified with double flush events.

He gave some preliminary results on appliance use from smart metered homes:

- volume per event is skewed by few large events

- micro-component logging suggests water efficiency showers are used for longer periods
- overall microcomponent logging is so variable and thus little value in terms of per capita consumption estimation at this stage (confirms other studies)
- complex results from water efficient showerheads as a lower flow rate with longer usage means the same volume per usage
- double flushing is an issue of design and acceptability.

Wessex trial

Luke De Vial introduced Wessex Water's trial that has 5,200 customers in total, all of whom are metered after a change of occupier. All have smart meters fitted have been divided into five groups:

- unmeasured control – charged on RV
- measured control – charged on normal measured tariff
- rising block tariff (60m³ at £1.27 and >60m³ at £1.90)
- seasonal tariff (winter at £1.27, summer at £1.91)
- peak seasonal tariff (winter at 1.52, summer at 1.52 for use =< winter, otherwise £3.04).

It is a three year study, with quarterly bills, radio enabled meters and logging flow every 30 minutes where data is collected once per month.

Canadian interest

Jim Robinson from the University of Waterloo in Canada reported that, despite the fact that metering was at a relatively low level internationally, some of the most interesting work on tariffs is now taking place in the UK.

This explained his presence in the UK. He has funding to carry out research on tariffs and said that he would be happy to co-operate with interests over here.

He is particularly interested in how tariffs affect peak day demand as he sees that the need to meet peak demand is the principal driver of utility investment.

Internationally he had found that few water rate structures are devised with a principal goal of reducing peak demand even though the cost to the utility of providing peak demand is estimated to be about ten times the cost of providing water for average day demands.

He also outlined a possible practical study saying that, so far, utilities in Canada and Australia have expressed interest in being involved.

Contact jrobin@watserv1.uwaterloo.ca

Essex & Suffolk's second decade

Essex & Suffolk Water remind us, through their latest newsletter, that they are in their second decade of water efficiency projects.

The latest project is *H2eco* that resulted in an impressive 20 per cent take up rate to an offer to have water efficient products delivered or installed by plumbers.

Participants kept a workbook and, from this information, it is calculated that by delivering and installing these products, customers will save an average of 30.55 litres of water a day in a property.

Part two of the project, which follows up how customers perceive the project and their motivations, is nearing completion and will be featured in the next newsletter.

To subscribe email:demand.planing@eswater.co.uk

US new homes certification

The USA Environmental Protection Agency has issued a draft *Certification System and Inspection Procedures, Inspection Guidelines and Irrigation Audit Guidelines* for WaterSense labelled water-efficient single-family new homes. Comments are due by mid-February.

The documents include a comprehensive check list for inspectors to use.

Bathroom taps and WCs should be WaterSense labelled and washing machines and dishwashers EnergyStar rated. There are maximum flow rates for kitchen taps and showerheads of 2.2 (9.8) and 2.5 gallons (11.15 litres) per minute respectively.

It also includes the complex calculations an inspector should use when multiple showerheads are installed.

You can download the documents via www.epa.gov/watersense/specs/homes.htm

Wise up with Thames

Thames Water now has its *Wise Up to Water* schools micro-site up and running at www.thameswater.co.uk/wiseuptowater.

Wise up to Water is a resource for students and teachers to help schools reduce their water use and includes a tool to measure 'how water wise your school is'. It includes a teachers' guide, information sheets and films and supports curriculum based water learning in the classroom.

Plumbing the heights

A *Water Efficiency Research Coalition* was formed when the AWE signed a Memorandum of Understanding with four other plumbing organizations:

- The Plumbing Heating and Cooling Contractors
- The International Association of Plumbing and Mechanical Officials
- The International Code Council
- The Plumbing Manufacturers Institute.

Projects that might be undertaken include drainline carry research for high efficiency toilets, non-water-using urinals, sizing of water efficient plumbing systems and safe applications for re-use of water.

Funds for worthy projects will be sought from government agencies, foundations, and other interested parties. Visit www.a4we.org for details.

Victoria targets 155

The Victorian Government in Australia recently launched the *Target 155 Personal Consumption Campaign* to combat dwindling water resources.

By January Melburnians were using an average of 149 litres per person each day as shown on the website www.ourwater.vic.gov.au/target155.

Unfortunately for customers a \$3 billion desalination plant and a reduction in revenues is threatening a substantial increase in water prices.

Irish waste watchers

The Irish Minister for the Environment John Gormley signed an order in early January bringing into effect Section 56 of the Water Services Act 2007.

This means that local authorities may issue notices specifying which action is to be taken to prevent wastage or excessive consumption of water.

Provision is also included for community-wide application of water restrictions in times of water shortages.

