FWR NEWSLETTER
. . . from the Foundation for Water Research
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Welcome to the Autumn Issue of the FWR Newsletter

A major change in the ownership of sewers took place on 1 October 2011. It will affect the water industry as well as the customers and developers. The adoption of private sewers is the focus of this issue and we are lucky that Phill Mills has agreed to write the key article.

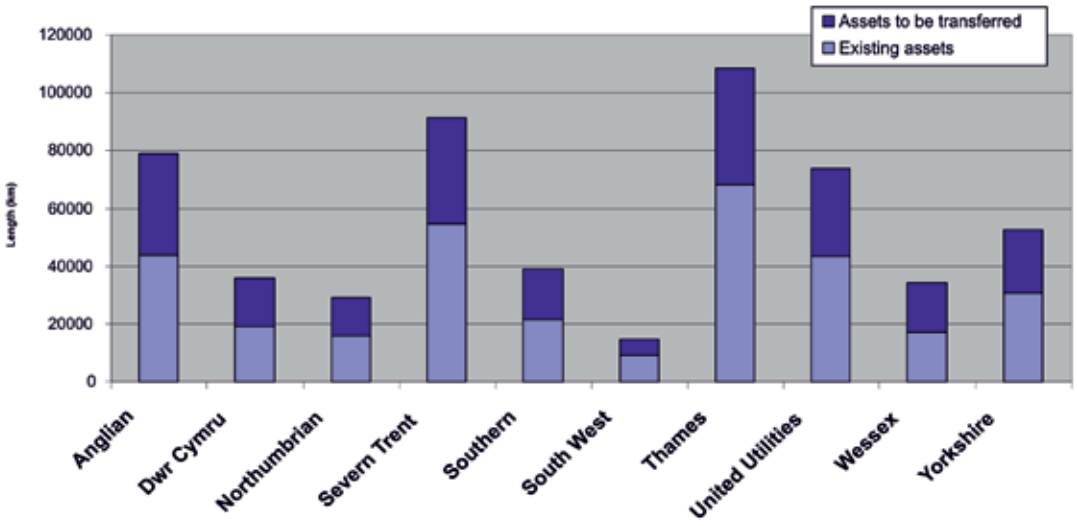
Phill Mills is Director at Policy Consulting Network, a recent independent consultancy operating in the utility sectors. Currently he is working for clients with specific interests in the transfer of sewers. Previously, Phill was Deputy Chief Executive at Water UK and had policy responsibility for private sewer transfer. He was therefore actively engaged in the processes that led from the initial consultation in 2003 to the transfer on 1st October.

During the summer, FWR was represented at conferences, exhibitions and water festivals. Reports by Mike Waite and Neil Tytler are on pages 5 to 7. On Page 7 we also report on a meeting of FWR with another delegation from China, this time from the Water Resources Department of the Jiangxi Province. As usual, on the last page, Caryll Stephen, FWR Chief Executive, reports on our current activities, and the Library section informs about new publications available from the FWR bookshop

For more information we invite you to have a look at our FWR website *(www.euwfd.com)* or *(www.fwr.org)*. You can also contact us by email or telephone (see details on the last page).

The Editor

THIS ISSUE



ADOPTION OF PRIVATE SEWERS

Total increase ~234,000km

Phill Mills
Director, Policy Consulting Network Ltd.

ON THE 1 OCTOBER the Water and Sewerage Companies (WaSCs) of England and Wales collectively took ownership of 234,000 km of sewers and lateral drains.

This is equivalent to over a 70% increase on the existing 324,000 km public sewer network. *And* add to that, the WaSCs do not know where most of these transferred sewers are or what condition they are in. *And* to cap that the WaSCs are also going to take on around 33,000 private sewage pumping stations between now and October 2016. *And* again, they do not know where they are or what condition they are in. *And* since the transfer was still uncertain at the last price review the WaSCs were not funded for this.

