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Enhancing Society

Welcome, to the July 2012 edition of Managing Water e'Magazine.

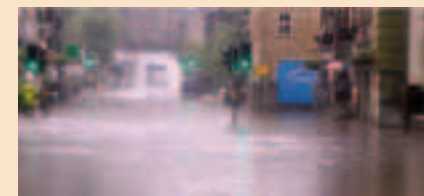
No more hosepipe bans! - the final 4 companies have lifted their bans as hosepipes have been replaced by pumps in many areas.

It's still rain, rain and more rain, or 'rain in between the showers' which was a comment made to me that seemed to sum up the weather.

Flood defences around the country have been seriously tested and in several cases - over run by the deluge and rapidly rising river levels. Parts of the UK were hit by an inch of rain in just one hour - a third of the average rainfall for the whole month of June.

Many areas have seen widespread disruption to road and rail links and large areas evacuated. Calderdale was one of the worst hit places with 900 properties being hit by severe flood and Minister, Richard Benyon visited Hebden Bridge which was flooded twice in just 3 weeks.

You can see the interview at Hebden by clicking the link below.
www.fadsdirectory.com/news/videos-of-flooding-at-hebden-bridge



Hebden Bridge the shots were taken 3 weeks apart. (Courtesy of Hebden Bridge website)



The Draft Water Bill has been released and water resources have been scrutinised by a report from an Agriculture, Fisheries and Environment EU Sub-Committee as well as in EFRA's report on the Water White Paper.

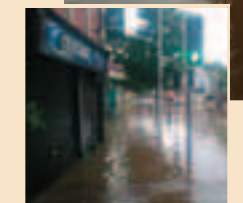
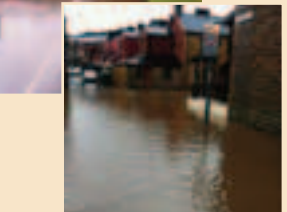
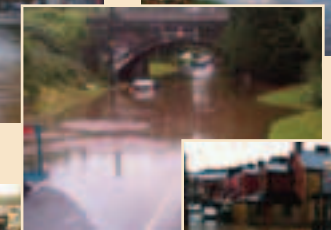
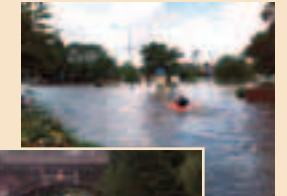
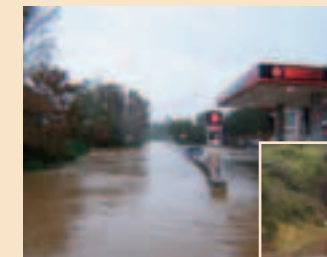
Defra have released a ministerial statement on the current situation regarding the flood insurance issue and would appear to suggest that levy funding is the favoured method, although details are still a little sketchy.

We are pleased to include articles from the Flood Protection Association (FPA) and from Mary Dhonau, Chief Exec of 'Know your flood risk'.

This edition's main feature covers SuDS and we are pleased to include conference summary reports from both CIWEM and SuDSsource who hosted two major events as well as articles and case studies from experts within the industry.

Richard Noble, Managing Water Magazine

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A few flood images taken from around the country



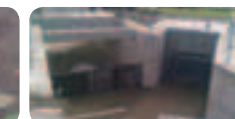
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Canal & River Trust takes over

From the 2nd July 2012, British Waterways officially ceased to exist in England and Wales and the Canal & River Trust took over.

Employees of British Waterways and The Waterways Trust now work for the new charity, which will be responsible for the network of canals and rivers in England and Wales. Other river navigations managed by the Environment Agency are likely to be moved to the new charity in 2015, subject to Ministerial approval.

In Scotland, it remains the same, with the British Waterways Board, operating as Scottish Canals and continuing with their responsibility and accountability for the Scottish Canals.

Visit www.canalrivertrust.org.uk



Immediate action on water resources says Lords Report

The Lords Agriculture, Fisheries and Environment EU Sub-Committee published its report 'An Indispensable Resource: EU Freshwater Policy', in May, and said that planning for the future of our water resources is both necessary and urgent.

The report warned that in the UK, the governments need to act decisively and that water costs may have to rise, especially in areas of greater water scarcity. For this to be accepted, consumers must be made more aware of the value of water as a resource and to recognise the other ecosystem service benefits that freshwater bodies provide.

It said that the EU needs to encourage the development of national water scarcity and drought management plans.

On the UK Governments 'Water White Paper' – it said it was welcomed in principal, but that the date set (in the mid to late 2020s) for a new water abstraction regime fails to demonstrate the required urgency. Over 10% of rivers are currently abstracted to an extent that may damage water ecosystems so we need to act sooner rather than later.

The report praised the UK Government's support of catchment management pilot schemes, to foster local involvement and said that they must secure the effective engagement of stakeholders. Planning for the future of our water resources must draw on the strengths of local involvement as well as the impulses of EU and national strategy.

Chair of the Committee, Lord Carter of Coles, said:

"The issue of water scarcity is becoming increasingly urgent. Having taken our water resources for granted for so long, we must start looking at ways in which we can protect the quality and availability of water resources in the face of challenges such as climate change and population growth.

Governments across the EU need to act decisively, and grasp the nettle of allowing the cost of water to rise where other measures fail to overcome water scarcity. Here in the UK, the Government cannot wait 15 years to reform the water abstraction regime when it is clear that over-abstraction is already doing ecological damage to more than one in 10 of our rivers.

And awareness of the dangers that are threatening a resource so vital to life must be at the heart of any and all efforts made by both the Government and the EU.

We welcome the Government's support of the 'catchment management' pilot schemes that are already running, which foster local involvement and will help to safeguard water resources. Price increases may well be an inevitable part of helping to secure our water supplies in the future.

If we are to ask people to pay more for this crucial resource in challenging economic times, we must ensure that they fully understand what they are paying extra for. They must feel connected to their local areas and know the benefits that freshwater lakes, rivers and streams provide to their local wildlife and ecosystems. Without the active involvement of local groups and individuals who know and care for the freshwater bodies where they live, we will struggle to rise to the challenge of ensuring proper protection of our water environment as an uncertain future unfolds."

<http://www.publications.parliament.uk/pa/ld201012/ldselect/lducom/296/296.pdf>

Government unveils draft water bill



Caroline Spelman MP, the Secretary of State for the department of environment, food and rural affairs, announced in a written ministerial statement the publication of the draft Water Bill for pre-legislative scrutiny.

The Draft Water Bill was published on the 10th July in Parliament heralding market reform, an innovation drive and a cutting of red tape in the UK water industry.

Under the proposals, which have been published for pre-legislative scrutiny, all businesses and public sector bodies in England will be able to switch their water and sewerage suppliers, allowing them to obtain more competitive prices, improve their efficiency and tender for services better suited to meet their individual needs. It is estimated that the benefits to the economy could be in the region of £2 billion over a 30 year period.

The legislation will also make it easier for bulk water trading within the industry, allowing water companies to work more closely to find long term solutions to water security issues.

The Bill will also make the costs of connecting new developments to the water and sewerage system more transparent.