Where a water services authority is of the opinion that serious water shortages are imminent, it may make an order prohibiting or restricting the use of water supplies for watering gardens, recreational parks or sports grounds, washing cars and trailers (including by commercial car wash facilities), filling or replenishing swimming pools, ponds and lakes and irrigating or spraying crops.

In the latter situation, it is not intended to provide an outright ban on the irrigation or spraying of crops. However, it may be appropriate to limit such activities to evening or night when losses through evaporation will be minimised.

Provision is made for penalties, including on-the-spot fines, for non-compliance with any order in force.

The text of Section 56 can be found at www.irishstatutebook.ie/2007/en/act/pub/0030/print.html

WELS on white goods

The Australian Water Efficiency Labelling and Standards (WELS) Scheme has issued consultation on Whitegoods Regulation Impact Statement: Minimum Water Efficiency Standards for Clothes Washers and Dishwashers and Water Efficiency Labelling of Combined Washer/Dryers.

The consultation assesses the regulatory impacts, including the costs and benefits of setting minimum water efficiency standards for clothes washers and dishwashers to improve the water efficiency of these products. It also assesses the case for introducing a WELS label and minimum standard for the dryer component of combination washer dryers that use water in dryer-mode and stand-alone dryers that use water.

Visit www.waterrating.gov.au/publications/ris-whitegoods.html for details.

Water efficiency to avert recession

The Alliance for Water Efficiency advised President Barack Obama's transition team about the employment potential and economic benefits of broad investments in water efficiency.

The AWE prepared a position paper, *Transforming Water: Water Efficiency as Stimulus and Long-Term Investment* that shows water efficiency programs yield jobs, water savings and other economic benefits and will be a cost-effective investment to consider for the proposed national stimulus package.

The AWE position paper contained the following key findings:

- direct investment in the order of \$10 billion in water/energy efficiency programs can boost US Gross Domestic Product by \$13 to \$15 billion and employment by 150,000 to 220,000 jobs. It could save up to 10 trillion gallons of water, with resulting energy reductions as well
- water/energy efficiency programs can be rapidly deployed and scaled to need
- some of the best opportunities for conservation investment are in lower-income areas
- the long-term strategic, economic, social, and environmental benefits of water/energy efficiency program make them 'no-regret' investments in the nation's future
- investing in water/energy efficiency programs now will, over the longer term, help advance national energy policy, promote sustainable resource use, contribute towards greenhouse gas emissions reduction, and lessen mounting regional conflicts over water resources.

In early January the AWE put out an urgent plea for details of water efficiency projects that could start within six months to two years so that a master list of projects can be sent to Washington for consideration for the Federal Economic Stimulus Plan.

Visit www.a4we.org for full details of the position paper.

Energy and water link down under

CSIRO and the Water Services Association of Australia have issued *Energy use in the Provision and Consumption of Urban Water in Australia and New Zealand*.

Energy use for residential water heating in Sydney, Melbourne, Perth, Brisbane, Gold Coast and Adelaide represents 1.3 per cent of energy use in the total urban system. Residential hot water uses on average 6.5 times the energy that is used to deliver urban water services, this ratio ranges from 4.7 in Adelaide to 11.2 in Melbourne.

This means that, at national level, a 15 per cent reduction in the use of residential hot water or an equivalent increase in the efficiency of residential hot water systems would completely offset the total energy used by the utilities providing water to those households in 2006/07. However care must be made interpreting this for any particular city.

Residential water demand management strategies should be targeted at energy-intensive end uses, such as showers and washing machines as these can

significantly reduce household energy demand and associated greenhouse gas emissions.

Analysis showed that shifting to a certain WELS rated shower would decrease energy consumption for hot water by approximately 50 per cent for households with considerably above average water use.

Energy use associated with industrial and commercial water use (e.g. water heating) is anticipated to be of similar magnitude to the energy for residential water heating. However, only minimal data could be found to verify this and consequently this information should be sourced as a priority.

The report gives a range of advice to industry to reduce water and energy use.

Visit www.clw.csiro.au/publications/waterforahealthycountry/2008/wfhc-urban-water-energy.pdf

EPA Water Efficiency Leader Awards

PepsiCo is a winner of one of the US Environmental Protection Agency's water efficiency awards, recognised for cumulative and on-going accomplishments across many of its main brand names.

PepsiCo is on target to reduce water consumption per unit of production by 20 per cent by 2015. US projects add up to 800 million gallons of water saved and a billion gallons internationally.

PepsiCo's activities include:

- water re-use through on-site wastewater/process water reclamation
- water efficiency through process optimisation and process alteration
- modifying maintenance tasks
- procuring key materials that are delivered more water efficiently
- top down corporate commitment with bottom up reporting
- growing a corporate knowledge base able to be shared across all brands.

Visit www.epa.gov/water/wel/ to see the list of winners.