THE BACKGROUND

Private sewers are a legacy from the 1936 Public Health Act. Sewers constructed before that date but were private were transferred to sewerage undertakers in 1937. However the Act did not cover sewers laid after that date. Effectively then developers could put forward new sewers for adoption, or not, and sewerage undertakers could choose to adopt new sewers, or not, depending on whether the developer applied and whether the sewers met the standards required. This led to the thousands of private sewers in back gardens, front gardens and elsewhere that were never adopted and remained the responsibility of the owners of the properties connected. Many were laid with poor materials that had a limited lifespan. Pitch fibre, used on housing sites in the 1950s and 60s tended to delaminate, collapse or deform over time and today many pitch fibre sewers need replacing.

THE PROBLEM

Estimates suggest that around 10 million properties in England and Wales were connected to the public sewer via a private sewer or lateral drain. However, most householders were unaware that they were connected. They paid the same level of water charges as those property owners whose drains connected via a private sewer directly to a public sewer, but effectively enjoyed a lower level of service.

Any blockage or collapse on 'their' sewer meant that they had to arrange and pay for repairs. By definition a sewer serves two or more properties, so this responsibility was shared with neighbours. When a

problem did occur it was often difficult for the people affected to get neighbours to share the costs or even in some case to allow access to chambers to clear the blockage. If the sewer had collapsed in one person's garden but their drainage was not affected then they were unlikely to want a huge excavation on their property. This 'social' problem coupled with the inherent technical and financial ones led to increasing complaints from householders. This became evident in a growing postbag to MPs and lobbying from local residents' groups, primarily those on the housing estates with the private pitch fibre sewers.

This lobbing led to the formation of the All Party Parliamentary Group on Sewers and Sewerage whose initial and primary aim was to promote the transfer of all private sewers to the WaSCs.

Transfer, though, has been a long time coming. Defra carried out a review of the problem in 2001, presenting the findings in their first consultation in July 2003. Transfer of ownership to WaSCs was the strategic option then favoured by respondents. In its response, Government suggested that "transferring ownership to WaSCs represented the only comprehensive solution to the problems caused by existing private sewers and laterals…"

A late stage clause was then added to the Water Act 2003[1], which modified the Water Industry Act 1991 and allowed the Secretary of State to make regulations requiring the preparation of schemes for the transfer to water companies of specified private sewers, lateral drains and sewage disposal works.

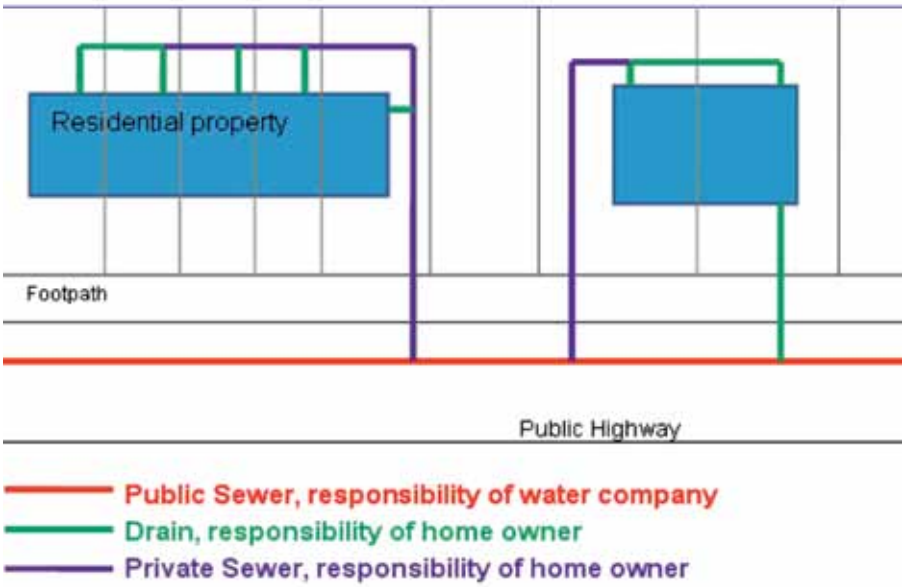
Defra issued a subsequent consultation on the implementation options in July 2007[2], essentially around the scope and form of transfer. This followed the Ministerial statement by Ian Pearson in February 2007 that "Householders will no longer bear responsibility for private sewers".