The Bill will also extend the scope of the Environmental Permitting regime to include water abstraction and impounding licences, flood defence consents and fish pass approvals. And the frequency of drought planning will change to a five yearly cycle so that it aligns with other water planning cycles.

The benefits to developers and applications made for flood consents will be the reduction in red tape around environmental regulation and duplication with Environment Agency consent schemes .

Fish Pass approvals will also be included in the Environmental Permitting Regime, similar to that already included in the Eels regulations. Defra is looking at introducing further legislation for all fresh water fish to deliver its Water Framework Directive commitments. This will impact on the development of new dams as well as existing structures where existing fish passes may have to be altered to suit all species of migratory fish.

Whilst most of the draft Bill is aimed at improving competitiveness and efficiency of the water industry, the abstraction regime clearly could have a great impact on agriculture. At present the government has resisted pressure for the draft Bill to include legislative proposals to reform the abstraction regime.

The draft Bill will now undergo a scrutiny process to ensure that both Parliament and stakeholders have the opportunity to comment before it is finalised for introduction into Parliament. The EFRA Committee is expected to hold an inquiry into the draft Bill and call for written evidence before holding public evidence sessions. Following the scrutiny process, the Water Bill will then be introduced into Parliament.

Further information on the draft Water Bill is available from the Defra website:
www.defra.gov.uk/environment/quality/water/legislation/water



EFRA report on the Water White Paper

Launching the report, Anne McIntosh MP, EFRA Committee Chair said:

"We heard persuasive evidence about the environmental damage unleashed by over-abstraction. The Government's current plans - to reform the abstraction regime by the mid-to-late 2020s - will not take effect rapidly enough given that our rivers are already running dry."



"The reform of abstraction licenses must be brought forward to protect against the effect of severe droughts such as the one we saw earlier this year. Defra must also work with Ofwat and the Environment Agency to tackle urgently those abstractions which are already causing severe damage to our rivers."

"Extremely disappointing"

The Committee also finds it "extremely disappointing" that the White Paper fails to set a target to increase levels of water metering.

"It's hard to see how the White Paper's call for water to be managed as a precious resource can be reconciled with the lack of any clear target to increase metering levels. Installing a meter is the most effective way to improve water efficiency, providing a clear incentive for householders to minimise wastage,"

The report highlights how bad debt in the water sector adds around £15 to each household's water bill every year. "It is simply unacceptable that hard-pressed yet honest householders are subsidising those who are able but unwilling to pay their water bills. Defra must implement existing legal provisions rapidly to tackle this problem," says Anne McIntosh.

The Committee also examines proposals to reform the water industry in England to increase competition in the sector. MPs conclude that Defra should set a clear target date for opening a competitive retail market for water, and should take account of lessons that can be learned from Scotland, where retail competition has already been introduced.

"We welcome plans to increase competition in the water industry, although we believe that the White Paper's proposals for reform will fail to deliver a well-functioning retail market. We suggest how to remedy this and we look forward to examining revised proposals in more detail once the draft Water Bill is published," adds Anne McIntosh.

The Committee calls on the Government to take action to encourage the development of Sustainable Drainage Systems (SuDS), which can reduce the risk of flooding, and to implement the relevant outstanding provisions of the Flood and Water Management Act 2010.

"Deeply Worrying"

MPs also say that it is "deeply worrying" that the Government had not yet reached an agreement with insurers about providing cover for homes in areas of flood risk.

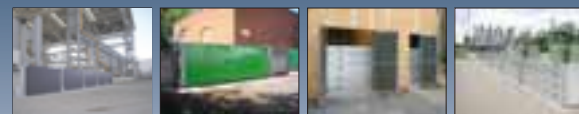


CIWEM agrees with the Committee in calling for more urgency in the reform of the abstraction regime and the encouragement of sustainable drainage systems (SUDS). They also agree that the White Paper is weak on water metering and that on rainwater harvesting, Defra must take more active steps to promote this and water recycling and seek to incorporate incentives of requirements for their inclusion in the design of new developments.

CIWEM Executive Director, Nick Reeves OBE, says:
"The Water White Paper misses an opportunity to promote the retention of affordable water for all who use water wisely and to charge those who use high quantities higher prices than they now face. It is naïve to assume that people who use excessive amounts of water will change their behaviour to the degree needed through anything but higher prices."
"...whilst much of the white paper necessarily focuses on the existing water industry and water supply systems, it is hard to believe that a document on sustainable water resources fails to mention rainwater harvesting or water recycling and re-use," it said in its response.



The Institution of Civil Engineers (ICE) has also called for universal water metering, as well as advocating increased interconnectivity between water companies. Deputy Chair of ICE water panel, Phill Mills, said:
"Further debate on the issue of water metering is welcome and much needed. If we are to tackle the UK's water security we need prompt, decisive action and universal metering has to form part of the solution. Metering requires a tariff structure that reflects the difference between essential and discretionary water use and must include social tariffs which support those who are less able to pay their bills. "But it's not just about managing demand for water. Supply solutions such as increased interconnection between water companies must also form part of the solution."



THE WATER STOPS HERE.

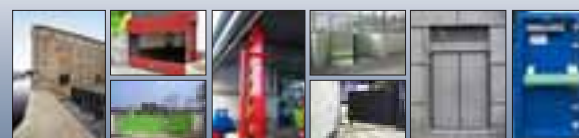


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Caroline Spelman

Member of Parliament for Meriden and Secretary of State for the Department of Environment, Food and Rural Affairs.

Flood Insurance - Ministerial Statement

Recent events have once again underlined the importance of safeguarding the widespread uptake of affordable insurance.

The central objective is to reach an agreement with insurers whereby insurance bills remain affordable without placing unsustainable costs on wider policyholders and the taxpayer. There is the potential to deliver a new approach that is a step-change better than the current Statement of Principles, by for the first time directly addressing the affordability of flood insurance. This is a complex issue, as insurers themselves recognise, and we have undertaken to work with the Association of British Insurers (ABI) to look at ways of providing safeguards. A number of proposals have come forward from the industry and we are continuing to consider a range of options. These discussions have made significant progress. The Government is considering with the industry's support a way of formalising existing pricing arrangements and maintaining the current cross-subsidy in place between policyholders. This would be by means of an internal industry levy, as proposed by insurers themselves. By reflecting existing arrangements, the levy would avoid increasing costs for those not at risk whilst helping households to continue to afford insurance in flood risk areas.