WDM by law

A new California law will require urban water suppliers to implement certain water conservation measures as a condition of receiving funds.

Assembly Bill 1420 (Laird) was signed into law by Governor Schwarzenegger in October 2007.

The law requires urban water agencies to demonstrate implementation of demand management measures. A detailed description of implementation methods and levels is contained at www.cuwcc.org

The Bill also requires an independent technical panel by 1 January 2009, to provide information and recommendations on 'new demand management measures, technologies, and approaches' to conserve water. The panel will report by January 1, 2010.

Visit www.owue.water.ca.gov/news/news.cfm to download the latest news.

Water crunch

A survey of 1,000 UK decision makers, conducted by the Environment Agency, shows that over half of companies do not have any form of environmental or sustainability policy in place, whilst 55 per cent expect that UK businesses will cut back on future investment in sustainability measures as a result of the 'credit crunch'.

The research also identified clear misconceptions amongst business decision makers as to the importance of water efficiency, with only ten per cent of those questioned seeing saving water as important as saving energy. Just 15 per cent of businesses surveyed said they currently have a water efficiency policy in place.

Fuller details of the survey can be found at www.environment-agency.gov.uk/news/101332.aspx

Reflections

With the UK officially in recession and concern rising about unemployment and a global economic slowdown it would be easy for the environment to take a back seat and for businesses to focus their efforts elsewhere.

But it is now, when the bottom line is threatened, that companies should be working even harder to cut down on waste. Reducing water is one way of achieving this.

But how are businesses managing water?

The 93rd issue of the bulletin details discussions at the Global Water Footprint Summit (page 1). This event was attended by some of the world's biggest corporations including Coca Cola and Nestle.

Interest was driven by a perceived high risk to the often very complex and globally dispersed supply chains presented by water scarcity. There was also a real desire to project an image of corporate social responsibility.

This summit showed that big business is starting to take concerns about water scarcity seriously, looking to build resilience in the supply chain and remove risks posed by water scarcity.

But what about smaller businesses?

A recent Environment Agency poll of 1,000 businesses found that over half of the companies asked had no environmental or sustainability policies in place and 55 per cent expect businesses to cut back on future investment in sustainability measures because of the credit crunch (page 10). Many of the businesses polled were small or medium sized organisations. It is perhaps these companies that are most likely to lose focus on their

environmental impact as times get tough.

While it is understandable that businesses, just like everyone else must prioritise to survive the financial storm, it would be a missed opportunity if this was at the price of keeping a check on their environmental impact and specifically on reducing wastage.

The Water Efficiency Awards is open for entries until April the 17th (page1). The awards run every two years and showcase achievement in water efficiency.

A quick glance at previous winners shows that companies can make significant financial savings from taking simple steps to reduce their water use and achieve very impressive savings by being creative and investing in innovative solutions. The awards have always shown, and will no doubt demonstrate once more, that focussing on reducing water use can save significant sums of money.

The Water Efficiency Awards are also an excellent opportunity for organisations to demonstrate a commitment to reducing their environmental impact.

Across the pond, the Alliance for Water Efficiency (AWE) has produced a paper advising Barack Obama of the employment potential and the economic benefits of wide scale water efficiency projects (page 9).

The AWE is urging the new administration to consider these benefits as part of the Federal Economic Stimulus Plan. Perhaps we should follow this example, by ensuring that through these difficult financial times we increase our focus on reducing water (and energy) wastage. After all, reducing water use in business reduces costs, increases profitability and benefits the environment. Who can argue with that?

Jonathan Dennis

Diary

5 March – Water Conservation – Making Effective Plans for the Long Term

CIWEM and CMS are organising this conference to be held at SOAS, London University. Visit www.ciwem.org/events/Water_conservation_programme_050309.doc for details.

12-13 March – Climate Change Adaption and Water

European Water Partnership (EWP), the Dutch Ministry of Transport, Public Works and Water Management, the United Nations Economic Commission for Europe (UNECE), the World Water Council and the Cooperative Programme on Water and Climate are organising this conference in Brussels. Visit www.ewp.eu for details.

15-16 April – Waterwise Conference 2009 – Delivering Water Efficiency in the UK

The fourth Waterwise Water Efficiency Conference will take place at Keble College in Oxford, Visit www.waterwise.org.uk for details.

26-29 April – Water Loss 2009

There is a call for papers for this IWA conference which is to take place in Cape Town, South Africa. For information visit www.waterloss2009.com

7-9 October 2009 – WaterSmart Innovations

Following the success last October, 2009 conference will take place in Las Vegas. Details at www.watersmartinnovations.com

25- 28 October 2009 – Efficient 2009

The 5th IWA Specialist Conference on Efficient Use and Management of Urban Water Supply Systems will take place in Sydney, Australia. Details at www.efficient2009.com

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