In December 2008 the then Environment Secretary Hilary Benn made a further statement that "Approximately 200,000km of privately owned sewers and lateral drains in England will be transferred to water and sewerage companies from 2011"[3]. The Minister Huw Irranca-Davies provided a written statement: "As well as bringing simplification and clarity to owners, LAs and WaSCs… transfer will also significantly help address a lack of integrated management of the sewerage network as a whole, and provide much greater efficiency of effort and expenditure at a time when climate change and housing growth may impose greater demands on urban drainage systems."

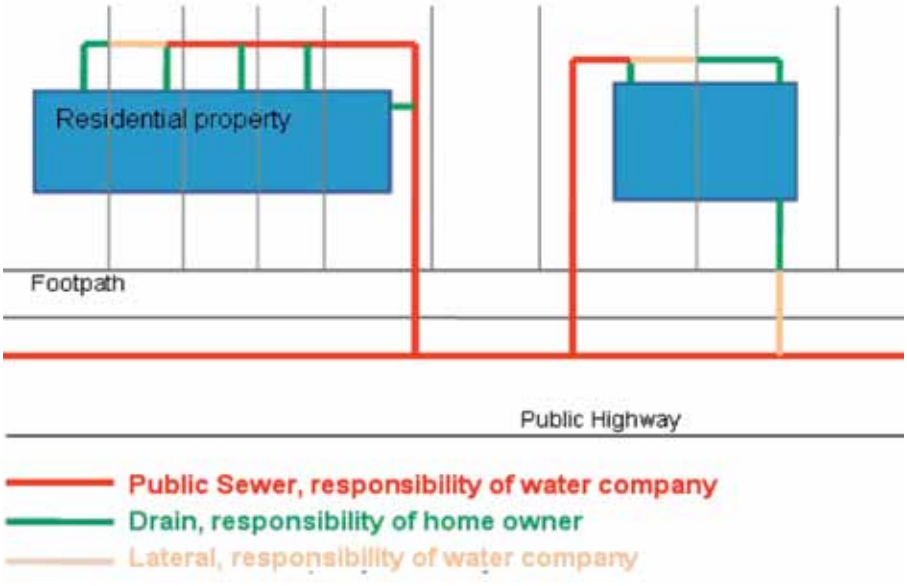
A further consultation on the draft regulations for transfer and the proposals for transfer schemes was issued by Defra in August 2010[4]. The final regulations[5] setting out the schemes for adoption of private sewers were then enacted on 1 July this year with transfer date set as 1st October. These regulations covered the 'main schemes' i.e. for transfer of those sewers which immediately before the 1st July connected with a public sewer and also 'supplementary schemes' for those new sewers on development sites.

The supplementary schemes will ensure the automatic adoption of sewers and lateral drains built in the interim period between 1st July and commencement of Section 42 of the Flood and Water Management Act[6], which covers mandatory adoption by WaSCs and the requirement for developers to enter into an Agreement as a condition of connecting to the public network. Section 42 is expected to be enacted in April or October 2012.

Sewer and drain responsibility prior to 1 October 2011 (source Water UK).



Sewer and drain responsibility after 1 October 2011 (source Water UK)



PERSPECTIVES

For customers, this must be a good thing.

Up to 10 million property owners will be relieved of the responsibility of owning and maintaining an asset they were unaware of and of the risk of the unexpected costs of repairs. There is however a price attached to that transfer of risk. Earlier estimates suggested an impact on water bills of between £3 and £14 a year[7]. However, since there was much uncertainty over the lengths and condition of the assets being transferred these predictions can only be estimates. And if a company achieves a successful IDoK* application say in late 2013, the earliest Ofwat expects to see an application, then the company will be entitled to recover three years worth of expenditure in the final year of the current price review period. This would be a perverse and an unpopular result for customers with a significant water bill increase in 2014/15 – coincidentally the year of the next Price Review.

Having said that, it seemed, in the run up to the transfer that not many customers were interested. The WaSCs had to send notices or

letters to all private sewer owners two months before transfer day. Effectively this meant writing to all their customers in July. Companies made sure the messages were as clear and understandable as could be; some even tested early versions with focus groups. However the legal notice was predefined and could have caused confusion for some. Companies therefore resourced up for an unknown number of customers querying what was happening. In the end though around less than 0.05% actually called in. So for the majority of customers it may have simply been a case of "what's all the fuss about?" or "I thought the water company was already responsible". It will be interesting to see then how many calls the WaSCs did receive in the first weeks of October, from customers with historical drainage problems and those with new ones.

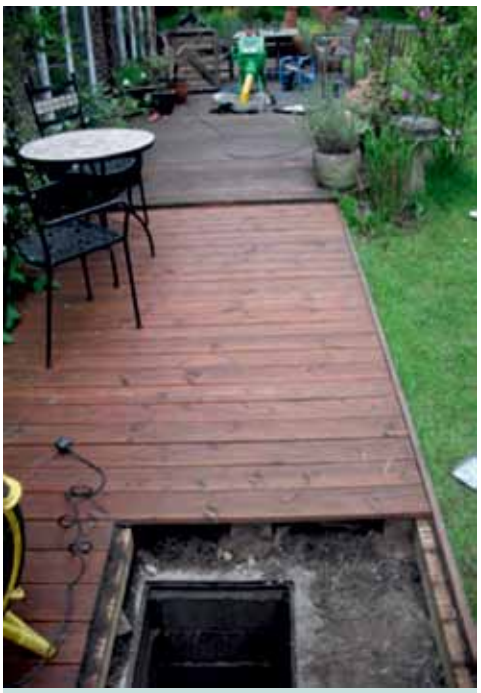
Distressed customers - who will they call? If the water company, the call centre operator has to decide whether it is the WaSC's responsibility. With little information most will send a crew to attend.

Property owners who do not want their private sewer transferred can make an appeal to Ofwat. This right is encompassed in legislation and Ofwat has published guidance [8]. There are however only two grounds for an appeal – 1) that the sewerage company does not have a duty to transfer the sewer or lateral drain, or it is exempt from transfer and 2) the proposed transfer would cause serious detriment to the appellant. In the first case the exempt sewers are those owned by a railway undertaker and those that lie in Crown land and the relevant authority has opted out of transfer. In the second case – "serious detriment" means the appellant would have to demonstrate they were significantly worse off – financially or otherwise. Ofwat will in its decision process consider the possible detriment to the appellant and other customers served of not transferring the sewer to the WaSC. The appellant will therefore have to set out their proposed future maintenance arrangements.

Appellants have two months from notification of the transfer to lodge any appeal. Effectively this means by the end of September

Any private sewer subject to appeal will therefore not transfer until Ofwat has ruled on the appeal. The appellant and others served by the sewer will continue to be responsible for its maintenance and repair. If the appeal is rejected then Ofwat will then make "a declaration of vesting" and the sewer will then transfer to the WaSC.

* *IDoK is Interim Determination of K. Between periodic reviews a company, or Ofwat, can in certain circumstances seek an interim determination of price limits where there are significant changes in costs or revenues. This is set out in Licence Condition B of the water companies' licences.*



WaSCs will be faced with working in restricted locations and on customers' property.

(Photograph courtesy of Wessex Water)

For the WaSCs there are major issues.

This is probably the biggest change for them since privatisation. The lengths of sewers they are responsible for has increased on average by 70% overnight, yet they have received no funds to maintain these, often poor condition, assets and are unlikely to receive any funding till 2014/15 at the earliest.

They will inevitably see an increased number of customer calls. As they will now be working on private property the potential for not meeting customers' expectations increases significantly, especially related to timing of works and reinstatement. This has significant implication for companies SIM** performance and in turn their potential settlement at the next price review.

Their future workload is uncertain but they are having to resource up to meet increased workloads, both on the ground and in the call centres.

There is also the risk of being accused of anti-competitive behaviour in their response to customer calls if, as pointed out below, their approach leads to a disproportionate decline in work going to private drainage contractors.

Ofwat expects a 'prudent' approach with very minimal capital spend this AMP. However companies will have to maintain the transferred assets, capture data for preparation of an IDoK and their PR14 business plans and manage customers, local councillors' and MPs' expectations for resolution of long-standing problems. The WaSCs are really caught between a regulatory rock and a legislative hard place.

** *SIM is Service Incentive Mechanism - the consumer performance measure that includes both quantitative and qualitative assessments. The quantitative measure aims to measure the number of times consumers contact their company because of its failure to meet their expectations.*

It acts as a broad measure of 'failure demand'. This is the extra demand placed on a company because of service failures, such as work not being done properly or work not being done at all.

For private drainage contractors many never expected it to happen, or were blissfully unaware, despite several seminars and roadshows over the last few years.

However it is a very fragmented sector and with the exception of a few big household names, mostly made up of SMEs with a large proportion of small firms with two or three vans on the road. But it has, not unnaturally, been the larger firms that have won work with the WaSCs or their Tier 1 contractors.

In theory, there should still be sufficient work for the small firms. A number of studies have suggested most blockages are within a few metres of the property and only about 20% to 30% of blockages will actually be on the company side post transfer.

The question is - who in the future is the public going to call when they have a drainage problem? If they think the water company is now responsible for everything, then water companies could become the default call. It is difficult for call centre staff, with no sewer records, listening to a customer trying to explain the problem, to determine whether it is the company's or the customer's responsibility. In most cases therefore the WaSCs expect to send a crew to attend.

If that crew then find the problem on the customer's drain - rather than the public sewer – do they walk away leaving a distressed customer with an un-resolved problem? This is unlikely and not the service we would expect. Generally therefore water companies will offer to clear a blockage at a fixed rate – at least for the first time.

FWR Wastewater
the information centre for water, wastewater and related environmental issues

There are potential competition issues here. The crew attending will have to advise the customer they can get alternative quotes. But in those circumstances, how many customers will? So although only 20% - 30% of the blockage work should theoretically transfer to the water companies, their and their contractors' crews could end up doing a great deal more. The likely impact on the small drain repair contractor is therefore still a big unknown.

For insurance companies the question is - will there be a protocol with the WaSCs?

If the property owner has buildings insurance, and all homes with a mortgage must have, most insurance companies will appoint a drainage specialist to investigate any drainage problem. This includes clearing a blockage as part of the investigation, in most cases, without a policy excess being charged.

So in some cases a contractor working for an insurance company will attend and in some cases a water company or their contractor will attend. The problem may be the others to repair. So there really needs to be a protocol on what then happens - so the customer is not disadvantaged and kept waiting for a different crew to attend. Where though the same contractor has a contract with the WaSC and has delegated powers from the major insurers then this is unlikely to be an issue.

Most insurers have agreed to follow Defra's recommendations in its "Provisional non-statutory guidance"[9] to honour any claims and continue with any repairs on transferred sewers started before the transfer day. However they will then be working on a WaSC's asset and will need to keep the WaSC informed of their work.

For developers this changes the automatic right of connection to the public network that developers previously enjoyed.

Having created this legislation to transfer all existing private sewers and lateral drains to the WaSCs, Defra had to make other legislative changes to prevent new private sewers bring created. It covered this in the Flood and Water Management Act 2010 – section 42 "Agreements on new drainage systems".

Essentially this changes the automatic right of connection to the public network that developers previously enjoyed. Now anyone wishing to make a connection must enter into a Section 104 Agreement*** with the WaSC and that Agreement must include details of the construction standards and arrangements for adoption by the WaSC. The standard must 'incorporate or accord with' standards to be published by the Minister. However, these are not expected, even in consultation form, until late November.

Whilst this removes the risks to future customers buying a new home, it does increase the risk to the WaSCs. Having entered into an Agreement they must adopt the connected sewer, irrespective of whether it meets the standards set out or not, once certain events take place – probably the occupation of the property and billing of the owner. This is a complete change from previous arrangements where WaSCs could refuse to adopt or the developer did not put forward sewers for adoption. So to mitigate the potential risk, WaSCs have suggested increasing the current level of bonding from 10% to 100% and even 100% of the reconstruction costs. In practice such levels of bonding are unlikely to be available in the current financial climate. Lloyds Register and NHBC (the major Bond provider to developers) are therefore working on an insurance backed accredited contractor scheme. This has some similarities to the existing WIRS schemes run by Lloyds. The proposed scheme has wide support from the water industry and developers.

Developers are faced with new construction standards and new Section 104 Agreements for adoption of sewers.

CONCLUSION

Private sewer transfer has been an issue recognised by successive governments since 2001. Transfer to the WaSCs took place on 1st October. Despite being written to, whether the majority of customers actually realise this is questionable. Those customers with problem sewers, some even lobbyists over the last decade, will be well aware. But what will be the cost of transfer? And when will customers see the impact in their water bills?

In the run up to transfer there are many "known unknowns" and "unknown unknowns". Significant are the length and condition of assets transferring; the workload for the WaSCs and when, or if, they will be reimbursed their costs during this AMP period. And what then will be the fallout from the consequent rise in water bills? For private drainage contractors, that have not won work with the WaSCs or their Tier 1 contractors, will they still be in business in a year or two? For developers, what will be the implications of new and as yet unknown standards for new sewers? And will there be a realistic and acceptable alternative to 100% bonding requirements?

So despite ten years in the making, there are many uncertainties about private sewer transfer still to be resolved.

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Web: *(http://www.policyconsulting.co.uk)*

*** *An agreement for the adoption of a new sewer entered into by the developer and WaSC, under section 104 of the Water Industry Act 1991*

PRIVATE SEWER TRANSFER

Where to find more information:

- **A Defra web page** with latest news, giving a summary of the background, legislation and regulations and links to key publications. *(http://www.defra.gov.uk/environment/quality/water/sewage/sewers/)*
- **Water UK web site** giving extensive information and explanations with illustrated examples how the transfer will affect different types of properties. *(http://www.water.org.uk/home/policy/private-sewers-transfer)*
- **Consumer Council for Water, CCW.** Background information and FAQs. *(http://ccwater.custhelp.com/app/answers/detail/a_id/522)*
- **Local WaSCs.** Every WaSC in England and Wales has a devoted section of its website providing more information about the transfer. A list of links to all of the companies is available on the CCWater website: *(http://ccwater.custhelp.com/app/answers/detail/a_id/418)*
- **A dedicated website Private Sewer Transfer.** A guidance on the new legislation for sewers and drains sponsored by the PIMS Group. *(http://privatesewertransfer-px.rtrk.co.uk/?gclid=CPzQ-5nkw6cCFQRP4QodBUSmDg)*

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2. Consultation on Private Sewers Transfer – Implementation Options. Defra. July 2007. *(http://archive.defra.gov.uk/environment/quality/water/industry/sewers/documents/private-sewer-consultation.pdf)*
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FWR Water Supply
the information centre for water, wastewater and related environmental issues

DWI Annual Report

Private Water Supplies

The DWI Annual Report by the Chief Inspector of drinking water is available for download at the DWI website: *(http://dwi.defra.gov.uk/about/annual-report/2010/index.htm)*

Mike Waite comments.

THE 2011 DRINKING WATER INSPECTORATE (DWI) ANNUAL REPORT 'DRINKING WATER 2010' INCLUDES FOR THE FIRST TIME A SEPARATE REPORT GIVING SUMMARY STATISTICS ON PRIVATE WATER SUPPLIES IN ENGLAND AND A SIMILAR ONE FOR WALES.

The data is derived from records kept by Local Authorities in accordance with their legal duty imposed by the Private Water Supplies Regulations 2009 and records are up to the end of 2010 and as held on 31 January 2011. As local authorities have until 2015 to carry out all required risk assessments, the data is incomplete.

In England there are over 16,600 private supplies serving more than a single premises. A number of examples of unsatisfactory private supplies are given. Already 114 improvement notices have been served on private supplies in England presenting a potential danger to public health, and a further 56 in Wales. Although fairly few samples have been taken, 9 of the 194 samples from private supplies in England supplying more than 1000m^3 per day have contained E.coli.

A number of breaches of chemical standards have also been detected, in particular arsenic and nitrate. These reports show the importance and impact of the Private Water Supplies Regulations 2009.

FIPS 2011 Conference

Developing Technologies

Faecal Indicators: problem or solution?

Has technical progress reduced the need for faecal indicators?

6 – 8 June 2011, Edinburgh

The FIPS 2011 conference was designed to address existing and emerging issues in environmental microbiology offering new challenges in microbiology, public health and environmental science which will assist in monitoring and modelling environmental systems to protect human health, animal welfare and environmental quality.

Mike Waite reports: Much interesting work is going on but nothing was described that is likely to radically change current practice in the immediate future. The meeting embraced the principle of Water Safety Plans as the first line of defence for public health with traditional microbiological monitoring only as a confirmatory tool. E.coli and enterococci remain the indicators of choice but Bacteroidetes are the mainstay of developing molecular technologies, being more numerous in faeces and having a number of host-specific species and strains.

A more extensive report on the conference is available on our website: *(http://www.fwr.org/drnkwatr/fipsconf.htm)*
Full programme of the conference and some presentations are available on the conference website: *(http://www.fips2011.org).*
Proceedings of the conference will be available from the Royal Society of Chemistry.

Future Water 2011

13 July 2011,
Royal Geographic Society, London

Future Water, an All Party Parliamentary Water Group conference, was a key policy event for the sector, bringing together top-level politicians and senior officials from Defra, BIS, OFWAT, the Environment Agency and Natural England, industry leaders from water companies, suppliers, and analysts, as well as all those affected by the sector's actions, including environmental groups, consumer representatives and other stakeholders.

Mike Waite reports: The meeting was attended by over 150 delegates from a diverse range of backgrounds who heard a number of presentations including keynote addresses from Anne Mackintosh, MP. Chair of the EFRA Select Committee, and Richard Benyon MP, Parliamentary Under Secretary for Natural Environment and Fisheries Defra. The delayed Water White Paper and its possible impacts was a major topic, along with water trading, competition, charging policies and sustainable abstraction.

A more extensive report on the meeting is available on our website: *(http://www.fwr.org/drnkwatr/futurh20.htm)*

Richard Benyon MP, Parliamentary Under Secretary for Natural Environment and Fisheries DEFRA

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WSW
Water, Sewerage & Waste Exhibitions

THIS YEAR FWR HAVE SUPPORTED FOUR WATER, SEWERAGE AND WASTE (WSW) EXHIBITIONS *(http://www.pse.co.uk/)*.

The first three were in Glasgow, Manchester and Exeter with the last being in Birmingham on the 27th October.

These exhibitions have been running for a number of years and are a successful way for organisations to promote their products and services to a large number of people working directly in the water, sewerage and waste industries.

This wide ranging audience is ideal to promote FWR not only to manufacturers and water professionals but also those not directly involved in water management such as surveyors, architects, environmental consultants, property managers, and local authority personnel.

Manchester – 17 March 2011

Glasgow – 30 June 2011

Exeter – 15 September 2011

Olivia Sanderson,
WSW exhibitions organiser

FWR Water Framework Directive
the information centre for water, wastewater and related environmental issues

Our Chinese visitors from the Jiangxi Province. From left: Mr Hu Yinglong, Chief Engineer, Water Resources Information Centre, Mr Li Fenggeng, Senior Engineer, Water Resources Science Research Institute, Ms Liu Yan, Deputy Director, Water Resources Projects Administration Bureau of Gan-Fu Basin, Ivana Wilson (FWR Editor) and Neil Tytler (WFDIC Manager), Mr Li Dongjiang, Deputy Director-general, Water Resources Department, Mr Chen Yunxiang, Deputy Director, Water Resources Science Research Institute and Mr Tian Chengwei, Deputy Division Chief, Rural Hydropower Electrification Development Bureau.

Mr Li Dongjiang, leader of the delegation, with Mr Chen Yunxiang.

Mr Tian Chengwei asking questions through the interpreter Zhiai Liu.

Delegation from Jiangxi Province visits FWR

Jiangxi Province (population 41.4 million) is situated on the south bank of the mid-low reaches of the Yangze River in eastern Peoples Republic of China.

The main body of water in the province is Poyang Lake, the largest freshwater lake of China, which receives its water from catchments of rivers Fu, Gan, Rao, Xin and Xiu. Poyang Lake is an internationally important wetland.

Thousands of Siberian cranes, which migrate to Poyang Lake every winter, account for 95% of the remaining population. Jiangxi Province is involved in several major natural resources management projects, including controversial plans for the construction of a dam across Poyang's northern end.

In the limited time available Ivana Wilson outlined how water resources are managed in the UK and Europe and Neil Tyler then discussed in more details key features of the Water Framework Directive and how it is being implemented in the UK.

Ivana Wilson

FWR exhibits at Water Festivals

TO RAISE AWARENESS OF FWR and the large amount of information we provide on water and related environmental matters, this year FWR targeted two high profile public events; the Hampshire Water Festival in Havant *(http://www.hampshirewaterfestival.co.uk/index.html)* and the Inland Waterways Association Festival at Burton-on-Trent *(http://www.waterways.org.uk/events_festivals/past_events/the_waterways_festival/home)*, both in July. These two events attract large numbers of the public who have some relationship with water and the water environment.

There was considerable interest in FWR's work and publications and by the end of both events all of our leaflets and information sheets had gone. In supporting these events we also made contact with a number of local environmental professionals who wish to receive regular updates on new or revised FWR information and publications.

Neil Tytler

Night procession of boats at the Inland Waterways Festival at Burton-on-Trent.

Neil Tytler at the FWR stand at the Hampshire Water Festival.

Councillor Ken Smith, Mayor of Havant with Neil Tytler at the Hampshire Water Festival.

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An update on the activities of the FWR

Caryll Stephen
Chief Executive of the Foundation for Water Research

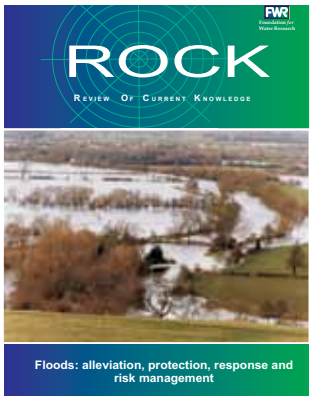
As you will see from the previous pages of this newsletter, the Summer months have been busy for FWR with the production of some new publications and exhibiting at a number of 'watery' events. This newsletter is concentrating on the wastewater area and in particular on the recent major change in the ownership of sewers and we are most grateful to Phill Mills for writing our lead article on this change.

The next three months should see us exhibiting at a few more events and producing some further revisions/additions to our family of ROCKs and Guides. We are also expecting a further Chinese delegation. Our December newsletter is already being developed and will focus on integrated catchment management with particular emphasis on lakes.

All in all a busy three months ahead leading up to Christmas.

FWR Library
the information centre for water, wastewater and related environmental issues

New FWR publication



New FWR ROCK

FWR/R0015, July 2011

Floods: alleviation, protection, response and risk management

Flooding is the most widespread of all natural hazards, often arising from adverse meteorological conditions such as:

- intense or prolonged rainfall in river catchments
- storm surges at the coast and in estuaries
- storm-generated waves at the coast.

The main factors which need to be considered regarding flooding include technical, social and governmental aspects. This ROCK aims to provide a concise description of these factors on a worldwide basis but with a more specific European and UK focus.

The report is posted on our website and may be viewed via our FWR website: *(http://www.fwr.org)*. Hard copies of the ROCK are obtainable from the Foundation, price £15.00, less 20% for FWR Members

FWR publications in preparation:

Later in the year we are planning to publish a revision of the FWR ROCK on sewage sludge disposal (FR/R0001) and a new FWR Guide on public water supply management. The popular pocket-size booklet "An Inspector's Guide to Sewerage Law' is being updated to take into account the recent changes in private sewers ownership, as described in the article by Phill Mills in this issue. It should also be available later in the year.

SNIFFER Reports:

SNIFFER
SCOTLAND & NORTHERN IRELAND FORUM FOR ENVIRONMENTAL RESEARCH

SNIFFER manages and publishes research addressing knowledge gaps relating to environmental issues.

The reports are available in pdf format on the SNIFFER website *(http://www.sniffer.org.uk)* . CDs (£20.00+VAT) or printed copies can be ordered from our FWR website *(http://www.fwr.org)* or by e-mail: *office@fwr.org.uk.*

You can purchase the reports through our Secure Online Purchasing system.

The following new reports are now available from FWR:

- **ER04** - Development of site relevant critical loads for APIS (£15.00)
- **ER12** - PM2.5 in the UK (£50.00)
- **ER17** - The costs and benefits of carbon abatement technology for regulated sectors (£25.00)
- **ER18** - Assessment of the contribution of aquatic carbon fluxes to carbon losses from UK peatlands (£35.00)
- **ER20** - Tidal Technologies: Key issues across planning and development for environmental regulators (£15:00)

Design Agency - http://www.connellmarketing.com

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