This work is taking place against a backdrop of significant advances in flood risk mapping and forecasting which in turn is giving insurers the ability to more accurately ascribe the level of flood risk to individual properties. As this knowledge base expands it will bring considerable benefits, not least in terms of helping Government, local authorities, households and businesses plan for and mitigate the risk of flooding. Investment by all in preventing flood damages from occurring will remain the best and most sustainable way of achieving affordable insurance over the long-term. The Government and insurers are determined to see insurance premiums remain affordable and widely available, particularly in light of the pressure household budgets are currently under and the pattern of flood events

we have seen over recent years. The priority is now to resolve detailed design issues including how support would be targeted. We are looking to develop with insurers a model that delivers benefits to households in need of support whilst avoiding poorer policyholders subsidising wealthier ones. We are looking for an approach which also encourages individuals and communities to consider the actions they can take to keep future premiums down. This measure would be intended to facilitate a gradual change in the market but would still mark a step change in Government's role in the management of flood risk. As such any proposal will require detailed scrutiny before it could be introduced. Meanwhile, this Government is continuing to fulfill its role in reducing flood risk by spending more than £2.17 billion on flood and coastal erosion risk management in England over the current four year spending period. 60 new schemes are moving into construction this year under our new partnership approach to funding which has already brought forward £72 million in additional investment from other sources. We expect that the benefits of our investment in risk management will be reflected in reduced insurance premiums going forward. The recently published National Planning Policy Framework fulfils the Government's commitment to avoid unnecessary building in floodplains and this outcome has been welcomed by the ABI and others. We are helping insurers incorporate the protection afforded by property-level protection measures into their pricing models and, with the industry's help, are publishing a guide to help households find the best means of accessing insurance in flood risk areas. We are also working with local authorities and other partners to look at the extent to which communities, through acting together, can help to manage the costs of flood insurance. Intensive discussions with the insurance industry are continuing and we will announce further details in due course. I undertake to update the House at the most appropriate points.



Paul Cobbing, NFF

Paul is Chief Executive of the National Flood Forum, a national charity that supports and represents people and communities at risk of flooding. He has worked on many environmental issues throughout his career for public, private and voluntary organisations. The National Flood Forum is now trying to ensure that the needs of people at risk of flooding are at the heart of new policies on insurance.

Commenting on the Ministerial Statement

Welcome, but, says the National Flood Forum. Flood charity the National Flood Forum welcomes the written ministerial statement announcing the Government's overall approach to the future of flood insurance. Paul Cobbing, the National Flood Forum's Chief Executive says, "The Government has accepted the need for a pooled model as the National Flood Forum and others have been arguing. However, this is only the first step in making sure that people can get insurance that is affordable and accessible, and that protects vulnerable people in society." Floods can tear the heart out of communities. Once the water, the politicians and the cameras are gone, there's a long hard grind to get life back to normal. The National Flood Forum helps people through the recovery process and sets up local support groups, empowering individuals and communities identify and manage their flood risks in the future, in partnership with authorities. The floods of the past few weeks highlight the need for Government and the

insurance industry to agree on a sustainable model for future flood insurance. Paul Cobbing says "Government has outlined its approach today; now we need to agree the detail as a matter of urgency." We need a system that provides affordable and accessible insurance for all; a fair system we know we can rely on, rather than the possibility of hand-outs if the worst happens. In a recent survey conducted by the National Flood Forum, fears about the ability to get insurance at an affordable price were highlighted as a particular concern and callers to our helpline frequently cite the difficulty of getting insurance as a major cause of distress.

Paul Cobbing, Chief Executive of the National Flood Forum said "Households across the country must not be left in the lurch when the Statement of Principles ends next June. Government has to take the lead to ensure this does not happen and time is running out. We need to act now to get the right framework in place."

Contact Paul by:

email: paul.cobbing@floodforum.org.uk

Telephone: 01299 403055

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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.

Clarity is required for the Local Authorities

With one voice, a cry for 'clarity, clarity, clarity' has gone out to Government as Local Authorities in England and Wales prepare to commence their roles as Approving Bodies for Sustainable Drainage Systems (SuDS).

Further delays in the implementation of those parts of the Flood and Water Management Act 2010 which will make Sustainable Drainage Systems (SuDS) compulsory in England and Wales seem inevitable.

Local Authorities are due to commence their roles as SuDS Approving Bodies (SABs) in October 2012, but many important questions remain unanswered relating to the National Standards by which the SABs will be expected to judge drainage schemes in proposed developments.

There are strong indications that both local government and industry believe proposed National Standards, as they currently stand, are not yet fit for purpose. A three-month consultation into the National Standards closed in March this year, but many of the concerns raised in the responses both by industry and local authorities appear to remain unanswered.

There were significant concerns about the lack of clarity in the proposed National Standards. The Government has promised detailed Guidelines to accompany the National Standards. There's little doubt that the Standards in their current form are insufficient without them. Many agree the guidelines would need to have been written, scrutinised and agreed by industry before the new SuDS approval system begins. To be effective, the guidance also needs to be binding, not just advisory.

In their responses, local authorities have called for at least 6 months' notice before commencement and many believe an earlier start is unrealistic. It seems April 2013 is looking an ever more likely date. Recent flooding has been a sobering reminder of the devastating 2007 floods which led to the Flood and Water Management Act, but many are worried that a dilution of the original principles has crept in, introducing exemptions in a number of areas which could undermine the whole intent.

Amongst all of the questions to be resolved, affordability is the most hotly debated. While many developers welcome a proposed

exemption on the grounds of affordability, many fear such a test could be used as a 'get out' clause and would focus on capital costs alone.

There are strong arguments that SuDS are often cheaper or comparable to conventional systems. Affordability must not be allowed to dilute the whole spirit and principles of the Flood and Water Management Act," he stresses.

Current thinking on SuDS focuses much more on the multiple benefits such as amenity and biodiversity and on the holistic, whole-life contribution to a project in ecological and environmental terms.

A second area requiring clarification is around the term 'reasonably practicable', which is used 15 times in the proposed standards. In a dispute between a developer and a SAB – who decides what that means exactly?

The proposal that SuDS Approval and subsequent Local Authority adoption should only be required for drainage systems serving more than one property is a cause of inconsistency, if not confusion. Why should a large commercial scheme, such as a supermarket for example, not go through the SAB process? What about residential buildings in multiple occupation? Unadopted SuDS on these developments would have to be maintained by the tenants or building owners.

Runoff from large single properties could have significant impact on surface water drainage in the area. What recourse would the water company have in such circumstances? Surely a ruling based on minimum area of land would be more reasonable?

I must stress that there is overwhelming support for the Government in implementing the Flood and Water Management Act, and for the principles embodied in Schedule 3, which seeks to implement the National Standards and the Local Authority SAB roles. It's been five years since widespread flooding in England set us on the road to radical changes in surface water management and flooding this year is still a costly scourge on our infrastructure. We must neither falter, nor delay any further.

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Extreme weather confirms the need to plan for climate change

Lord Smith, Chairman EA

Lord Chris Smith, Chairman of the Environment Agency said at the launch of the report into climate adaptation in Britain that Britain needs to plan now for more erratic, unpredictable and extreme weather patterns in the future His comments came following recent floods across England and Wales and that this extreme weather is typical of the kind of weather we should expect to see more frequently, based on climate predictions.

Testing resilience to extreme weather

This year the wettest April to June on record, which saw many rivers rise to unprecedented levels, followed the driest 16 months on record in some parts of England – testing the country’s resilience to extreme weather. Severely depleted groundwaters, worryingly low reservoirs, dried up rivers and hosepipe bans were quickly followed by the wettest April, May and June ever recorded, with flooding having devastating impacts on homes and livelihoods across the country.

Lord Smith said: *“The weather extremes which we’ve seen this year – with widespread floods almost immediately following a long term drought - have brought the importance of resilience into sharp focus. Climate change science tells us that these are the sort of weather patterns we are going to have to get used to, so taking action today to prepare and adapt our homes, businesses, and infrastructure is vital. “The Environment Agency is working to improve its flood forecasting and early warning systems and is improving flood defences to protect communities. Local Authorities and other partners also have a key role in improving community resilience and incident response. And we must all work together to plan better for surface water flooding after torrential rain. “But we have also seen some of the warmest years on record in the last decade and water resources in some parts of England are under increasing pressure. We therefore need government and organisations to work together on long term solutions to water resources and efficiency.”*

Climate Ready

The Environment Agency is at the forefront of efforts to increase the country’s resilience to flooding and water scarcity, both now and future climate conditions. Its new Climate Ready support service aims to help organisations from businesses to health authorities and local authorities prepare, by providing them with advice on future risks and the steps needed to adapt. The Environment Agency continues to work with water companies, industry and the farming community to identify ways to conserve, share and make the most efficient and effective use of water. Since the start of May over 3,000 properties have been flooded, 55,500 properties have received a flood warning from the Environment Agency and over 31,000 properties were protected by flood defences, during what’s now being referred to as the ongoing summer 2012 floods. The Adaptation Sub-Committee report provides an assessment of current progress to manage risks from flooding and water scarcity.

Adaption Sub-Committee report on Climate change

“the number of properties at risk of flooding could quadruple by 2035 if climate change is not addressed sufficiently”

The number of properties, in England, at risk of flooding could increase by up to 4 times, over the next twenty years if adequate steps are not taken to prepare for climate change. on the 11th July by the Adaptation Sub-Committee (ASC) of the Committee on Climate Change,

Despite of the worsening effects of floods, the report found that:

- Development in the flood plain increased by 12% (210,000 properties), compared to 7% in the rest of England over the past 10 years. 1 in 5 of these properties were built in areas of the floodplain at greatest risk of flooding.
- Simultaneously, funding for flood defences from both public and private sources is decreasing: 12% lower for the current spending period compared with the previous period after inflation. The Environment Agency estimates that funding needs to increase by £20 million a year on top of inflation to keep pace with climate change.
- Take-up of measures to protect individual properties from flooding is 20 – 35 times lower than the rate required to safeguard all properties that could benefit.
- The proportion of gardens that have been paved over increased from just over a quarter of total garden area in 2001 to nearly half in 2011.

The report advises that increasing investment and ensuring more careful planning of new housing in the floodplain can reduce the risk of flooding by almost four times what it would have been in 2035 without action.

Lord John Krebs, Chair of the Adaptation Sub-Committee said: *“Extreme weather is likely to become more common in the future as a result of climate change. Flooding and drought are two of the most significant climate risks. Flooding, as we have seen recently, can have a devastating impact on people’s lives and livelihoods. How we adapt to these risks will be critically important to our future resilience: whether it’s deciding not to pave over our gardens; or building in less exposed areas. “We must take adaptation more seriously if we are to manage the growing risks of floods and droughts. This can be done by investing more in flood defences, faster roll-out of water meters and giving serious consideration to where and how we build our housing and infrastructure. Without action by households and businesses to prepare for these inevitable weather extremes the country faces rising costs, unnecessary damage and future disruption.”*

The report also indicates that water scarcity is likely to become more common in some parts of the country in the future due to the combined effects of climate change and population growth. This is likely to be exacerbated by levels of household water consumption that are among the highest in north west Europe.

Encouraging households to save water could reduce total consumption by 700 million litres of water per day, two-thirds more than current efforts by water companies, according to the new report by the Sub-Committee. A faster pace of reduction in water use is needed including through increased metering (in higher risk areas) and water efficiency measures.

The report did conclude that actions to date are having a positive effect on the issues:

- Investment of £1 billion in flood defences has helped to reduce flood risk to 182,000 homes in the last three years.
- The majority of floodplain development proceeded in line with Environment Agency advice, because the developer incorporated adaptation features, such as raised ground and floor levels or safe evacuation routes.
- Nearly half of all new developments have incorporated sustainable drainage features.
- Household water consumption has declined since 2000 from 150 litres per person per day to 145 litres per person per day.
- Water companies are investing £1.8 billion to reduce demand for water and increase supply by 320 million litres per day between 2010 – 2015.

Recommendations for the Governments National Adaptation Programme:

- More transparent and careful planning of new development in flood risk areas by local authorities, taking account of long-term costs of flooding.
- Increasing investment in flood defences (from public or private sources) or finding other ways to deal with increased flooding risk.
- Encouraging greater use of property protection measures and sustainable drainage systems to cope with flash-flooding.
- Further steps to increase efficiency of water use by households through water metering and pricing.

The National Adaption Programme

Defra’s progress report on becoming ‘Climate Ready’

Defra has published a National Adaptation Programme ‘Progress Check’ outlining the priorities to help the UK meet the challenges of climate change and become ‘Climate Ready.’

The National Adaptation Programme was created, as required by the Climate Change Act, to address the risks set out in the first UK Climate Change Risk Assessment of January 2012 and the first National Adaptation Programme will be published in 2013 focusing on helping UK businesses, local authorities and civil society to become more resilient or ‘Climate Ready’ to climate change impacts. Through co-creation, Defra hopes to stimulate innovative policymaking and to empower a wide variety of non-government organisations to take responsibility for finding the best solutions for their sector.

The National Adaptation Programme will be built around 5 core themes and will be reviewed every five years to address the most pressing climate change risks to the UK.

The 5 core themes are:

- Agriculture and forestry;
- Built environment and infrastructure;
- Business and services;
- Health and wellbeing;
- Natural environment.

Agriculture & Forestry

The programme for agriculture is to look at means of increasing resilience to drought and lack of water availability, including through water abstraction licensing reform and water catchment partnership pilot. Whilst also maintaining and improving soil structure and function to aid adaptation, including through soil policy and working with drainage authorities and water cycling and soil policy.

Built environment and Infrastructure Built Environment

The risks considered to the built environment include extreme weather such as flooding, storms, heat waves and drought. Longer term effects include changes such as increasing temperatures and sea level rise. Most of today’s new and existing buildings are not necessarily equipped to cope with current and future climates, and at the current rate of replacement, around 70% of buildings that will be in use in the 2050s, already exist. The Built Environment theme focuses across

three main areas: buildings – where, what, how and standards; resilience and response to emergencies; and decentralisation and localism. The proposal is theat: *“Buildings and places and the people who live and work in them are resilient to a changing climate and extreme weather; and organisations in the built environment with an increased capacity to address the risks and take the opportunities from climate change”* • Support the implementation of planning reforms; • Consider the response to overheating risk; • Better and more widespread use of Green Infrastructure to mitigate climate risks; including Urban Heat Island and surface water flooding; • Support implementation of the Water White Paper; • Long term strategy for flood and coastal management.

Infrastructure

The existing stock of bridges, roads and power stations is already vulnerable to today’s extreme weather. The Government has prioritised the need to address the risks climate change presents to infrastructure and to improve the long-term resilience of new and existing infrastructure networks in the energy, ICT, transport, and water sectors. Many organisations within the infrastructure sector were asked to prepare Adaptation Reports, setting out how climate risks impact on their organisational objectives and the steps they are taking to adapt to them.

Business and Services

These too need to understand how climate change will effect the way in which they operate. They face many different risks, including natural hazards such as flooding, drought and heat waves.

Health and wellbeing

Flood, droughts, hextreme temperatures etc can have serious impact on our health and this will impact greatly on health care and social care organisations.

Natural environment

The natural environment provides us with essential services, for example food, flood risk reduction, clean water and recreation, as well as having an intrinsic value. Deterioration. A healthy natural environment can also help society to adapt to climate

change in a sustainable way. The natural environment theme will support delivery of the Natural Environment White Paper and the Biodiversity Strategy 2020.

Theme proposals

- Adapting to key water risks such as environmental low flows and water quality including through piloting adaptation within the water catchment
- Adapting to key biodiversity risks through action to increase the resilience of landscapes and habitats including through a new ‘Climate Ready Biodiversity and Ecosystem Services Working Group’ of key stakeholders and progressing the work through Nature Improvement Areas;
- Embedding climate change adaptation within the work of the Ecosystem Markets Task Force and Defra’s Payment for Ecosystem Services project;
- Supporting Local Nature Partnerships to embed adaptation within their approach where they wish to do so;
- Adapting to key marine risks through working with the Marine Climate Change Impacts Partnership and by improving the integration between marine and land based approaches to adaptation.



Defra Minister Lord Taylor of Holbeach said:

“I am pleased to publish a short report on our progress in co-creating the

National Adaptation Programme as part of work to develop a Climate Ready UK. This reflects work so far, that has already involved a wide range of stakeholders. It sets out our general approach and the priorities for each theme.

“We would very much like to receive comments from stakeholders on what is set out in the report, ideas about areas to further develop and offers to contribute from organisations that haven’t been involved so far.

“I and the Climate Ready team look forward to further collaborative work to develop the National Adaptation Programme as we look towards publication in 2013.”

You can read the full report here: www.defra.gov.uk/publications/files/pb13801-climate-change-progress-check.pdf

To comment on the initial priorities in the progress check, email climate.ready@defra.gsi.gov.uk by 14 September 2012.

Protecting Property



People at risk of flooding are being urged to visit a new interactive online portal which has been launched by The Flood Protection Association (FPA).

The launch coincides with the fifth anniversary of the devastating floods of 2007.

And with three flood warnings currently in force across the UK, the FPA's new website www.thefpa.org.uk aims to provide a lifeline to individuals and businesses looking for a single source of flood related information, latest flood warnings and a special helpline.

As well as guidance on how to protect a property, types of flooding and how to assess a flood risk, importantly the site recommends trusted, accredited suppliers of all types of flood protection products and specialists in flood risk assessment surveys.

All FPA members comply with the association's code of practice as a sound guarantee to customers of the highest standards of quality, integrity, safety and reliability.

This means their flood protection products are quality assured and, where appropriate, are Kitemark certified as a symbol of trust.

In particular, the site features two illustrations of a home and a commercial property - by hovering over water entry points, a list of product providers pops up with a link to members and how to contact them.

The aim is to develop the site into an online hub of all things flood related, explained the FPA's chair and flood protection ambassador Mary Dhonau

OBE.

"Flooding is one of the biggest threats this country faces and this summer could be the wettest we've seen for a decade.*

"As many as 5.5million people (one in six) live with the threat of flooding in the UK and as a multi-time flood victim myself, the experience can be traumatic for those affected - you can't put a price-tag on losing the most precious things that matter most to you and your family.

"That's why flooding is known as the silent, indiscriminate burglar.

"With the Flood Insurance Statement of Principles - the gentleman's agreement between the government and Association of British Insurers - expiring in 2013, homeowners and businesses face even more uncertainty of whether they will get flood insurance.

"As a result, people will be expected to protect their own property. Our website aims to help homes and businesses be flood resilient by providing a hub of much needed information on how to prevent or reduce damage caused by flooding.

"It is vital that people are aware of the risks and are properly prepared."

For more information, visit www.thefpa.org.uk or contact the FPA helpline on 033 33 23 8701.

£4 million, funding for university research projects to help alleviate flood risk

The Engineering and Physical Sciences Research Council (EPSRC) has provided £4 million, funding for 3 research projects, all aimed at changing the way that we prepare for and respond to flood events.

For more information contact the EPSRC Press office on tel: 01793 444404 or email pressoffice@epsrc.ac.uk



A Durham University-led research team will develop computer modelling to look at how emergency planners, the emergency services, local authorities, businesses and other key players interact in the aftermath of a flood.

The research is expected to lead to the creation of the first unified framework that integrates and evaluates organisations' changed behaviours in the face of flood events and how these affect business continuity management and future preparedness.

The findings are expected to go towards better planning and response in the future as well as mitigating economic losses.



New strategies for managing urban flood risk are required, necessitating radical changes in the ways cities are managed, planned and developed. Previous research has identified multiple options and measures for future urban flood risk management that align with more general targets for water centric, sustainable communities. However, it remains unclear how these options and measures can be:

- (1) delivered in practice, and;
- (2) comprehensively evaluated in terms of their benefits and costs.

Recognising this, the project proposed here will develop novel ways of driving new, resilient urban forms and fabrics through delivering measures to manage flood events sustainably while enhancing urban life; providing scope for radical solutions under new build; and, realising possibilities for improving existing performance through retrofit and urban renewal.



The project will look at the most critical flood scenarios caused by sequences or clusters of extreme weather events striking vulnerable systems of flood defences, urban areas, communities and businesses. The project will analyse and simulate situations where a second flood may strike before coastal or river defences have been reinstated after damage, or householders and small businesses are in a vulnerable condition recovering from the first flood. By examining such events and identifying the worst case scenarios, we hope our findings will lead to enhanced flood resilience and better allocation of resources for protection and recovery.

Changes in the frequency and severity of flooding are under close scrutiny due to increased storminess in projections of future climate. The project will look at observed records of storms and try to understand how clustering may obscure

or even exacerbate any climate induced changes. This is crucial for designing flood defence schemes now, which will operate for decades into the future, as current methods of estimating risk in a stationary climate do not fully account for the observed clustering of flood events and possible changes in variability.

Other aspects of the project will look at how coasts (beaches, dunes and engineered defences) and rivers behave during storms. Of particular interest is the effect of previous storms and floods moving sediment (i.e. shingle, sand and river bed material) so that the beach or river is in a different (perhaps weaker) condition when a second flood event arrives. The movement of sediment is difficult to predict as mostly happens during storms, so our knowledge of these processes is currently lacking.

News

from the



Supporting and Representing Flood Risk Communities

Flood Recovery Trailer kept busy



The floods of 11th and 12th June in Wales and on the south coast brought flooding once more into the public gaze. About 250 houses were flooded around the Bognor Regis area in West Sussex and the NFF's Flood Recovery Trailer (FRT) was deployed on 15th June to bring help, support and advice to householders affected.

Working with Arun District Council, the Environment Agency and Southern Water,

Heather Shepherd and Charles Tucker took the trailer first to Felpham, then to Middleton on 16th. Arun council then took charge of deployment and took the FRT to Littlehampton, Barnham, Wick, South Bersted and Elmer, finishing on 21st. Environment Agency staff then deployed it to Bracklesham Bay in Chichester Council on 22nd and 26th.

Then heading North, the FRT is now visiting communities in West Yorks and Lancashire, that were hit by flash floods on 22nd June. Again, several hundred homes were flooded. Heather Shepherd, Paul Hendy and Paul Cobbing are manning it along with EA and council staff. Venues so far include Crawshawbooth, Irwell Valley, Croston, Wigan, Todmorden, Hebden Bridge and Mytholmroyd.

With more rain and flooding predicted for this coming weekend, in many parts of the country, the trailer is expected to be deployed again very shortly.

Want to protect your home or small business from flooding?

Ask the NFF! Phone Amanda on 01299 403055 or Heather on 01743 741725.

See Paul Cobbings response to the Ministerial statement on flood insurance - page 8

A New Buckingham Flood Group

The NFF is supporting Buckingham setting up a voluntary flood group and working towards a major dry run and town awareness event.

We were initially involved after householders were furnished with property level protection by Aylesbury District Council. Since then we have worked with three different areas in Buckingham bringing the community together to gain support in a flood event.

The area now has a new flood group called 'FAB' 'Flood Action 4 Buckingham' and a linked volunteer group organised by 'Churches Together'. Heather Shepherd says: "Buckingham has received much support to get this off the ground, but has now leaped forward with great success. It is an excellent example of a flooded community being supported by a local voluntary group. I can't sing the praises of 'Churches Together' enough for the tremendous support they give to their communities at time of need."



Flooding

The impact of the ending of the Statement of Principles:

what next?

Last month's horrendous flooding, which struck large parts of England and Wales with devastating effects, together with warnings that Britain faces the worst flooding for a decade has once again ensured that flooding is top of the news agenda. However, many residential and commercial property owners are still unaware of the risks and have no measures in place to protect against flooding.

Despite currently being the middle of summer, the UK is in a state of high flood alert, with the Environment Agency (EA) putting in place 53 flood warnings and 175 flood alerts across the country. Whilst Brits have always made light of the 'British summer' and blue skies, sunshine and warm weather have never been guaranteed, UK weather patterns over recent years have become undeniably more extreme, with intense and prolonged periods of rainfall as likely to fall in the summer months as during the winter. Who can forget the fateful summer of 2007 which saw many parts of the country under water?

We can no longer simply say 'I live nowhere near the coast - it won't happen to me'; the recent flooding which occurred in Wales took place in some areas that have not flooded in over 80 years. Flash flooding is the most frequent type of flooding in the UK and, as currently demonstrated by the rainfall throughout the country, homes do not need to be near a river or the coast to be affected; it can happen anywhere to anyone.



Insurers are presently steeling themselves for the biggest insurance pay-outs for flood damage since the £3bn bill following summer 2007; the ABI is anticipating figures to be in the low hundreds of millions although the exact amount cannot be confirmed until the flood water recedes - and with rain forecast throughout July and August, there's no telling when this will be.

The ending of the Statement of Principles

At the moment, insured property owners should receive an insurance pay-out - but what will happen after the Statement of Principles comes to an end next June?

30th June 2013 will see the ending of an agreement between the insurance industry and the Government which committed insurers to continue to provide flood insurance for most homes and small business premises, even in areas of significant flood risk, provided there were plans, within five years, to reduce the risk below 'significant', i.e. the Environment Agency's benchmark for a level of flooding 1 in 75 years.

The Government, however, cut back its expenditure on such flood reduction measures and, when the Statement was last extended in 2008, the Association of British Insurers (ABI) stated that it would not be renewed again when the current agreement expires at the end of June 2013. The Statement of Principles only applied to existing insurance companies that supplied flood insurance; new insurers to the market were not bound by the agreement and could therefore elect to only offer flood insurance to properties outside a flood risk area. By being less exposed, they could offer lower premiums and therefore win business at the expense of others. As a result, the ABI declared they would return to 'risk-based' pricing following the end of the Statement of Principles next year unless they and the Government come up with an alternative.

Post-June 2013, Will people be able to obtain flood insurance?

Due to annual policies, the cost of flood insurance has already started to reflect a

By Mary Dhonau,
Chief Executive of
Know Your Flood
Risk
and multi-time flood
victim



property's risk and this will accelerate when the Statement expires. Properties with significant or high flood risk are likely to find that their premiums or excess increase or that certain conditions are imposed on cover. I have learned of several homeowners whose insurance has increased by two-thirds and the excess amounts are around £15,000-£20,000 - and they are among the lucky ones; once the Statement of Principles expires, those at greatest risk may not be able to obtain flood cover at any cost.

Added to this, where flood insurance is not available, the property owner may be in breach of their mortgage which generally requires insurance cover for all perils.

So, what next?

As it stands at the moment, the future of flood insurance could go in one of two directions. One option is a 'free market', where policy holders would be charged according to the level of risk at which they are deemed to live, which could mean that the cost of flood insurance would rise substantially. Alternatively, and favoured by the ABI, the risk could be pooled (called 'Flood Re') by the insurance industry; should a large flood occur and the 'pool' wasn't big enough to pay out, the Government would become the insurer of last resort.

The future of flood insurance hangs by a very thin thread. Despite the Secretary of State for the Environment, Caroline Spelman, revealing earlier this year at the annual ABI property conference that intensive discussions between the Government and the ABI are taking place and that an announcement would be made in the spring, a solution is yet to be reached and no announcement has been forthcoming.

Encouragingly however, it was made clear that the Government is fully aware of the risks to households and the devastating impact that floods can have, and that they are committed to doing all that they can in partnership with the insurance industry to address the needs of home owners. The idea that insurance and financial support would not be available to those at risk of and who have suffered flooding was deemed unacceptable.

The following sites are useful sources for information and planning:



www.knowyourfloodrisk.co.uk
'Homeowner's Guide to Flood Resilience'



www.marydhonau.co.uk
'4-Step Guide to Preparing a Household Emergency Plan'



www.thefpa.org.uk
how to protect your property from flood



www.rics.org
The RICS Consumer Guide to Flooding

What can property owners do to protect against flood?

Whilst the future of flood insurance is unclear, there are many steps that property owners and potential property owners can take to ensure their homes and businesses are better protected against flooding.

It is vital that property owners and potential buyers ascertain their risk. If they are purchasing or leasing a property, they cannot currently rely on their surveyor or solicitor to have obtained a flood risk assessment as these are not covered in the preliminary enquiries or standard searches.

There are a number of commercial providers of good desktop flood searches that use robust data and risk models that are capable of greater accuracy than the Environment Agency's public site (the EA also only covers river and coastal flooding). These cover ground and surface water and in some cases dam and reservoir burst. Additionally, they can model flood depth and, importantly, distinguish between properties at different elevations. They are available at a modest cost of around £20 for a residential search.

The Know Your Flood Risk campaign, www.knowyourfloodrisk.com, recently launched a 'Homeowner's Guide to Flood Resilience' which offers practical advice on how homeowners can prevent and protect their home from flooding. Receiving flood warning alerts from the Environment Agency will give homeowners time to prepare their home with products that stop the water from entering the home, such as air brick, door and window covers.

It is essential that homeowners and potential buyers know the flood risk of their property. I didn't know my home was at risk of flooding until my son woke me one morning to say that his downstairs bedroom had flooded. Had I known in advance, I could have chosen to walk away from the purchase or I could have protected my property in advance.

I urge every homeowner to investigate their flood risk, plan in advance and take the necessary steps to protect their home. With the Statement of Principles ending next year, it could make the difference between being able to find available and affordable insurance or not.



Usk flood wall refurb wins prestigious ICE award

An Environment Agency Wales project to refurbish the Usk flood wall has won a prestigious civil engineering award.

wall, which was no longer strong enough to protect the town from flooding, the Agency simply refurbished it.

The scheme was completed in 2011, at a cost of £684,000 and significantly reduces the risk of flooding to people in nearly 40 homes and businesses in the Woodside and Llanbadoc areas of the town.

This was 66 percent cheaper than rebuilding and work emitted 60 percent less carbon dioxide.

The judges were also impressed by the way the Agency reduced disruption for local people and the local environment - including the nearby Site of Special Scientific Interest (SSSI).

It also provides flood protection to important local infrastructure including the main A472 trunk road and an electricity sub-station.

Tim England, from Environment Agency Wales said:

The project won the Roy Edwards 'Special Award' at the 2012 Institution of Civil Engineers (ICE) Wales Cymru Annual Awards for the innovative way in which it was designed and built.

"We're always looking for innovative and cost effective ways to deliver our work, and this project is a great example which has resulted in benefits for local people and the environment, as well as cost reductions."

Instead of demolishing the existing flood

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Putting Wigan's defences to the test

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Wigan dam



the dam - downstream



the dam - upstream

In the March edition of Managing Water, we ran a feature on the flood alleviation scheme at Wigan, which is based around a dam with 2 large hydro-brakes to control the flow of flood water. As you know, June saw widespread torrential rains causing much flooding and devastation around the country and would give the Wigan defences its first major test.

At the centre of the dam, just a mile from the town centre, two giant Hydro-Brake® Flow Controls successfully held back flood waters in the carefully-engineered flood storage area extending one kilometre along the steep-sided river valley.

Keith Roddy, Project Team Manager for the Environment Agency commented: "The Flood Alleviation Scheme was designed to protect 610 properties downstream in Wigan town centre. The scheme did its job successfully and significantly reduced the extent of flooding in the town centre, protecting homes and businesses previously at risk."

More than 100 mm of rain, equivalent to one month's rainfall, fell in just a few hours in the North of England during the weekend of 23 and 24 June. Over 3,000 homes were protected from flooding by Environment Agency defences, including those at Wigan.

The 2 m diameter Hydro-Brake® Flow Controls are the centrepiece of an 8 m high dam, 120 m wide and 120 m long. The dam creates a potential 370,000 cubic metres of flood storage extending along a kilometre of the Douglas valley.

In the event of a major flood, water is held behind the dam to reduce the chance of flood defences in Wigan being overtopped. The excess water is then stored in the valley upstream from the dam. After a flood, the stored water is slowly released back into the river until normal river levels are achieved.

Alex Stephenson, UK Director for Hydro International's Stormwater Division explains: "The Wigan scheme is one of the largest and the most innovative flood storage projects of its type anywhere in the world. The use of Hydro-Brake® Flow Controls was vital to the project because they could be precision engineered to 'fine-tune' the flood storage capacity.

"We also developed a new design of Hydro-Brake® Flow Control with an adjustable intake specifically for this project to 'future-proof' the dam and allow adjustment in the light of major experiences such as this one. The addition of specially-designed restrictor plates on the Hydro-Brake® Flow Controls' intakes enable the flow rate from the outfall to be adjusted by plus or minus 20% in the future.

"The cone-shaped geometry of the Hydro-Brake® Flow Control allows water to flow through the device unimpeded until it reaches a pre-determined head. At this point a self-activating vortex is triggered which throttles back the flow and releases it at a strictly controlled flow rate.

"The Hydro-Brake® Flow Controls also have a much wider aperture than conventional valve or penstock solutions, reducing the risk of blockage from debris. This would have been a major advantage during the recent flooding."

The Wigan flood storage project was the second phase of the Environment Agency's flood alleviation scheme at Wigan. Phase one, completed in 2008, involved the raising of defences along the River Douglas.

The completed dam and flood storage has been landscaped and made attractive for visitors as part of a green corridor running from the town centre through to Haigh Hall Country Park.

For more information about Hydro-Brake® Flow Controls contact any of Hydro's sustainable solutions for stormwater control and treatment, please call 01275 337977, email enquiries@hydro-international.co.uk or visit <http://www.hydro-int.com>

New research into flood impacts in the South of England

By Robert Nicholls, Matthew Wadey and Craig Hutton

Following extensive research, the University of Southampton has developed a means of understanding the effects and impacts of coastal flooding across the South coast. The understanding, which could contribute to more effective flood forecasting, defence design and land use planning.



By using observations from real coastal floods and numerical models, researchers simulated coastal floods within the Solent to approximate the consequences of synthetic flood events, using land and property as example measures of potential flood impacts from these hypothetical events. This is differentiated from existing information available in the Solent, by considering realistic defence responses and failures (overflow, outflanking, wave overtopping, and full breaching) and processes of water spreading across the floodplain.

PhD Researcher Matt Wadey, who worked on the study, explains: "The model allows a regional simulation to be made in 15 minutes across the entire Solent on a standard desktop PC. It also makes rare use of data sets on real events, such as the 10 March 2008 floods, to demonstrate the validity of the results."

Results were generated across a range of wave and still water level conditions over the timescale of one tidal cycle, to enable a view of present-day and 21st century impacts, and indicates the accompanying uncertainties from variations in what may be considered to be 'extreme' water level or wave events at any given time.

The Solent was selected as it provides a varied estuarine and wave exposed case study region. Importantly, it is experiencing a changing level of threat from coastal flooding, due to rising sea levels and new development in low-lying areas – these pressures are expected to continue through this century. Defended and undefended floodplains coexist. This study differed from most coastal flood research as it focused upon analysis of inundation over a region where coastal floodplains are relatively small, and water flowing over defences (overflow and wave overtopping) may be more significant compared to breach (a reduction in the effective crest height).

Simple 'bath-tub' methods (which assume that for a given sea level all areas below the elevation on the adjacent land are submerged), based only on contours, suggest that approximately 24,000 properties in the Solent are exposed to a 1 in 200 year coastal flood, with the largest concentration of risk in Portsmouth. Yet, when using the more realistic methods in this study, 5,000 to 17,000 properties might be flooded depending on how the defences function in these events. Comparison of the results with analysis of historic floods suggested less than 1,000 properties would be likely to suffer serious damage.

However, when viewing these results in the light of rising sea levels, which have been observed at Southampton over the last 75 years; it is apparent that the need to adapt or upgrade defences (or in some instances build new systems altogether) will become imperative as the nature of coastal floods changes with rising sea levels. Overtopping was

found to be relatively important compared to breaching in the Solent region because coastal floodplains are small.

Robert Nicholls, Professor of Coastal Engineering who worked on the study, says: "Floods are an important long term risk to society. While society generally adapts to them, this is usually accomplished in response to real events, which can include significant losses and even deaths.

"Sea-level rise is increasing the probability of extreme events in most coastal regions; hence it is essential that methods are available to identify the likelihood and characteristics of flooding. High resolution datasets and numerical tools are currently available for many coastal areas, although are not routinely integrated; particularly where risks are not obvious or recently experienced. Our research provides a method for such integration that can support coastal management measures such as forecasting and warning, defence planning, and land-use zonation. This is intended to provide outputs that are easily communicated to the public and flood managers."

The concepts drawn from this study are transferable to similar coastal regions, whilst this research is ongoing with focus upon further validation and more detailed case studies within the Solent.



Images show Emsworth, top of page and above left. Yarmouth above right and below right. Southampton docks, below left.



Delivering a Vision for an Urban Landscape with SuDS

by Alex Stephenson, Director of Hydro International's UK Stormwater division and chair of the British Water SuDS Group.



Photograph courtesy of Illman Young



Photograph courtesy of Illman Young



Elvetham Heath

It is, perhaps, an interesting irony that an old origin of the word 'suds' may have meant silty floodwater, or a marsh or bog. To civil engineers at least, SuDS are now better known as the urban antidote to flooding and poor water quality, as the acronym for Sustainable Drainage Systems.

So, if we are to believe the Oxford English Dictionary's etymology at least, it seems we have already turned a full circle of sorts with SuDS as a solution to controlling the flow, quantity and quality of surface water. It's a play on words, admittedly, but it helps me to set up a historical question: In another 100 years' time can we hope that the word SuDS will be on the tip of the general public's tongue as a humdrum, everyday term for stormwater drainage?

Despite the encouraging progress made in regulation in the UK, we are only just starting out with SuDS. The focus of the Flood and Water Management Act and the Code for Sustainable Homes, for example, is very much on new development or redevelopment. It will be years before the proposed new National Standards for England and Wales have a significant impact on surface water drainage infrastructure.

Great progress has been made in getting SuDS on the statute books in England, Wales and Scotland. It's taken a lot of work for Government and industry to get this far, but it's still just the end of the beginning as far as SuDS is concerned.

The best blueprint we have of SuDS for the future comes from the recently published guidance on Retrofitting for Surface Water Management from CIRIA (Construction Industry Research Industry Association). Among the industry experts who have authored this milestone document, there is a palpable sense of passion and enthusiasm for the transformational potential of SuDS in urban environments.

Their infectious vision helps to paint the best picture we have so far of the opportunity to deliver multiple benefits with SuDS in our urban spaces, creating attractive and useful public landscapes, improved biodiversity

and helping to reconnect a network of ecological green corridors.

SuDS principles aim to mimic natural drainage paths and processes by dealing with rainwater close to the point where it falls. To achieve this means engineering in nature's way with a full 'toolbox' of techniques using both 'hard' engineered and 'soft' natural components, often in combination. SuDS retrofit opportunities cover a broad range of options, from the incremental and prosaic through to more strategic urban planning approaches. The critical point is that no space is useless.

The Guidance's 22 case studies provide some excellent exemplars, including several that use Hydro International's products as part of a sustainable solution. A recent car park retrofit at St Ives in Cornwall used Hydro Stormbloc® and Hydro Stormcell® storage, together with a Hydro-Brake® Flow Control as part of a local retention solution that has solved flooding problems there. Another case study from Waltham Forest in North London showcases one of the first ever drainage schemes to use vortex flow controls. Back in 1984, the solution used 9 Hydro-Brake® Flow Controls to tackle major flooding problems and was even featured on Tomorrow's World as an exciting new solution to flood risk. It is still doing its job today providing a sustainable, no power solution to managing flood risk.

The concept of Ecosystems Services has provided a means of re-evaluating Sustainable Drainage systems in terms of the multiple value they offer local communities. The Government's Natural Environment White Paper helped to outline a means of giving a monetary value to the benefits derived by people from natural systems. Such approaches help to counter negative perceptions of SuDS as being too expensive, or taking up too much land. These perceptions must not be allowed to dilute the UK's approach to SuDS in the future. In the past, we have treated stormwater as a waste product to be swept away along underground pipes, through combined sewers

and eventually to wastewater treatment works where it has to be expensively treated and discharged. In the same way, many of the urban pockets of green along our streets and highways have often been neglected, or seen as costly liabilities that need to be tidied up.

In future, landscape architects and urban planners will be as important as civil engineers in delivering a multi-agency approach that can harness the potential of SuDS as part of wider urban solutions for our homes, highways, public parks and amenities, helping to build blue and green corridors and contribute to Water Sensitive Urban Design.

Engineering in nature's way means using a mix of 'hard' or proprietary systems and 'soft' or natural features to achieve this. Well-designed SuDS can minimise land take, while still delivering a sustainable solution. For example, using a Hydro-Brake Optimum® can help minimise stormwater storage requirements and reduce the size of a pond or detention basin. Treatment solutions like the advanced hydrodynamic separator (Downstream Defender®) can be enabling, helping to prevent silts, oils and pollutants from entering sensitive ponds and wetlands. Our industry still has much to do in terms of infecting all the necessary agencies with a passion for SuDS and we must continue to demonstrate best practice. Hydro's Engineering Nature's Way website is one such initiative to share knowledge and case studies on SuDS. Visit www.engineeringnaturesway.co.uk. You can also download the popular "SuDS in the Urban Landscape" e-guide, authored by myself together with Prof Richard Ashley and Sue Illman of Illman Young landscape architects.

Download a copy of 'SuDS in the Urban Landscape e-guide below:
<http://www.engineeringnaturesway.co.uk/download-the-e-guide/>

Making a *murky issue* crystal clear:

The Flood and Water Management Act and National Standards for SuDS

It has been a long road, but it seems sustainable drainage systems (SuDS) are finally gaining ground. With the introduction of the UK Flood and Water Management Act (2010), all new developments will be required to implement SuDS. Reducing run-off rates, mitigating flood risk, recharging stressed water tables, and filtering polluted stormwater are all motivating factors for this change in legislation. Crucially, the Act removes the long-referenced road-block to SuDS – an active adoption body. The Act introduces the SuDs Approval Body (SAB), a role to be taken up by county and unitary authorities, who will be responsible for approving and in some cases, adopting and maintaining new SuDS schemes.

SuDS have the potential to become an integral part of the urban landscape. But they come with a health warning; if they aren't given the care of design and maintenance that we would expect for any other part of the public realm, they won't deliver the benefits. It seems obvious, but good design that successfully integrates water management with the urban world still seems to be a challenge.

Draft National Standards for Sustainable Drainage Systems were released in December 2011 and outline how Defra expects SuDS to be designed and adopted. No doubt the draft proposals will be finessed to provide consistent expectations and guidance for



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design, but crucially the National Standards remain focussed on functionality and leave the broader design considerations surrounding place-making, design quality, ecological value, and contextual response to be set out through local plans. This leaves the SAB and local authorities with a challenge – if they want to approve and adopt SuDS that respond to the local agenda and maximise value to communities, they need to embed that vision through local standards and skills.

Embracing a changing landscape

As with the introduction of many new policies, the draft National Standards and the proposed approval and adoption processes raise as many questions as they answer. