

Managing Water

and its
environment



Image: River Windrush, Weir replacement and new fish passage - Pg 24

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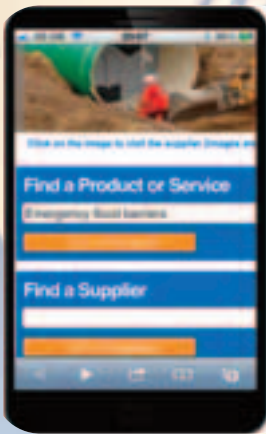
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November Floods,
National Control Centre. Pg 8





*"Here to serve the
water management industry"*



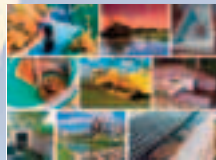
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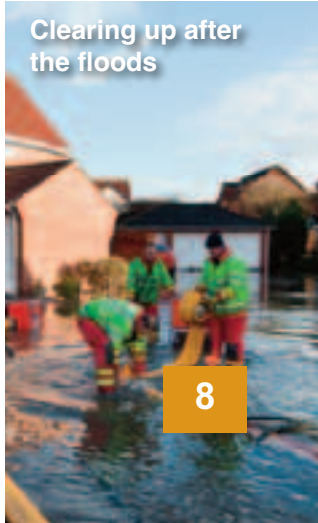
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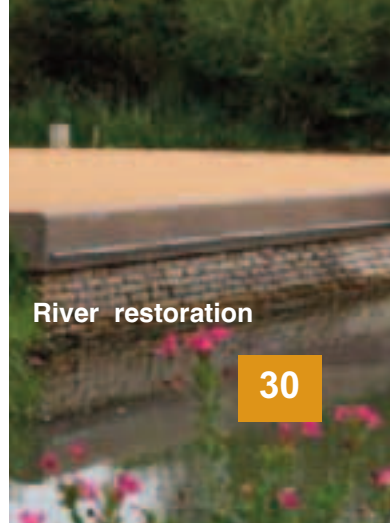
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Vegetation Control
Vehicle Tracking
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Dredging Cutter Suction
Dredging Pumps
Dryers
Duct Sealing
Earth Works
Eel Pass
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Embankment Reinforcement
Emergency Pumps

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Water Ambition and
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**Alex Stephenson,**

Alex has over 36 years experience in stormwater drainage design and related issues.

As well as being the UK Stormwater Director with Hydro International he is also Chairman of the British Water SuDS focus group. He is ideally situated to keep you up to date with the industry changes and legislation.

SuDS – Why We All Have To Get It Right

There's no doubt that we are making tremendous steps forward on the road to widespread use of SuDS in the UK, but there is still a long road ahead. That's why sharing knowledge and best practice is so important.

Since its launch in May 2012, there have been nearly 20,000 visits to the Engineering Nature's Way website. Now, with the launch of Susdrain, CIRIA has established an important new community for SuDS. Hydro is proud to be a partner and we wish them every success with the initiative. The more ways there are to share information and resources, the better.

There is also still much to be done to implement SuDS along our national and regional highways and to truly tackle surface water quality via local authority road maintenance programmes. CIRIA's invaluable work in producing a guide for Retrofit SuDS has laid out a vision of just how much SuDS could contribute to future urban environments. At present, the work is all there to do.

Why is sharing knowledge so important? Because getting it right from the start is essential. If we don't, then we'll end up with patchy and inconsistent implementation of SuDS across the UK, especially if legislative guidelines remain unclear and there continues to be a shortage of funding for local authorities.

That's why initiatives like Susdrain are so important. For the past 18 months, Hydro International has been making its contribution to sharing best practice through the Engineering Nature's Way initiative and will continue to do so. There are also important forums like Local Government Association's Flownet community to share knowledge between professionals.

As the chair of the British Water SuDS focus group for over 7 years, I have been privileged to be involved in the development of SuDS from its earliest beginnings. What has impressed me at recent professional events has been the passion of leading industry individuals in putting the case for SuDS. It wouldn't be too much to say the mood was visionary.

Learning from international best practice and disciplines such as Water Sensitive Urban Design has also helped to drive forward a vision for SuDS in the UK. By working together as an industry, we have a real opportunity to use SuDS to transform our urban environments and to provide valuable ecosystems services.

This also means tackling some key 'urban myths' around SuDS. Firstly: that they are only 'green' or 'soft' features. True SuDS embody a treatment train which can be selected from a broad 'toolbox' of engineered and more 'natural' components. This is the principle of Engineering Nature's Way, which I believe offers a practical, achievable and clearly-understandable way forward.

Secondly: that they will make projects more expensive. Concerns about the potential extra costs of installing SuDS were probably behind a late addition to the draft Standards: a clause that can exempt developers from installing SuDS schemes on the grounds of "disproportionate cost". This has been seen as something of a 'loophole' and in my view, is unnecessary. By applying SuDS principles and the full toolbox of SuDS techniques, there should be very few schemes that would fall through the net.

Both Susdrain and Engineering Nature's Way are about dispelling the myths and busting misconceptions, it would be useful to know what other misconceptions you believe there are by responding to this blog?

To achieve success co-operation is required between Government agencies, water companies and industry and between complementary disciplines such as manufacturing, civil engineering and landscape architecture.

After the success of the London 2012 Olympics this summer, we are especially conscious of our national interests. Initiatives like Susdrain can help to provide a vital engine for progress, enabling government and industry to share knowledge and develop best practice for the good of the environment for all, no matter what the politics of the day.

To begin with, it will be the large scale housing developments such as those at Elvetham Heath in Hampshire and Clay Farm in Cambridgeshire which set the bar and provide important best practice examples.

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**Charles Tucker,**

Charles is Chairman of the National Flood Forum, a national charity that supports and represents people and communities at risk of flooding.

Charles had a 35 year career in rivers, water pollution control, drainage and waste regulation before taking early retirement from the Environment Agency.

They are "kicking people when they're down

As rumours strengthen that talks between the Government and the Association of British Insurers (ABI) have broken down, the National Flood Forum has hit out at both parties for failing to secure an agreement on the future of flood risk insurance.

At least 816 homes have been flooded in the past week but Government has still not reached agreement with the ABI on a replacement for the Statement of Principles covering flood insurance. This runs out in June next year and already many insurance companies are making plans that assume there will be no agreement. The consequence will be a free-for-all where insurance companies are free and refuse insurance to anyone who is at high risk.

This is kicking people when they are down. Every one of those 816 households is likely to have a nasty shock when they come to renew their insurance. Many that have flooded before could now find it difficult to get insurance, at any price.

It's bad enough just to be flooded. Being hit with a 4-figure insurance premium adds insult to injury. And being refused insurance could spell financial ruin for thousands. Every household and community hit by flooding is relying on them to ensure that flood risk insurance is available to all, is affordable, and is based on social justice.

The Flood Forum has long held that it is Government's responsibility to ensure that a clear framework is in place with the insurance industry for flood risk insurance. Failing agreement, a completely free market will leave many thousands of high risk properties unable to obtain insurance in future years.

These negotiations have been going on for over 2 years; for them to break down at this stage is outrageous. It's now time for action. We need to see exactly what is being proposed by both sides and knock heads together; and fast.

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CIWEM's new President



Ramboll director Paul Hillman, BSc MSc CEng CSci CEnv C.WEM FICE FCIWEM, was inducted as President CIWEM on 1st October 2012.

Working to achieve a clean, green and sustainable world, CIWEM is the only independent, chartered professional body and registered charity with an integrated approach to environmental, social and cultural issues. A powerful evidence-based lobbying force, both within the UK and abroad, it supports thousands of members worldwide and provides training and professional development opportunities.

Paul, who specialises in environmental engineering and science, has over 40 years' experience in the construction industry. His recent projects for Ramboll include acting as environmental adviser to the Forth Crossing Bridge Contractors (FCBC) consortium for design developments and construction methods on the Forth Replacement Crossing – presently Northern Europe's largest bridge construction project. He also had overall responsibility for the Environmental Impact Assessment on the £600 million Mersey Gateway scheme.

A lecturer on public health engineering, surface water hydrology, contaminated land, environmental pollution and waste management, and research supervisor on wastewater treatment and waste management at the University of Southampton, Paul has also acted as a consultant to the World Health Organisation on environmental health matters in the Middle East. His other interests include supporting the Rose Road Association, which provides high-quality services for young people with complex disabilities in Hampshire.

Immediately following his induction as CIWEM's 26th President, Paul chaired a Presidential Debate focusing on environment, water and health. In addition to these themes, he has also chosen to highlight the role of CIWEM in delivering public benefit and the challenges in delivering environmental benefits from the development process during his tenure.

Paul comments: "I'm honoured to be taking on this role and want to thank Ramboll for allowing me the time and giving me the support to do so. I'd also like to thank my colleagues for their help and for taking on the extra workload my absence is likely to bring. I consider myself an optimistic generalist and I'm greatly looking forward to meeting CIWEM members throughout the UK and in Hong Kong and to promoting the values of our Institution during my year in office."



Infrastructure Act comes into force

The Infrastructure (Financial Assistance) Bill, which will enable the Government to guarantee up to £40 billion of investment in infrastructure received Royal Assent yesterday (31st October).

The Bill has now become an Act of Parliament and will be known as the Infrastructure Act. It passed through Parliament in just 55 days and will enable the Government to underwrite major infrastructure projects under the UK Guarantees scheme. Since the launch of the scheme in July, over 60 projects have come forward for discussions with the Treasury.

Following initial concerns that flood defence was not included in the bill, assurances were given, in mid October that flood alleviation schemes will be considered by the new investment fund.

The Chief Secretary to the Treasury, Danny Alexander, said:

"Securing Royal Assent just three months after the launch of the UK Guarantee scheme shows that we are getting on with delivering the vital infrastructure that the country needs to boost growth."

"Since July we've had significant interest from industry, and passed the legislation to make the scheme a reality. We can now get on with the search for eligible projects, and I hope today's progress will encourage project sponsors to come forward to see how they can take advantage of the strength of the UK's balance sheet by taking up a guarantee."

New Chief Exec for Environment Agency NI



Terry A'Hearn, formerly of the Environment Protection Authority (EPA) in Victoria, Australia, has been appointed Chief Executive of the Northern Ireland Environment Agency.

A'Hearn worked for the EPA in Victoria for seventeen years in a range of executive and senior management roles. For the past two years he has been based in London working for the international environmental consultancy, WSP Environment and Energy.

In that role he has focused on providing advisory services to government agencies on policy and regulatory reform. He has also led a team providing sustainably and climate change advice to clients in the UK.

Commenting on the appointment, the Environment Minister Alex Attwood said:

"This is an important appointment and I am very pleased to welcome Terry to his new post."

"He brings valuable experience from his time with the EPA in Victoria, Australia and also the international environment consultancy, WSP Environment and Energy. I believe that he can help make the NIEA strong on the environment and strong working with farmers, businesses and others for work opportunities in a time of growing worklessness."

"Terry will have a key role to play in protecting and safeguarding the environment in Northern Ireland. There will be many challenges but also many opportunities in his inbox in the coming years. That is the character of DOE as the leading Environment Ministry."

Mr A'Hearn will take up his post in mid-November.

Appointment of chief executive for *Natural Resources Wales*



Professor Peter Matthews, chair of the Welsh Government's new body for managing natural resources in Wales, has announced the appointment of Dr Emyr Roberts as the body's chief executive. The appointment took effect from 1 November.

After a career with the National Farmers' Union, Emyr joined the Welsh Office in 1991 and was promoted to the senior civil service in 1997. Since then he has held a number of posts within the Welsh Government. Emyr is currently Director General of Education and Skills.

Prof Peter Matthews said:

"The interview panel was greatly impressed by the high calibre of applicants for this post and I am delighted to announce Emyr's appointment. He brings a wealth of experience and skills to this important position. We have an exciting few months ahead of us as we establish the new body and launch it on 1 April 2013."

Commenting on the appointment of Dr Roberts, the Environment Minister, John Griffiths said:

"I look forward to working with Emyr and Peter as they progress our exciting plans to establish a single body to manage Wales' natural resources. The natural environment is crucial to the Welsh economy and it is vital it is managed as effectively and efficiently as possible to ensure the best outcomes for Wales and its people."

Speaking about his appointment, Emyr said:

"I am delighted and privileged to be working for this new organisation, helping to manage Wales' natural resources. My priority will be for us to ensure that the environment and natural resources of Wales are sustainably maintained, enhanced and used."

It is a key Programme for Government action for the Welsh Government to bring together the Countryside Council for Wales, Environment Agency Wales and Forestry Commission for Wales as one organisation. The single body will become fully operational on 1 April 2013.

One single body will ensure the most sustainable and effective management of Wales' natural resources. The transition from three environment bodies to one is estimated to result in benefits worth £158m over a ten year period allowing greater investment in frontline delivery of services.

Shortly after the appointment the Welsh natural resources body was officially named as Natural Resources Wales.

Non-Executive Directors

The Welsh Government has also announced the ten Non-Executive Directors who will oversee the new body.. Selected from 185 candidates, they are as follows: .

Dr Mike Brooker
Rev Hywel Davies
Dr Ruth Hall
Dr Madeleine Havard
Harry Legge-Bourke
Andy Middleton
Morgan Parry
Nigel Reader
Prof Lynda Warren
Sir Paul Williams



However, there is concern that none of the persons named have engineering experience in flood or coastal erosion risk management, a major aspect of the new body's portfolio of functions. It remains unanswered who will speak up for those at flood risk in Wales once Natural Resources Wales is up and running on April 1 2013.

Blueprint for water report says Government are failing to tackle flood and drought risk

A new report has warned that the risk of both flooding and drought next year has increased because the Government is failing to fix Britain's broken water system.

The 'Blueprint for Water' report says it took the wettest summer on record to avoid serious water shortages this year and more dry winters will put the UK back on drought alert.

The report, produced by 16 leading environmental groups including Friends of the Earth, the Marine Conservation Society, the National Trust, the Rivers Trust, RSPB, Waterwise and WWF, measures the Government's performance against the 10 steps to sustainable water by 2015.

The latest report scores ministers' performance no higher than a "C" grade in any of the 10 steps.

Carrie Hume, chair of the Blueprint for Water coalition, said: *"Lack of action to fix our broken water system is a false economy."*

"We cannot continue to lurch between flooding and drought which is damaging for people, businesses and wildlife."

The Government claims its draft Water Bill will improve the UK's water infrastructure by creating the conditions to "encourage innovation and reduce demand".

2012 report card: progress on 10 steps to sustainable water



November 2012 - More widespread flooding

car swept away crossing a ford in Warwickshire
- West Midlands Ambulance Service



EA National Incident Room



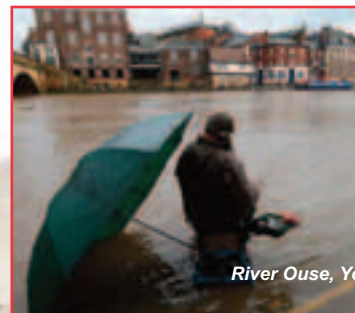
Newcastle



Rhostryfan village North Wales - Rob Jones EA



River Ouse, York



Caravan Park at Rushden



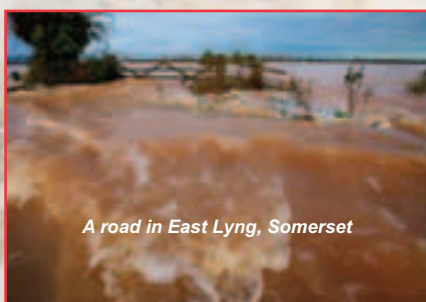
Diglis, Worcester Dave Throup EA



Worle in Somerset



A road in East Lyng, Somerset



clearing out in Kennford, Devon



Vehicle recovery in Eavesham, Worcs



Widespread property flooding, road and rail closures, failing defences and still the debate over flood insurance continues.

As the weather forecast finally improves, it will be of little consolation to the people around the country who have once again experienced the devastating effects of flooding.

Approximately 200 flood warnings and 300 alerts are in force in England and Wales and widespread flooding has occurred with approximately 1100 properties being flooded since Wednesday last week. The EA has issued flood warnings to 106,000 properties at risk of flooding and many defences have been tested to the limit, protecting over 51,000 properties.

Over the weekend more than 800 homes, mainly in South-West England were damaged as parts of Britain were hit by the worst flooding in half a century. Devon and Cornwall were particularly badly hit, along with Malmesbury in Wiltshire and Kempsey in Worcestershire - where a new £1.5 million flood defence project broke down after an electrical problem.

As each flooding event occurs it adds more fuel to the debates on climate change and flood insurance and heaps more pressure on the Governments to make definitive moves to solve both issues.

The talks between the ABI and the Government appear to be a "crisis point" and Stephen Gilbert, the Liberal Democrat MP for St Austell and Newquay, said the events of the last two days "should be a wake-up call for a government that needs to grip this issue and do so quickly".

The ABI has called for the Government to commit to a joint solution to ensure long term affordable flood insurance for high-risk households, describing the current state of talks aimed at reaching an agreement as being at an impasse.

This follows the Government's refusal to consider providing a temporary overdraft facility to a proposed not-for-profit special insurance fund for 200,000 high-risk households which will otherwise struggle to get affordable household insurance when the current arrangements come to an end next year. The temporary overdraft facility would be used to pay claims if there were 2007-style floods in the early years of the scheme before it had built up its reserves.

Environment Secretary Owen Paterson, responded, speaking on BBC Breakfast, denying that talks between the government and insurers had "stalled", whilst MPs have urged the Government to provide more effective financial support in reaction to the damage caused by the heavy rainfall and flooding as local government budgets face extensive cuts.

Speaking at a debate in Westminster Hall, Rosie Cooper, Labour MP for West Lancashire, called for changes to be made in how flooding of homes, transport networks and food-production farmland is dealt with and urged for more investment.

"We need more significant investment in flood prevention measures in homes and a more general commitment to the principle of prevention.

"We must deal with the ongoing maintenance of watercourses and sewer systems, which has been cut back due to the squeeze on Environment Agency and local authority budgets."

She added that the role and responsibility of the lead local flood authorities is largely focused on post-flooding activity, instead of flood prevention and management and a despite being eligible for grants to install flood prevention measures in homes, few residents are aware that they are entitled and local authorities do not know how to bid for the measures. She called for the Government to make the scheme a

priority and simple to apply for.

Chris Williamson, Labour MP for Derby North, attacked the Government cuts in funding for flood defence as many schemes await a starting date.

The Government responded, defending the reductions in flood defence spending, blaming the "parlous economic state" of the country that the Government inherited, and said it was still spending £470 million a year.

Friends of the earth have said that the floods have highlighted that urgent climate action is required. Experts are predicting that climate change will trigger more frequent floods in the future, creating severe disruption in the UK and these recent devastating floods are a "wake-up call" for Britain to take action on climate change and reduce emissions.

They called on the Government to show leadership and move quickly to slash UK emissions and help protect us all from the threat of increasing global climate change.



The Institute of Civil Engineers (ICE) have said that action must be taken to ensure better flood resilience as the UK continues to face the consequences of severe rainfall.

Commenting on the flooding in the UK and the further warnings in place for the weekend, ICE Director General Nick Baveystock said:

"The impacts of flooding are far reaching - it afflicts communities, homes, businesses and sadly takes lives. It also often leads to the failure of critical infrastructure networks such as power and transport, further restricting access to basic services when they're needed most. The often long-term effect on businesses is damaging the UK economy as a whole."

Mr Baveystock has called for more funding and guidance for local authorities so they can adopt a wider range of measures that are not solely reliant on conventional flood defences.

"The Environment Agency itself states that every £1 invested in flood risk, returns around £8 worth of benefit. Adopting a diverse range of solutions will improve our resilience, and ensure these benefits are realised.

"We cannot just wait for floods to destroy homes - we must take effective measures to mitigate and avoid damage."

Nick Starling, Director of General Insurance at the ABI said,



"The Government has indicated it will not provide any temporary overdraft facility for the insurance industry's not for profit scheme, which makes it very difficult for it to go ahead. As a result, negotiations have hit an impasse. Insurers know their customers are increasingly worried about flood cover and we will therefore continue talks with Government to try and find a way forward."

"The severe floods experienced by many areas of the UK this year are a reminder of the rising flood risk facing the UK. It is therefore vital that insurers and Government tackle this issue together - this is not just a problem for insurers. No country in the world has a free market for flood insurance with high levels of affordable cover without some form of Government involvement."



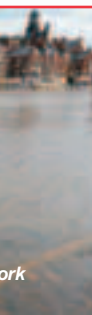
The National Flood Forum have hit out at both parties for failing to secure an agreement on the future of flood risk insurance and has accused them of "kicking people when they're down".

Chairman of the National Flood Forum, Charles Tucker, said *"This is kicking people when they are down. Every one of those 816 households is likely to have a nasty shock when they come to renew their insurance. Many that have flooded before could now find it difficult to get insurance, at any price."*

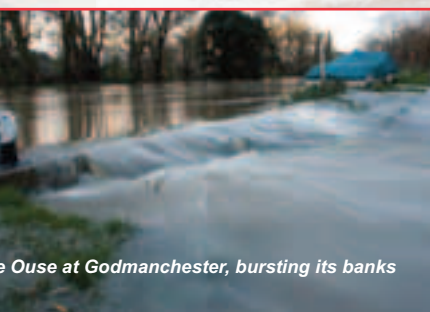
"It's bad enough just to be flooded. Being hit with a 4-figure insurance premium adds insult to injury. And being refused insurance could spell financial ruin for thousands. Every household and community hit by flooding is relying on them to ensure that flood risk insurance is available to all, is affordable, and is based on social justice."

The Flood Forum has long held that it is Government's responsibility to ensure that a clear framework is in place with the insurance industry for flood risk insurance. Failing agreement, a completely free market will leave many thousands of high risk properties unable to obtain insurance in future years.

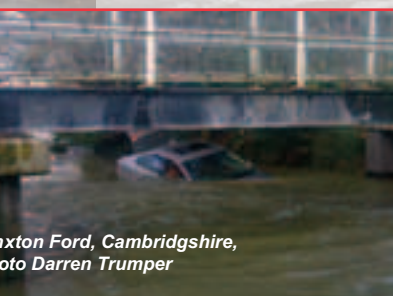
Charles Tucker added *"These negotiations have been going on for over 2 years; for them to break down at this stage is outrageous. It's now time for action. We need to see exactly what is being proposed by both sides and knock heads together; and fast."*



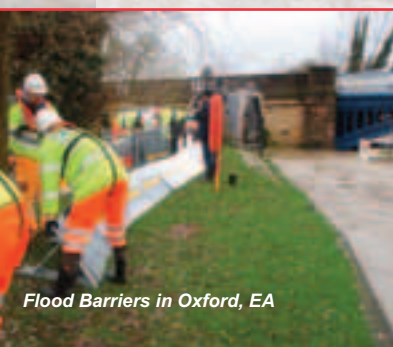
n, Northants. EA



e Ouse at Godmanchester, bursting its banks



Nettleford, Cambridgeshire, photo Darren Trumper



Flood Barriers in Oxford, EA

Protecting Property

Repairing a flood damaged home - to make it more resilient

By Mary Dhonau

We have had the 'wettest', the 'driest', the 'coldest' and the 'hottest', all in the last 10 years! This summer alone has been a total washout, again proving to us that our climate is changing and we now face an unpredictable future as climate change impacts on our daily lives. Sadly unprecedented amounts of rainfall may well become the norm. We can no longer simply say 'I live nowhere near a river or the coast - it won't happen to me'. In recent years the majority of flood insurance claims have come from surface water flooding- where there has been no tangible river or sea nearby. So in my book, everyone should prepare for being flooded! The chances are that unless you are lucky enough to get a hard engineered flood defence for your community, you will flood again!

So what can be done to reduce the misery of being flooded? Firstly, of course consider protecting your home using property level flood protection for more information visit <http://thefpa.org.uk/> but in addition it is a good idea to make your home resilient to flooding. This means - Adapting a property to minimise the effect of floodwater, so that no permanent damage is caused and the structural integrity is maintained. This will reduce the amount of time you are out of your home and the amount of money your insurance firm will have to pay out, helping you to be able to maintain your insurance cover. It is my view that, sadly, every flood defence will be over topped one day and that flood resilience is going to be the only sensible option as we adapt to living with the increased threat of flooding.

I have been flooded on many occasions and it's an appalling experience. However I made my home flood resilient and when I was flooded again in 2007, I was back living down stairs within only 3 weeks and did not make an insurance claim. Whilst it was not a picnic, it was much better than being out of my home for 9 months! Obviously the best time to make your home flood resilient is after a flood when some of the cost can be offset by your insurance claim.

How do I make my home resilient to flooding?

Consider the following:

Put the plug sockets, boilers and service meters higher up the walls - above previous flood levels.

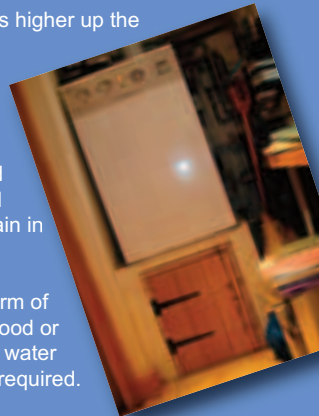
Install tiled floors over a concrete floor.

Fit plastic skirting boards, or use wood such as oak which is more resilient to floodwater. I used normal skirting board, but coated it with several layers of yacht varnish, when I was flooded again in 2007, my skirting boards were fine!

New nano technology is also available in the form of "nanoshell wood" which once applied (to soft wood or hard wood) will protect the skirting boards from water ingress for up to ten years before re-coating is required.

Replace your kitchen with powdered coated steel kitchen units, which do look very attractive or buy plastic carcasses- on which 'normal' doors can be fitted and removed before a flood, or else use solid wood rather than MDF or chipboard units (as these disintegrate with the effects of floodwater.)

Make sure your oven is fitted up high in the unit, rather than free standing.



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Resilient to flooding

Stand your washing machine/dishwasher on a raised plinth.

Consider installing a pump and sump to keep the water levels down or a good quality 'puddle sucker' which sit on the floor and are able to pump water away to a depth of only a few millimetres of water. Always seek professional advice from a suitably qualified surveyor before undertaking such work.

Replace ordinary plaster with lime-based plaster or cement render. Relatively new to the market is Dragonboard which is essentially water proof. Although there is some surface absorption, it can prevent passage of water when walls and floors made from Dragonboard are appropriately jointed and sealed, the boards will contain the water. Once the source of water is removed, the board will dry out naturally, without delamination, crumbling or any failure whatsoever. Ideal for use in flood risk areas, both internally and externally. It will not support mildew or mould growth, and is safe to use in any environment. In a short while Dragonboard will be available for internal doors, skirting, ceilings, kitchen cabinets and much more through an FPA listed member.

Replace mineral cavity wall insulation with close cell insulation. Use of Dragonboard and close cell insulation solutions will also improve the thermal value of your property. Fit lightweight internal doors with rising hinges, so if you get a flood

warning you can lift the doors off and out of harm's way.

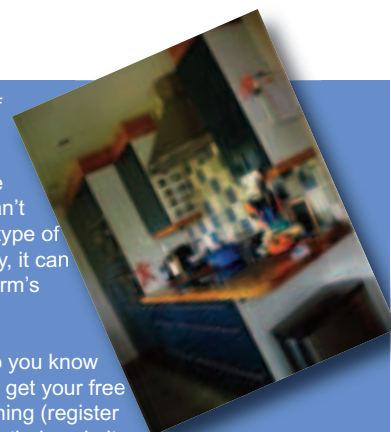
Keep items of sentimental value upstairs where the floodwater can't reach them and think about the type of furniture you use, so if necessary, it can be lifted upstairs easily out of harm's way.

Make a household flood plan, so you know in advance what to do when you get your free Environment Agency Flood Warning (register with the Environment Agency via their website www.environment-agency.org.uk or by ringing 0845 988 1188.) It's far better to plan in advance what you are going to do rather than when your mind is whirling, it will help you to stay focussed on what you and your family need to do to keep yourselves and your possessions safe.

One final note, always seek professional advice from a suitably qualified surveyor before undertaking such work.

For more details see:
A homeowner's guide to flood resilience, a downloadable guide from www.knowyourfloodrisk.co.uk

'How to restore your home following a flood,' a publication written by the Association of British Insurers, which is available on their website <http://www.abi.org.uk/>



No link between property level flood risk protection and insurance says new report



A new National Flood Forum Study shows that there is no link between people installing measures to protect their property from flooding and the availability, or cost, of household insurance. However, people who did install Property Level Protection did feel that it brought peace of mind.

Spokesman for the Forum, Paul Cobbing, said *"Property Level Protection measures are a new and rapidly developing way for people to help protect their homes from floods. Hundreds of people have invested in reducing their flood risk."*

Property Level Protection against flood risk is the process of reducing the risk of flood water entering a home through the use of a range of products, such as air brick covers, flood doors and barriers and non-return valves on the drainage system.

Where properties are surveyed properly, and the right methods chosen for the building and the householder, these methods can help protect people and their possessions.

Click below for more information:

[PLP and Insurance full report](#)

[PLP and Insurance Summary](#)



Grim future for people living in flood-risk areas in the North West

By Andy Hirst, EDS

INSTALLING anti-flood devices does not lower insurance premiums or give people more insurance options, a report has revealed. But it does say that being prepared in flood-risk areas by using inventions such as FloodSax sandless sandbags is all-important and does provide that most important element ... peace of mind. Yet there is no doubt the report makes grim reading for people at risk from flooding.

The major report called **Property Level Protection and Insurance** has been carried out by the **National Flood Forum** supported by the Department for Environment, Food and Rural Affairs (Defra). The National Flood Forum is a national charity dedicated to supporting and representing communities and individuals at risk from flooding. The report states: "Property Level Protection (also known as property flood protection) has developed rapidly in the last few years as one way of reducing the impact of flooding and is still developing. Households that are likely to suffer less damage from flooding and the loss of fewer possessions might be expected to incur fewer and lower value insurance claims and this might result in lower household insurance premium and excesses.

"A number of households have been flooded and have installed PLP. Our findings are that in most cases it does not result in lower insurance premiums and excesses nor increase customer choice of insurance cover. However, installing PLP does provide many people with increased peace of mind.

"A few households with PLP have seen a reduction in insurance premiums and/or excesses. This is usually associated with the ability to obtain an Environment Agency letter demonstrating reduced flood risk due to a flood defence scheme. However, a letter from the Environment Agency in itself does not guarantee reduced premiums and/or excesses.

"Most households in this survey did get insurance in the end but often after a significant struggle. Householders are often forced to stay with their existing insurance providers as no-one else will insure them. Several householders ended up paying annual premiums of thousands of pounds and had excesses that would be a significant proportion of any reinstatement cost."

And the report has even worse news for those living in flood-risk areas. "Some householders report they have a serious concern they will be unable to sell their property. There are examples where buyers have been put off from purchasing either because their searches revealed a flood risk or by problems in obtaining insurance for the property. Some householders have been informed by insurance providers that should they sell the property, the insurance company may not provide insurance cover for the purchaser.

"Analysis of responses from householders who have installed PLP was that a much clearer mechanism is needed that will allow PLP measures to be taken into account by insurers as a matter of course."

Examples of Property Level Protection include flood doors and barriers, air brick covers and non-return valves on the drainage system.

One of the respondents from Yorkshire said: "The last flooding caused an attack of angina and since then we are anxious every time it rains. God knows what the house would sell for now should we ever sell."

A respondent from the North West added: "We lived in a caravan in the back garden for six months. Our wedding video, videos of the children and photos including honeymoon photos were destroyed. I have ended up with depression."

And an elderly couple from the same area wrote: "We were away at the time of the flooding and all possessions at floor level and up to 60cms were affected with high loss due to internal plaster, doors and fittings and furniture. It was a truly devastating experience for my wife and I,

both in our 80s, emotionally, in our healths, our anguish, depression and financial loss as the insurance settlement did not meet all liabilities." And one from the South East of England said: "No insurance companies will insure me – other than the existing company I am with. The insurance I had was the same. However, the premiums were raised from £300 a year to £900 a year now. My excess is also higher from no excess to £5,000 now."

To read the full report go to page 9



Left: the FloodSax before it is inflated.

Top image: FloodSax sandless sandbags protecting a home. The gelling polymer in the bags inflates on contact with water so they go from weighing just seven ounces to 44lbs (20 kilos) in just over three minutes by absorbing the water.

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"There's no WaStop®-ing us!"

By Zebrina Hanly, Aquatic Control Engineering

WaStop® non-return valves are specifically designed for use in most types of outfalls. Competing with traditional duckbill style valves but offering a new range of possibilities where flap valves and penstocks are not a feasible solution, WaStop® valves have seen increasing successes in projects throughout the UK and Ireland. Following the catastrophic flooding in spring of this year it is no surprise that a great number of WaStops® have been sold for storm drains, pumping stations, outfalls, community sewerage systems, private basement conversions and more.

Recently an installation was completed at Markham Brook (see picture). A 1200DN WaStop® was designed by our engineers with a specially shaped flange to fit the 'snug shaped' existing headwall. Insufficient headwall space meant the installation of a flap valve or duckbill valve would have involved increased civils to the structure or additional product design. For security our engineers also designed and supplied a metal grill which

prevents tampering and increases site health and safety. Installed by our expert installation team for Nomenca this WaStop® was fitted and tested in a few short hours, providing Markham Brook outfall with a robust non-return valve preventing backflow and reducing local flood risk.

A tidal outfall at Tenby posed a flood risk as sea water was forced into the pipe during high tide. JU Bowen was contracted by the

Environment Agency to install a suitable solution into this constantly submersed outfall to reduce the flood risk to the local area. As the WaStop® fits inside the pipe, no protruding valve components are exposed to the force of wave action which can cause tearing and failure with other backflow prevention solutions. Due to the fact that the outfall is submersed the installation had to be performed by a dive team. WaStop® was

considered the best valve to install in these conditions. Due to a failing pipe flange and lack of headwall to install the valve, an expansion collar was used to internally attach the WaStop® to the existing pipe outfall. WaStop® non-return valves can be provided with a number of installation attachments and installed simply and with complete versatility. ACE is established as the technical leader in WaStop installations in the UK and Ireland for both simple and tricky projects! WaStop® is a Swedish product with 12 years of successful installations worldwide. ACE is proud to be WaStop® Main UK and Ireland Distributor; a partnership providing our customers with UK specialist engineering, design services and a complete package solution at competitive rates. WaStops come in a wide range of standard sizes and can quickly and cost effectively be designed to fit your project. For more information on this product please visit our website:

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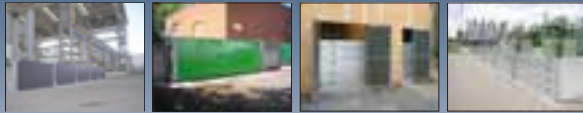


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All Party Parliamentary Group on Finance and Insurance



Charles Tucker, Ralph Green and Paul Cobbing

Paul Cobbing, Charles Tucker and Ralph Green of the Royal Borough of Windsor & Maidenhead Parishes Flood Liaison Group (PFLG) gave their views on flood insurance to the meeting of the Group on 17th October, together with Nick Starling of the Association of British Insurers and Graham Trudgill of the British Insurance Brokers Association. We put the case that progress needs to be made quickly and that any new framework needs to meet the tests of accessibility, affordability and social justice.

MPs were keen to find out more about where negotiations had got to, why an agreement is so important for flood risk communities and what the barriers are to finding a solution.

♦ The government are still in "intense negotiations" with the ABI on a replacement for the "Statement of Principles". Previous Secretary of State Caroline Spelman accepted the proposal for a "Morpeth" type flood insurance model. This would feature a universal levy on household insurance, feeding a capital pool to moderate insurance costs for high risk properties, in the interests of social justice. As always, the sticking point is "who pays", i.e. who picks up the tab for the "contingent liability" following a catastrophic flood.

Much work has gone on over the summer to develop a model showing how this would work – and the division of costs for different scenarios. But it's now time for the talking to stop and action begin – and we shall keep pressing government to secure the agreement that will give flood-risk communities confidence for the future.

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SuDS Design Standards – Where do we go from here?

By Alan Corner, Associate Director, Hydro Consultancy

When the news quietly trickled through, local authority SuDS approving teams could not have been surprised to learn that they will not be commencing their new roles in April 2013. A further delay had come to seem inevitable.

The question is, what should the preparing SABs do now? Those who are farthest ahead could follow the lead of Oxfordshire and Cambridge City councils and expect developers to work to locally-agreed SuDS guidelines. At the other end of the spectrum, some local authorities might be tempted to put preparations 'on hold' altogether with no indication of when their roles will begin and allocate precious funds elsewhere.

Even if it is motivated by the best intentions to deliver really good National Standards through further consultation, Defra's low-key announcement of another delay will not help to clarify matters. It will be interesting to hear the comments of officers to the Engineering Nature's Way local government SuDS survey launched this month.

Just as Flood Minister Richard Benyon delivered his news to local authority flood risk officers, another SuDS consultation was coming to an end - the proposed new British Standard BS8582 Code of Practice for Surface Water Management for Development.

It's a shame the British Standard consultation was not more widely publicised. It would be good to see the consultation extended for further stakeholders to comment. Although not perfect, the British Standard is actually a much better document than Defra's National Standards.

The problem with a shortage of information is that it leads to speculation. It doesn't take a conspiracy theorist to question what might lie ahead when we have a Government with a stated intent of reducing standards, red tape and building regulations. I even heard a theory that the British Standard could replace the National Standards. This seems unlikely.

Of course, there are differences between them: BS8582 is a Code of Practice only, and relates to the whole of the UK, whereas the National SuDS Standards will be

part of the Flood and Water Management Act and will only be applicable in England and Wales. Nevertheless, there is much in the BS8582 that could be applied to make the National Standards more robust. One thing is for sure, if both are developed in parallel at some point there will need to be clarification on which Standard designers should follow first.

In the meantime, with a further delay in implementation of the SAB roles, designers and developers are left to deal with a 'power vacuum'. Strictly speaking with the automatic right to connect to a sewer withdrawn, there is no official legal entity at the moment who can give a developer approval to connect.

Defra has given few clues as to how or when the Guidance which is supposed to accompany the National Standards will be drafted and published. My feeling is that perhaps the excellent FlowNet community run by the Local Government Association could have a role in developing and scrutinising the guidance so it really works well for the people who will be using it.

Amidst all of this, it is the 'leading light' local authorities that are setting the bar for SuDS best practice and producing their own design guides. The latest from Essex County Council, for example, is excellent. So do we need National Standards at all? Could localism lead to locally-developed guidelines, supported by a British Standard?

My feeling is that without clear National Standards for designers to work to, we will end up with an inconsistent approach to SuDS across the country. Whilst the more visionary councils will continue to support developers in delivering great schemes, there will be others where the results will be less satisfactory. With so many misperceptions about SuDS still abounding, this could be very damaging in the long run.

While the climate of uncertainty continues, it's the role of all SuDS stakeholders to continue to champion and share best practice. We must do everything possible to make sure the best exemplars are widely known by local authorities, designers, civil engineers, contractors and developers.



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Raising a Toast to SuDS on a Steep Scottish Mountain Highway



“a demonstration of how a SuDS solution can be implemented in a sensitive environment with difficult topography”

Scottish Cairngorms Mountains famous for its whisky production have been tackled with an imaginative SuDS Solution from Hydro International which has averted potential road safety problems on the A95.

Poor drainage, flooding and freezing weather had led to a landslide and extreme surface degradation along a section of the narrow A95 that descends on a 10% gradient with tight bends to the picturesque village of Craigellachie on the River Spey, near Elgin.

Located immediately above the River Fiddich, a tributary of the River Spey and a Special Area of Conservation, the area is also world-renowned for the production of single malt whisky and is an important salmon fishery. Control of any surface water runoff would therefore have to include measures which maintained the clarity and purity of the water.

By working with Hydro International's stormwater design team, BEAR Scotland specified a long term surface water drainage solution which delivered control of surface water flows and minimised any potential pollution from hydrocarbons into the watercourses below. The solution incorporated three Hydro-Brake® Flow Controls within pre-cast concrete weir wall chambers and a Downstream Defender® hydrodynamic vortex separator.

Investigations as part of Transport Scotland's upgrade of this section of the A95 Aviemore to Keith Trunk Road, revealed that surface water flowing down the steep hillside had been infiltrating the road foundation structure along the 0.9km stretch near Craigellachie. The water flow had been washing away the aggregate layers and causing a loss of load bearing capacity, leading to premature wear, edge deterioration, and in one location a landslide that resulted in a retaining wall being constructed.

“Winters can be quite extreme in the Cairngorms,” explains Darren McLennan, Senior Engineer, BEAR. “Water freezing inside the road structure creates all sorts of problems.”

“Just addressing the road reconstruction without considering the water flow would have resulted in the erosion problem recurring in a few years time. We also couldn't afford to have the water flowing over or under the




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road structure which could create icing problems in the winter or the risk of further landslips.”

Under the Water Environment (Controlled Activities)(Scotland) Regulations 2011, the drainage from major roads must be subject to control of any diffuse pollution to help meet the objectives of the EU Water Framework Directive. There were also concerns on the potential of the reconstruction work affecting the water environment, so care was needed to prevent any accidental pollution. Other restrictions, under the General Binding Rule 10 of The Scottish Environment Protection Agency (SEPA), stipulate that any road construction must be drained by a SuDS scheme to ensure flow and pollution control. SEPA Pollution Prevention Guidelines 5 and 8 carefully regulate works which could affect water and look for at least two forms of treatment to the surface water runoff.

“The road is cut very tightly into the hillside, which limits the construction space along much of the stretch of road although there is a small lay-by set into the hillside around the middle of the scheme. There are also a minor road and farm entrance which complicate the road drainage solutions,” Darren continues.

An existing short retaining wall and a series of ditches were proving inadequate, especially as rainfall intensity is increasing with climate change. Simply improving the ditch volume and water retention with a conventional approach such as cast concrete channels was not an option due to space within the highway boundary. Also, the lack of flow control would risk additional sediment being washed into the river.

“Because of the gradients, surface area and other site characteristics, the volume calculations were complex. Hydro was able to design a minimal maintenance SuDS solution

providing the required levels of treatment and combining effective flow control with efficient removal of sediments and any hydrocarbon contaminants.”

The basis of the scheme, undertaken by contractor, the Coffey Group, was to excavate and deepen the existing ditches. These were lined with heavy duty polyethylene to prevent seepage into the road structure then filled with carefully graded filter drain aggregate. Flow through the new channels is limited by a series of check dams before eventually discharging into a new pipeline constructed under the road.

The water flow in the pipeline is controlled by a series of three Hydro-Brake® Flow Control devices, located at 300 metre intervals in weir wall concrete chambers under the road. The controlled discharge of the maximum design flow of the Hydro-Brake® units also enables the pipeline to be used as a temporary storage chamber to help mitigate storm events.

The last of the three Hydro-Brake® units is located at the downslope end of the pipeline, in front of the Hydro Downstream Defender®. This device ensures high sediment retention even during storm events, with no re-entrainment, while controlling floatables and providing hydrocarbon separation. The Downstream Defender® discharges over a reinforced rip rap face set into the embankment to control erosion, and then to the river.

“The result is an elegant solution which meets both the environmental concerns and the serious structural problem,” states Darren. “As the purity of water in the catchment is very important, and the safety of the infrastructure is greatly improved, we have achieved a good result.”

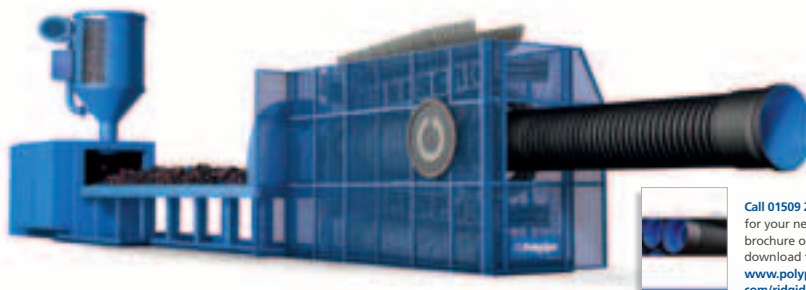
Client: BEAR for Transport Scotland
Main Contractor: the Coffey Group

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David Noble. OBE spent a career spanning over 50 years in the flood defence and land drainage business, within the public sector and in running his own specialist consultancy, including the provision of services to the Association of Drainage Authorities, acting as it's Chief Executive.

Structures in channels

- a foreword by David Noble

Channels, and particularly natural rivers and streams, fulfil a variety of functions, they were created to convey water to the sea the location of them dictated by topography and geology. Over hundreds of years channels have been adapted to serve other needs, notably on larger rivers the installation of water mills and the establishment of navigations have changed almost beyond recognition the characteristics of channels. In more recent times channels have been recognised as important habitats for fish, and in supporting invertebrates, together with a wide range of aquatic flora.

As development has changed the country's landscape, channels have not escaped the impact, and other than in their headwaters the majority contain structures, which are in place for a variety of purposes. In consideration exclusively of channel conveyance, and particularly of flood flows, it would be desirable not to have any weirs or culverts but they are necessary to accommodate other important interests, and where possible the adverse impact of their presence should as far as practical be mitigated.

Weirs, and other such barriers, across channels change the flow regime and dependent on the nature of the channel can have either a beneficial or detrimental impact on fisheries. Where they are in place to retain water levels in lowland channels for navigation purposes, it is beneficial in providing the 'full' river and water volumes to support the coarse fish population. They also provide the clear water favoured by the coarse fish anglers. In contrast those impeding the upstream progress of migratory fish are highly damaging.

Concern is expressed over the impact on the habitat due to another significant barrier to flow, namely the land drainage pumping station. Whilst all stations are protected with screens to avoid debris damage to the pumps the grid space is such that fish go through the pumps, and certainly the larger fish suffer. There is evidence that smaller fish can make that journey unharmed and indeed pass through complex pumped and piped systems to happily populate another water body.

Opportunities exist to mitigate the adverse impact of structures in channels and a good example is with the installation of fish passes within, or alongside, weirs. Whilst these have been in place for many years, more recently developments have provided pre-formed structures, which make installation very much easier.

It's not all flow meters and water quality you know!

Why fish thinking is key in the Water Utilities Sector...

Zebrina Hanley, Aquatic Control Engineering

As with many new environmental legislations, our Water providers and associated contractors and suppliers are consistently given additional responsibilities to extract, distribute, filter, aerate, pump and more WHILST thinking about flood risk, drought, water quality, local ecology, invasive aquatic weeds...the list goes on!

A particular hot topic of AMP5 is thinking carefully about our fishy friends, and perhaps quite rightly so. Eel has declined by as much as 95% in our waters in the last 25 years and other fish populations such as sea trout are also dwindling in expected numbers. Although the exact cause of these declines is hard to pinpoint the Environment Agency, Institute of Fisheries and Angling Trusts all believe it is important that the entire water and environmental sector act to improve this now. Indeed their cries were heard and further legislation including the Freshwater Fish Directive, the EU Regulations and others have been updated and revised to cover recent concerns. Work in earnest has begun to re-think some long standing elements of the UK's water flow control structures inland including culverts weirs, sluice gates and outfalls which are blocking migratory routes and now expectations for the industrial water sector to follow suit are beginning.

For the industrial water sector the legislation is beginning to clamp hard on intakes and any other related pumping. Whilst screening is commonly practiced, it is often insufficient at reducing fish mortality to acceptable levels as fish entrainment and disorientation still occurs. The focus is to keep fish away from flows which could potentially entrain them or to prevent smolts and small fish from entering through their first set of screens. The emergence of fish deterrent systems, using light and

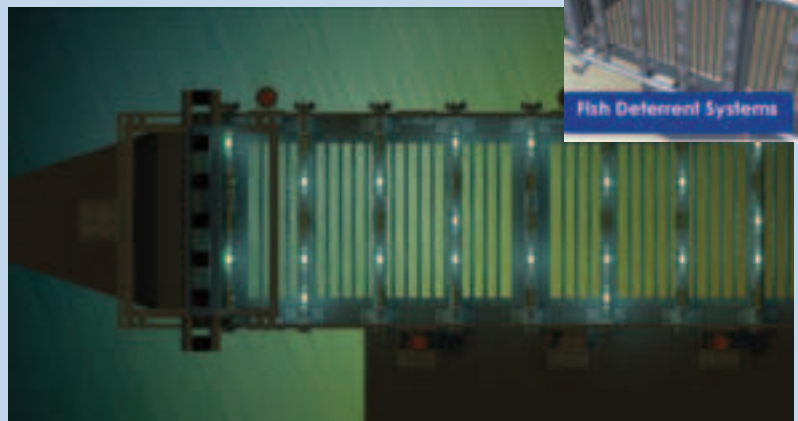
sound as a dual solution with screening is now an important consideration for intakes and other similar applications.

Aquatic Control Engineering Ltd is a unique provider of fish migration solutions in industrial water abstraction applications including fish friendly hydropower, fish friendly axial pumping and fish deterrent strobe lights and acoustic systems. With in-house expertise from engineers, environmental and fisheries educated employees, ACE is established at recommending, designing, project managing and installing these kinds of projects.

A popular solution, ACE fish friendly deterrent systems are installed close to pump inlets in sumps or in screens. A recent installation at Welches dam by Aquatic Control Engineering Ltd effectively prevents fish from entering by exposing them to bright stroboscopic light; fish sensitivity to this light causes them to seek an alternate route avoiding the dangers of the pump. This is an excellent solution for an intake refurbishment where pumps are already installed.

For new build projects fish friendly axial pumps can be installed allowing pumping and safe fish passage simultaneously. Installed in Holland, independent testing by consultants Witteveen and Bos awarded these pumps with a 100% fish friendly status (study in Dutch and English available upon request).

If you are working on a utilities construction projects, are involved in environmental utilities work and would like more information, please do not hesitate to contact us at any time.





Improving morphology and fish passage in high energy rivers



By Jenny Mant and Victoria West (the River Restoration Centre, UK)

The EU RESTORE partnership (www.restoreivers.eu) is funded by the EULife+ information and communications programme. As part of the RESTORE project the partners are required to organise workshops based on specific topics of interest and priority. This event focused on the impact of barriers (to sediment, flow and fish) on high energy river systems, and the benefits of implementing natural fish passage, including discussion about what barriers fish can really pass. It aimed to discuss current best practice for fish passage, and identify how the EU RESTORE partnership can disseminate this information to policy makers, river basin manager and other key stakeholders in Europe. The one day event, followed by a site visit, was attended by around seventy delegates included presentations on hydropower needs and fish passage, the development of tools for the assessment of passability of riverine obstacles for fish, and to support the cost effective implementation of restoration measures.

Some of the key findings were as follows:

Sediment release when removing obstacles to fish passage was seen as the key concern, together with the risk of contaminated sediment release.

A case study presented by Scottish Natural Heritage highlighted the issues of barrier removal for freshwater pearl mussels, which have been identified as a threatened species by the IUCN (International Union for Conservation of Nature and Natural Resources) Red list. Removal of barriers has the advantage of re-connecting sediment transport mechanisms to ensure sediment replenishment of important mussel habitats. However, it may also threaten these habitats due to sediment release which can smother juveniles and other essential habitats such as coarse sand and gravels. Delegates highlighted that there was a lack of confidence in dealing with possible issues of sediment release, stating a need for further research and monitoring programmes in this area. REFORM (REstoring rivers FOR effective catchment Management) was identified as a project that is aiming to develop protocols and procedures that will help address this. RESTORE plans to work closely with this project in the future to ensure that lessons learnt are transferred and incorporated into these initiatives.

More extensive river systems were acknowledged as more complex hence potentially increasing the risk and uncertainty associated in applying restoration principles.

Weir removal in high energy environments in particular was identified as difficult. The impacts both up and downstream of the proposed removal are often seen as unknowns. More guidance was called for and the idea of a handbook was discussed. This, it was suggested, could help reduce the risk associated with barrier removal by identifying

areas of possible sediment deposition within the river system, and could help to facilitate the production of policies that promoted river connectivity techniques for fish passage and natural river processes.

Hydropower plants and dams have been identified by the WFD as one of the top hydro-morphological pressures in Europe due to their restrictions on flow and sediment regime. Mitigation measures and ecological compensation should therefore be a requirement for any hydropower schemes in all countries in order to meet good ecological status for the WFD. Natural bypass channels, it was suggested, should be designed beyond the requirement of fish passage, allowing for morphological and ecological connectivity. During the workshop a requirement was highlighted for additional research into fish biology, and associated design criteria for specific species which is appropriate to the needs of practitioners. A need was identified for structures to mimic the slope, morphology and hydraulic conditions of the original stream and enable fish of different species to migrate, taking into account the different swimming capabilities of fish. EIFAC (European Inland Fisheries Advisory Commission) aim to define design criteria for fish passes in high energy rivers based on species, and produce best practice guidance on up and downstream fish. Once completed the RESTORE webpage will link to this guidance.

The role of stakeholders was also highlighted at the workshop. It was recognised that they have often been sceptical about the idea of restoring rivers especially in the context for flood risk. It is vital that the restoration community mitigate this by outlining the variety and significance of benefits that restoration can bring, and give details of the likely success of the proposed works. Demonstration sites would be useful, it was deemed, to illustrate "success stories" and the RESTORE River Wiki online resource for best practice river restoration projects across Europe will provide a useful and updateable resource (http://riverwiki.restoreivers.eu/wiki/index.php?title=Main_Page).

Site visits to the Inchewan Burn a tributary of the River Tay, where a previously degraded river was restored to mimic natural process and improve fish passage, together with Pitlochry Dam and the River Tummel and Ballinluig all provided the participants a chance to discuss the challenges highlighted within the workshop.

The full details of this workshop will soon be posted on the RESTORE website and can be found alongside the other initiatives that have been the focus of this project across Europe. The website provides a wealth of information about all aspects of river restoration and we would always be interested to hear about your project, issue or concern. For further information contact the River Restoration Centre (www.therrc.co.uk) who manage part of the RESTORE project and speak to one of the technical team.



*Inchewan Burn below the A9
Before restoration (above) and after (below)*



Sediment bar on the Inchewan Burn

River structures in domestic hydro-electric power generation scheme.

by MIKE COOPER, AGA

Mill House is situated bankside of the River Wey in Surrey and was originally part of a flour mill built c.1768, rebuilt 1876, and demolished in 1922. The wheel house, still part of Mill House, initially held a 15 ft. breast shot water wheel.

A.G.A. Bioengineering Systems Ltd. were appointed CDM Contractors for the project which required the disciplines that brought together sound engineering practices while at the same time ensuring wherever possible, that the work carried out would protect, maintain and improve the environment. Priority had to be given to conform to EU & Environment Agency directives, while at the same time, the planning permission for hydro generation required consideration which catered for the migratory habits of fish and eels.

The installation of the hydro-power generator delivers electricity to the client while surplus supplies are sold on to the National Grid.

Initial work required the excavation and construction of a channel emanating from the main water course, designed to house the Archimedes screw driven generator. The outflow from the screw is discharged into the adjacent mill pond via a new sluice gate into a bypass stream.



Incorporated into the scheme is a geo-thermal heating system installed within the structure built for the Archimedes turbine. A steelwork frame holds the stainless steel geo-thermal heat panels from which a heat pump then transfers energy to domestic quarter's central heating system.

The Archimedes screw generator from Mann Power Consulting Ltd has a power output of 11KW and is designed for a flow head of 1.5m and the capacity of 1,100 l/s. Anticipated annual CO2 saved: 32 tonnes. The system was hoisted onto the site with a telescopic crane and located into the turbine channel. A steel trash screen was built into the inlet to exclude heavy debris.



The old wheel house was completely refurbished and is used to house the hydraulic sluice and the control system for flow management and minimisation of flood risk.

The Achilles screw speeds are adjusted to maintain defined upstream river levels, thus during peak flows, once the screw reaches max speed, sluice gates open to maintain optimum water levels.

To protect migratory and course fish populations a reinforced concrete fish pass was constructed 200m upstream, well clear of the turbine channel.



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One of the key elements to the successful operation of the fish pass channel was the installation of artificial plastic reeds referred to as "fish brushes". These fish brushes slow the water flow down and create eddies and back currents to enable fish to swim up through the pass into the mill pond and continue upstream stream.

To complete the project, range of A.G.A. Group bioengineering systems were used to combat erosion and undercutting of the banks along 200 m of the clients property, new habitat was created, water meadows restored and the bio-diversity of the project site totally enhanced. Products use include unplanted & pre-vegetated coir rolls, AGA Span vertical revetment, rock rolls and hardwood fagots, each used according to the dictates of the site conditions and habitat creation considerations.

A.G.A. TRM's (turf reinforcement mat) were used for soil stabilisation during recovery and naturalisation of the bank. TRM's have kept the soil in situ during the establishment of under sown grass and wild flower seeds while providing a micro climate for successful germination.

CDM Contractors for the project. A.G.A. Bioengineering Systems Ltd. have brought together their bioengineering skills, fisheries expertise and civil engineering experience to carry out the required hard and soft engineering plans, whilst using a hands on 'feel' to create a pool and riffle sequence, and restored channel, from the mill pool to the fish pass.



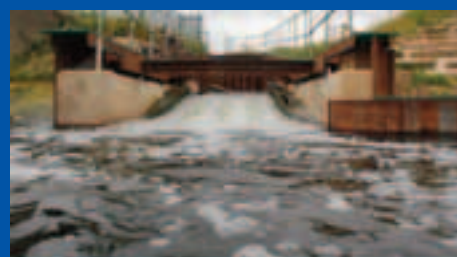
Borrowash Fish Pass - The largest in the Midlands

This fish pass was officially opened on 21 September 2012 and is the largest built in the Midlands region. It allows fish to freely migrate upstream past the weir to their spawning grounds using a bypass channel.

Borrowash fish pass enables fish such as eel, lamprey, salmon and sea trout to pass through the first artificial barrier on the River Derwent on their way upstream. The fish pass will deliver immediate benefits to coarse fish, help to improve the water environment and potentially open the way for the return of salmon into this catchment.

The work links to a programme of fish passage projects at nine weirs throughout the Trent and Derwent catchments being delivered in partnership between the Environment Agency, the Trent Rivers Trust and Derby City Council. The purpose of the work is to restore sustainable fish populations, and create a much healthier and more diverse River Derwent catchment. The ultimate aim is to improve the river's status under the Water Framework Directive - EU legislation governing the water quality in rivers.

Jim Finnegan, Environment Agency Fisheries Technical Specialist said: *"This has been one of the most significant fisheries projects we have delivered in the Midlands region. Artificial barriers to fish migration in the form of weirs are an on-going legacy of the industrial revolution which began on the Derwent, and Borrowash fish pass will help start to overcome the wide-ranging environmental damage they cause. Along with all the other work taking place on the river, this will have hugely positive impact on this iconic waterway as well as the wider community."*



images courtesy of the Environment Agency



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Tel: 01273 483833 or 01273 513484 (Fax also on both numbers)
email: Tony@fishways.com or Dick.Roberts@fishways.com



Pumping Stations and Eel Management

Pumping stations are heavily relied upon in low lying areas for protecting land and property from flooding but clearly as with any water structure they will impact upon the natural life occurring within the channels. There have been various investigations into the effects of pumping on fish and eel populations and what solutions are available.

A investigation carried out by INBO (The Flemish Research Institute for Nature and Forest), in 2009, set out to determine the effect that pumping stations have on the fish and Eel population in the Flanders region. They monitored 153 pumping stations, of which 76 operated propeller pumps and 34 archmedes screw pumps. They monitored the number and types of fish passing through the pumping stations and assessed the nature of injuries caused and the mortality rates.

With propeller pumps the mortality rate for Eels was 95 - 98% whereas with the archmedes screw pump the mortality rate was 16 - 19%. Pumping stations are one of the main causes of silver eel mortality in Flanders, next to 'angling' and 'predation'. Whilst Archmedes screws are less harmful to fish and eel populations than propeller pumps they do still cause an unacceptable level of fish mortality.

Last month (October) the **Environment Agency's Eel Management Plan Implementation Group** held a workshop on eel and fish passage in East Anglia to look at the effects of pumping stations on fish passage in the Anglian region.

At the workshop, a report '**Prioritisation of Pumping Stations in Anglian Region for Eel Passage**' was presented. The report was written by Dr David Solomon and Ros Wright and presented by the former.

With just under 450 land-drainage pumping stations in the region it would be a mammoth task to monitor each and every one. The report provides a process for categorising and prioritising pumping stations for the passage of eels, elvers and coarse fish. A methodology was developed to assess the extent of obstruction represented by the structures and an approach to identifying the relevant importance of the areas of waterway that are

affected. Structures affecting a large area of potentially productive fishery may be considered a higher priority for remedial action than one affecting a small area of less productive water. For freshwater fish the WFD status of the area being drained is relevant to the prioritisation process. Another key factor is the existing availability of alternative routes to or from the pumped catchment.

For the report proxy indexes for prioritising elver and adult eel passage facilities and a third index for prioritisation of coarse fish screening at pumping station intakes were developed. The application in the report of these indexes to pumping stations in East Anglia enables operators in the region to better understand the priority sites for screening and bypass facilities, and enable operators to target implementation within existing replacement and capital project programmes.

The solutions

To reduce the mortality rate of fish passing through pumping station pumps the obvious remedy is to prevent fish passage, there are three main approaches to achieving this:

Discourage fish from travelling through the pumps

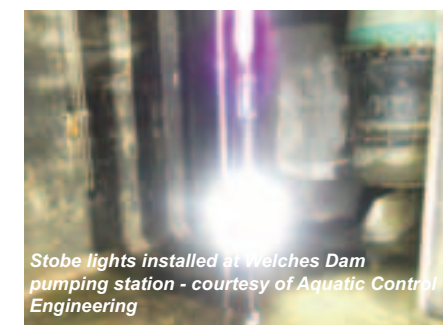
There are three main methods. The first is to install grids at pump intakes to restrict access. However physical barriers require regular maintenance and pump effectiveness can be severely hampered by debris.

The second is the use of strobe lighting or acoustic noise producers to deter the fish. However, the effectiveness is questionable as Eels appear unaffected by acoustic effects and strobe lights have had mixed results in deterring fish. In Holland it is commonplace to use a combination of the two.

The third method is to deter the fish by running the pumps backwards as part of the start up process. The reverse movement and propeller action and noise may suffice in driving the fish away from the intake before the pump is switched back to its usual direction.



Grids can be used to prevent fish entry



Strobe lights installed at Welches Dam pumping station - courtesy of Aquatic Control Engineering

To provide alternative routes for fish and eel passage

Fish passes and Eel/Elver passes used to bypass the pumping station.

Fish-friendly pumps

As the name suggests, these are pumps designed to allow fish passage through the pump with causing any damage to the fish.



Fish-Friendly pumps courtesy of Bedford Pumps



A Helping hand for the Eels and elvers

to begin the long migration of 5,500km back to the Sargasso Sea, where they spawn and die. CW Engineering have employed their own knowledge plus the industry's best technology to create

The critically endangered European Eel, which has seen its numbers sink dramatically over the past 30 years, has been passed a lifeline by the Environment Agency which has recognised the necessity to assist these creatures back into their home territory. All European eels share the only known spawning ground in an area of the Sargasso sea, south of Bermuda. Eel larvae follow the Gulf Stream and North Atlantic Drift to return to Europe metamorphosing into glass eels when they reach the continental shelf. Glass eels are attracted to freshwater and enter UK rivers in spring, historically in great numbers. After an average of six years for males and nine years for females, eels mature, stop feeding and become silver in colouration. Silver eels swim downstream towards the sea

a method to assist the eels & elvers in their migration. A 150m long eel and elver pass has been installed at the mouth of the Great Ouse, helping their migration around the major flood control sluice at the river's tidal limit.



The pass is in 4 stages, by-passing a sluice where the tidal range can exceed 6 metres: On the salt water side there is an ACE recycled plastic eel ramp with brushes fitted to assist ascent. This is followed by an HDPE plastic pipe with ACE spiral elver brushes which runs underground.

At the highest point there is a secure galvanised cabinet housing a 2 way pump which assists the elver's progress as they ascend and descend through the system, plus flow adjustment stopcocks and ACE penstock



to close the pipe through the flood wall. The cabinet allows for retro-fitting of camera equipment and cabling.

Now it's all downhill for the elvers through another HDPE plastic pipe which exits into the fresh water of the Great Ouse. A number of



rodding /inspection points have been set at ground level in the pipework to allow cleaning to take place.

Due to site security and vandalism, the design and specification was modified to reduce the risk of damage to the installation. The cover was mounted on the channel at an angle of 45 degrees in order to deter vandals from walking along the tray.

Dickey Dye says this project has brought home to CW Engineering how important it is to assist these creatures with their instinctive desire for maintaining their life cycle. CW Engineering would be extremely pleased to assist in these projects utilising all it's experience gained and developed on these types of projects



New 'Snipe Billy' needs no mates



Engineering for flood control.

CW Engineering have developed a stand alone version of their 'dipping' Snipe weed screen cleaner for remote sites with no available power supply, meeting the needs of HSE officers and forward planners.

Installation is easy and could be retrofitted into existing site situations without the need for civil modifications which makes it very cost effective. The machine can operate fully automatically and is started by timer, differential level, external signal or manual.

The machine is especially suitable for gravity intakes where no power supply is at hand. It can turn 180 degrees to dump into containers without further transport applications.

The tilting extending arm design which lowers the weed cleaning grab head into the watercourse before vertically clearing any debris from the weed screen (max 4m high). Grab widths are available up to 3m with a safe working load of 250kg.

Snipe Billy eliminates the need for 'lone working' in remote locations or at night and removes the need for regular inspection visits.

Snipe 'Billy' has been developed as a totally self-contained and automatic unit monitored by telemetry (SMS text) and camera for up to 3 months unattended use. Billy is fitted with a 5.5 Kva 3 phase 'silent' diesel generator and two 24v battery packs powered by solar panel and wind turbine.



For further details please contact
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quality & service

Improving flood protection and fish migration on the River Windrush

By Jayne Hornsby, Land & Water

The River Windrush, Witney, Oxfordshire saw the construction of a natural fish pass, a weir and a new access bridge as part of a large construction project. Another phase of this project is included in the river restoration section on page 30.

The first part of the project centred on the fish pass which comprised a hard engineered structure at the upstream junction with the River Windrush.

A notch weir was installed using shuttering and a driven sheet piled cut off wall. Stop log grooves allow for fish passage and flow control.



Boulder placement

and boulder dams were constructed using locally sourced stone materials and similarly were left for the river to redistribute over time. A planting scheme was carried out to the new river channel using some 5,500 local native species.



Inlet shuttering



Finished inlet detailing stop log grooves

Excavation of the fish pass channel took 3 weeks, with all excavated materials being utilised on site within the landscaping works, reducing cost and environmental impact. The new river channel meanders across the flood plain to join an existing back water channel; meanders have been designed to mimic a natural channel but were left for the river to shape its own route. Riffles, stone weirs, flow deflectors and shallow scrapes were all incorporated into the design. Riffles



channel under flow conditions

Fish Passes & River Structures

The next part of the project included the replacement of the existing water control structure.

The original water control was a sluice gate structure (as seen below), which had to be opened manually in the event of a flood. This was a potentially dangerous and labour intensive task.



The existing sluice was replaced by a new fixed crest weir which reduces the danger and the reliance on manual operation. The construction required the installation of a sheet piled coffer dam with over pumping during the construction phase to ensure safety and access.

For more information contact Land & Water



Over pumping to maintain dry working areas



Weir near completion



The weir in flow conditions



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The UK's first Siphon

Siphon Passes

The Wissey Fish Pass is unique in the UK, being the first Siphon Fish Pass. The Siphon Fish Pass, developed in the Netherlands, is an innovative fish passage system based on the traditional pool and weir fish pass. The Siphon Fish Pass can be utilised to provide migratory fish passage at many natural or manmade watercourse obstructions including weirs, lock structures, sluices and even between different watercourses. The Siphon Fish Pass can allow passage of most types of fish, varying from small coarse fish and eels to large migratory salmonids without compromising any existing flood defences.

The Wissey diversion sluice



Located in Stoke Ferry, North Norfolk, the Wissey diversion sluice forms a physical barrier between a cut-off channel and the River Wissey. An important structure in terms of managing water levels and controlling the flood risk, but the structure acts as an impassable barrier for coarse fish, salmonids and eels.



Why a Siphon Fish Pass

1. The siphon provides fish and eel migration in both directions between the two water courses
2. The siphon at the Wissey site is partially buried allowing easy integration into the existing landscape without the need for hard engineered foundations.
3. In times of high flows the siphon can be shut down and isolated to remove any risk of flooding.
4. Utilising the natural siphon effect, power and water consumption is kept to a minimum
5. A unique design requiring minimal civil engineering makes the siphon substantially cheaper than other traditional options

The Wissey Siphon Fish pass project was completed from initial site visit to commissioning in just nine months. This is testament to careful planning, hard work, strong teamwork and a truly innovative product.

The Wissey Fish Pass

Length: 70 m
Diameter: 1.8m
Baffles: 25 (1 per 100 mm of head difference)
Project duration: 9 months
Total cost: £407k

n fish pass

BY ZEBRINA HANLEY, ACE

Fish Migration is Worth a Party or Two...

For those of you that read our articles, look at our website or subscribe to our eNewsletters you may have heard a lot about our Siphon Fish Pass this year! We are very proud of it and following its installation in April, we have been talking about it everywhere we can. It has won poster awards, been in abstract reviews and talks throughout the country. It seemed interest had come a long way when we decided to formally open up the banks of the River Wissey to a hog roast seminar for all to come and explore this wonderful technology.



September 21st 2012, in partnership with the Environment Agency we welcomed over 100 local residents, fisheries experts, consultants, contractors and angling and wildlife conservationists. The ceremony opened with some excellent keynote speakers including Toby Willison, Anglian Regional Director for the Environment Agency who explained how flood defences like sluices could impact on fish such as sea trout and eel. Charles Rangeley-Wilson, Author of the Accidental Angler introduced excerpts of his book, captivating an audience with stories of how bonkers sea trout in Norfolk made him.

"It might look like a great big pipeline, but its pipes wildness back into our landscape. May God bless this siphon and all who swim in her."

For those with a passion for angling or an appreciation of fisheries were hanging on his every word.

During an organic hog roast lunch a number of groups were given the opportunity to take a detailed tour of the Siphon itself. Although we have the story on our website and a leaflet it was clear from the presentations and tour that many people had not expected the Siphon Fish Pass to be such a large and complex machine. What looks now like a giant underground pipe is actually a solution intended to tackle a number of priority sites throughout the UK that current fish migration solutions are not available to.

Following the tour, presentations focusing on the construction and design of the Siphon and the reason for its installation at this site took place. These themes were explored by Kye Jerrom, Environment Agency Technical Fisheries and Anthony Howarth and Marcus Widdison from ACE.

Beyond the ability to pass a range of coarse fish species and eel in up and downstream directions, the Siphon Fish Pass has a number of key benefits which current fish pass designs are unable to accommodate. Primarily the installation of the Siphon underground and the ability to isolate it in flood situations allow existing flood defence standards to remain which was key on the Wissey sluice site. Most fish pass alternatives are 'open' courses which cannot be controlled in such a manner and were also more costly, such as a Larinier option which was explored for the flood bank. This structure has been principally installed to help the ecological status of the River Wissey improve to meet the objectives of the Water Framework Directive.

Siphon Fish Passes are a tested concept (R. Beentjes 2012, Koopman 2011) in the Netherlands, where nine are currently operational. The available studies both indicate clearly the ability for the Fish Siphon Pass to provide adequate passage to a range of small coarse fish and eel, results which we have started to get from a five year monitoring project arranged by the Environment Agency. The beginning of the plan and results so far were well outlined in a presentation by Karen Twine, the Environment Agency Fisheries Team.



For those of you who would like to know more, please call or ask for an event pack to be sent to you. This features our film of the project and a number of leaflets, presentations and photos which you missed on the day. Alternatively we have our dedicated fish Siphon Event page and project profile available to all on our website with the downloads.

Aquatic Control Engineering would like to take this opportunity to thank, the Environment Agency and Anglian Water who were instrumental in the organisation of this event, and of course, all who attended on the day.





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Taming the Rhine

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The Rhine flood relief channel with Tensar VMax® turf reinforcement mat laid for bank erosion control

The Rhine flood relief channel with fully vegetated T

An ambitious €54 million flood relief plan for the lower River Rhine is also designed to improve the ecology and threatened habitats of the local floodplain. To deliver bank erosion control for the new channel, the engineering team selected Tensar's innovative VMax® turf reinforcement mats for surface soil stabilisation and secure rooting for bankside vegetation.

The Rhine is one of Europe's most important freight highways, carrying in excess of 200 million tonnes annually. However, maintaining this highway for human use often means battling against natural forces, such as frequent flooding, which reconfigure the course and flow of the river through bank and bed erosion, and sediment deposit.

At the town of Rees, close to the German Dutch border, the river is constrained between the heavily strengthened town port structures on the East bank opposite a natural promontory on the West. This narrow point increases flow and consequent scour while downstream of Rees, slacker flow deposits sediment on the inside of bends which reduces the navigable depth; periodic flooding makes

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Tensor VMax® turf reinforcement mat for bank erosion control

the problem worse, and flood frequency and intensity appear to be increasing.

Constant and expensive work is required to maintain an efficient waterway through dredging and redeposition of material; this costs many millions of Euros annually. At the same time, constant erosion was lowering mean water height and affecting the water table in the adjacent floodplain habitat; incipient drought conditions caused vegetation dieback and associated loss of birds, animals and insects.

To combat this, the Water and Navigation Authority of Duisburg-Rhine is investing in the excavation of a three kilometre by approximately 200 metre wide flood relief channel on the West Bank, behind the promontory. The new channel will act as an alternative river bed to accommodate flows when the main river rises to 80 cm above the mean river height, adding a capacity of nearly 20%. Work on the flood relief channel was started in 2009 and will be finished by the end of 2014.

"In the flood relief channel design, it was important to minimize any erosion of the channel bed and banks," commented Andy Winter, Tensor Erosion Control Manager. "Otherwise there was a potential to cause disruption to the existing channel and more siltation downstream.

"To combat this we designed an integrated erosion control plan which is intended to encourage natural vegetation to attenuate of flow velocity; Tensor's VMax® turf reinforcement mat is ideal for the less steep banks to prevent wave and level related erosion of the margins. In this way, we will combine relief of flood volume through the main channel with control of suspended solids, and start to rebuild the habitat with sympathetic vegetation and improved water retention."

For more information on Tensor's erosion control technology, please visit:
<http://www.tensor.co.uk/Applications/Erosion-control/Erosion-Control-of-Channels>.

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Bringing a Victorian bathing area back to life.

Jayne Hornsby, Land and Water Services



Original images of the bathing area as it used be, complete with changing rooms.

As apart of the planning conditions for the redevelopment of an old mill area at Witney, Oxfordshire, a Victorian bathing area, on the River Windrush, had to be restored. The area had long since fallen into disrepair and as well as this restoration, two habitat and balancing ponds and the accompanying drainage system had to be constructed. The contract for the work was given to Land and Water Services but before the work could commence, extensive wildlife mitigation was required comprising of habitat fencing to protect a local water vole colony and badger habitat, this process evolved over a 24 month period prior to the start of the construction phase. Close liaison with the Environment Agency and specialist mammal ecologist was essential to ensure the success of this project and to prevent programme delays.

The original river wall was in such a state of disrepair that it had to be demolished and a new wall, constructed using sheet piles secured with ground anchors. To replicate the original appearance, a capping beam of coloured concrete and open aggregate was laid along the top and a concrete bag-work wall for the facing. The surface area was then reinstated with a resin-bound aggregate and brick edge detail, to the original footprint and foundations of the bathing area and changing rooms. The works were undertaken and managed under full CDM regulations.



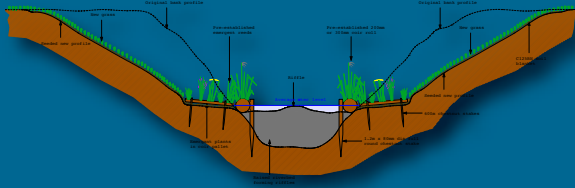
Before restoration



Bagwork detail on bathing area river wall



Habitat enhancement through channel improvement



Salix designed and constructed a river enhancement project at Ickenham for a gas pipeline river crossing as ecological mitigation to a degraded reach of river as part of a major pipeline project.

Salix were set the task of enhancing a degraded reach of the River Pinn near Ickenham, which, as a result of previous modification was now characterised by slow water flow, over deep and ponded sections with a silty bed and steep banks covered in nettles.

Salix designed and constructed a 50 metre enhanced channel. Imported flint reject stone was used to create in channel features, riffles and a point bar, that has concentrated the low flows and revived water flow in the reach.

Diverse marginal and bankside vegetation was established using mature pre-established coir rolls and pallets.

Locally harvested tree trunks were used to create a double flow deflector. Additionally, a large backwater was created on line and just downstream of the enhanced reach.



By Richard Edwards, Salix



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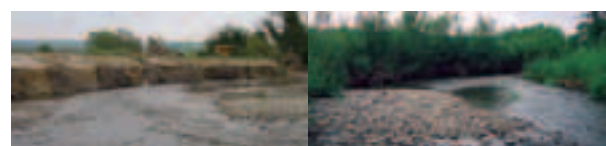
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River Dulais demonstration project using live willow root wads revegetation techniques in place of blockstone

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Tail Gate Sluice Refurbishment

Philip Ramsay, Team Van Oord

Refurbishment of Tail sluice gates to extend the operating lifetime

Client
Environment Agency

Principal Contractor
Team Van Oord

Duration
156 weeks

Value
£1.95m

Scope
Refurbishment and renovation of seven sluice gates

The Saddlebow Tail sluice's is the final stage in the Flood Relief Channel, which runs 10 miles (17km) from Denver to Saddlebow and can hold up to 9.5 million cubic metres of water at a time (more than 2 billion gallons). It was designed to protect 960 homes from the ravages of flooding from rivers, such as the severe 1947 floods, and tidal surges, such as the devastating 1953 floods. Our essential works will ensure the continued operation of Saddlebow Tail, which has been in place near King's Lynn for 50 years.

This project involved the renovation of the seven sluice gates and the replacement of chains used to operate them.

Year 1: Construction of temporary access and encapsulation to facilitate the refurbishment of three sluice gates, including grit blasting, painting and resealing.

Year 2: Construction of temporary access and encapsulation to facilitate the refurbishment of four sluice gates, including grit blasting, painting and resealing. Removal and replacement of two sets of lifting chains used to operate the gates.

Year 3: Construction of temporary access and encapsulation to facilitate the refurbishment seven cantilever sluice gates, including grit blasting, painting and resealing. Removal and replacement of five sets of lifting chains used to operate the gates.

The sequence of the operation was critical to mitigate the risk of flooding. We were only allowed two gates out of operation at any one time. This was the first time the chains had been replaced since the sluice was opened in the late 1950s.

The new chains do not require lubricating and will save the Environment Agency £16,000 a year and are expected to last for 50 years.

Safe

Our focus on site was to make sure everyone went home safely, whilst minimising disruption to the local community. The type of work was well understood by the project team which consisted of The Environment Agency, Opus International and ourselves. The project team clearly identified the key risks and necessary mitigation strategies at an early stage of the project. Early procurement of plant and materials prevented long lead-in items.

Innovative

Our temporary works were crucial to the success of the project as we were only allowed to use cantilevered scaffolding which was shrink wrapped to facilitate a totally encapsulated working area. The existing water had to remain in situ as the stability of the structure could not be guaranteed during any de-watering process. The shrink wrapped working area kept weather elements out and kept dust and blast material in to reduce the risk of contamination of the M&E equipment and local environment. During the construction period additional works were instructed and carried out as critical path items as detailed within our construction programme. We were able to carry out 10 weeks of critical path items within our original allocation of time

Honest

The project team was honest, committed and open to the challenge. There was a clear

strategy from the outset. Good and effective team working led to early resolution of project issues.

Throughout construction we investigated ways to add value and reduce costs. We were able to make savings through the following mitigation:

- Reduced fuel through utilising existing power units
- Remove the necessity to over pump flows by redesigning our temporary works
- We employed the services of a painting consultant to ensure ongoing specification compliance. This removed the need for lengthy end of contract inspections.

Collaborative

Throughout project appraisal, detailed design and construction options were continuously reviewed by Designer, Planning Supervisor, The Environment Agency and The Contractor. This review process allowed the combined expertise of the whole team to identify and mitigate risk through all stages of the project and arrive at a quick and clear decision on the most effective methods to refurbish both the sluice and lifting gates. We secured the services of a third party painting consultant to provide the client with design best practices and suitability of products. The consultant inspected each phase of our works before signing off to the satisfaction of the client. Through proactive planning and working as a fully integrated team we were able to deliver this project on programme to a very high standard and without incident, demonstrating fully the benefits of a coordinated team approach.



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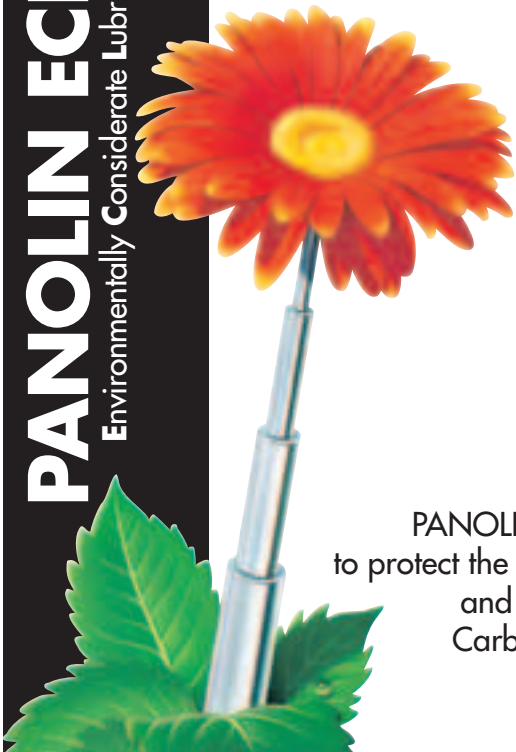
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£2.5m global lake research project

A consortium of scientists from six UK universities and research institutes has been awarded a £2.5m grant to create the world's first satellite-based global lake surveillance system.

Funded by the Natural Environment Research Council (NERC), the consortium project, entitled GloboLakes, will be led by Dr Andrew Tyler, Head of Biological & Environmental Sciences at the University of Stirling.

Scientists hope to use satellite images to monitor how lakes and reservoirs are being affected by environmental change.

The University of Stirling heads the consortium, which includes the universities of Dundee, Edinburgh and Glasgow, the NERC Centre for Ecology & Hydrology and the Plymouth Marine Laboratory.

Dr Tyler said:

"There are approximately 304 million lakes worldwide which are important for biodiversity and provide many ecological goods and services vital to human survival, such as the supply of fresh water, food and energy. They are also important for the facilitation of carbon cycling, flood alleviation and recreational pursuits."

Previous research has already shown how the ecological structure and function of lakes can be damaged by external changes such as the influx of certain nutrients, increased sediment load and climate change. Frequently the changes lead to algal blooms that can deplete oxygen concentrations and produce toxins that are harmful to human health.

Dr Tyler said that only a small number of lakes have been studied consistently and in any detail.

"This world-leading research will enable us to observe the conditions of over 1000 lakes around the globe in a consistent way and also retrospectively, by using archived images from over a decade ago," he said.

"This will allow us to gain deeper insight into their responses to environmental change and enable us to develop an early warning system to detect the onset of harmful algal blooms."

GloboLakes aims to allow monitoring to be carried out on an unprecedented scale and will provide the power to detect even the smallest changes. Additionally, it is hoped that by monitoring other environmental conditions, the project will produce a step-change in scientists' ability to understand and attribute the causes of change within lakes - a task which has been arduous thus far.

Professor Stephen Maberly, Head of the Lake Ecosystem Group at the NERC Centre for Ecology & Hydrology said that the new scheme would be an important development for monitoring freshwater.

He said:

"This project will help to cement the UK's position at the forefront of international research on freshwater ecosystems and will benefit the environment, society and industry."

"Information garnered will provide essential knowledge on the condition and response of lakes to environmental change, which will prove invaluable for the monitoring and management of lakes and reservoirs in the future."

River life could be profound droughts, a study warns

The Mayfly - in danger from drought



Critically low water levels in many rivers could lead to the partial collapse of food chains that support aquatic life, according to research led by the University of Birmingham published in the journal Nature Climate Change

This is the conclusion of one of the longest experiments on drought ever conducted in freshwaters.

The research was funded by the Natural Environment Research Council and the Freshwater Biological Association and included scientists from Queen Mary University of London (Dr Guy Woodward), the University of Leeds (Dr Lee Brown), and the Centre for Ecology and Hydrology (Dr Francois Edwards).

The team periodically lowered water flow in artificial streams,

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ndly harmed by

mimicking severe drought conditions in natural running waters. They looked at all species in the river, studying the whole food chain, measuring the growth rate of the animals in all populations.

Dr Mark Ledger from the University of Birmingham's School of Geography, Earth and Environmental Sciences, and lead author of the study, said 'We found that drought changed the make-up of the invertebrate life in the stream community and reduced its diversity by around 25%.'

Dr Ledger added many insects, such as mayflies, were severely affected by drought, as were many large predatory invertebrates, which could not escape. He continued: 'Our study demonstrates that the loss of invertebrates limits the flow of food energy through the food chain, with potentially profound consequences for the health of river ecosystems.'

'We discovered that, in particular, drought had negative effects on large bodied invertebrates, an important food source for fish, which has significant implications for fisheries.'

Co-author, Professor Alexander Milner, from the University of Birmingham, added: 'These findings demonstrate that the future intensification of drought, similar to that seen in the UK earlier this year and ongoing in the central and midwestern states of America, can be expected to have major effects on both biodiversity and ecosystem processes in streams and rivers.'

EC publishes new guidelines for inland waterways and nature protection

The European Commission is issuing new guidelines on inland navigation and nature protection to assist this important sector in applying EU environmental legislation.

The guidelines – **"Inland waterway transport and Natura 2000 – sustainable inland waterway development and management in the context of the EU Birds and Habitats Directives"** – explain

how best to ensure that activities related to inland navigation are compatible with EU environmental policy in general and nature legislation in particular. The document also emphasizes the significance of the inland navigation for securing long-term sustainability of EU transport network and highlights the achievements of this sector in integrating nature protection into its activities to date, a press release of the European Commission informs.

Siim Kallas, Vice-President and Commissioner for Transport, said *"Inland waterway transport plays an important role in the transportation of goods across many parts of Europe. This transport sector is considered to be safe, energy efficient and more environmentally friendly than other transport modes. But as it is one of many users of our rivers, it needs to be developed in an ecologically sustainable way."*

Janez Potočnik, Commissioner for Environment, hoped that the document will be "a useful tool to increase understanding between investors, planners, decision-makers and nature conservation promoters, enabling them to design sustainable navigation projects that meet the objectives of inland waterway transport while still respecting the ecological values of rivers."

The guidelines take a holistic approach to inland waterway transport and nature protection. They explain the policy context of inland navigation and biodiversity conservation in Europe. They stress that Natura 2000 sites are not designed to be 'no development zones' and that new developments are not excluded, provided that they guarantee a sufficient level of nature protection. The document also explains the legal obligations of infrastructure developers and managers from the point of EU environmental legislation, with a particular focus on the Birds and Habitats Directives. A number of case studies are presented, with examples of good practice showing how inland waterway development and management can go hand-in-hand with nature protection.

The guidelines particularly emphasize the benefits of integrated planning, whereby environmental requirements are taken into consideration at every stage of infrastructure development process and the participation of different stakeholders, including NGOs and civil society, is ensured in an active and transparent manner, securing win-win solutions for both sectors.

This document is the fourth guidance document on application of EU nature legislation in the context of strategic EU sectors. Previously published guidelines concerned wind energy, non-energy mineral extraction industry and developments in ports and estuaries.



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Rare birds arrive before diggers finish creating new Somerset nature reserve

NINA JUKES, WWT

A rare white-rumped sandpiper is the latest unexpected arrival on the Steart peninsula, Somerset. It is currently recovering on a flooded field, despite being surrounded by one of the biggest construction projects in the south west.

The bird, which has been blown off course on its migration from Canada to South America, has been attracting bird watchers since the weekend.

It is the latest in a string of rare birds to be spotted, prompting speculation about the peninsula in Somerset, which is being transformed into one of the country's largest wetland nature reserves.

Tim McGrath from WWT has been working closely with the Environment Agency, which is creating the nature reserve before handing it over to WWT to manage. He said:

"It is rather unexpected. We're in the middle of construction so there are several large diggers rumbling around the site. There's one small field that hasn't drained but it has been simply teeming with birds over the last weeks, despite being surrounded by all this hubbub.

"We're thrilled though. With birds like this turning up now, just imagine how it will be when the diggers are gone and we have 500 hectares of wetland, rather than just one field."

Local photographer and birdwatcher Tim Taylor took the photos of the white-rumped sandpiper. He said:

"It's exciting to see all the work underway. Somerset is already such a great place for birding, boosting it further will be a dream."

The construction team has been working hard over the last few weeks. They are taking advantage of the dry weather to landscape the former fields into channels and embankments. The landscaping needs to be in place before the current sea wall is breached next year, letting in the tide and creating coastal wetland.

The white-rumped sandpiper was preceded by another North American wading bird, a pectoral sandpiper, probably similarly blown off course on its annual migration, and a wood sandpiper, a glossy ibis and a spoonbill. The rarities are an added interest to the little ringed plover, ruff and curlew sandpiper that regularly visit Steart.



Image courtesy of Tim Taylor (www.wildimaging.co.uk)





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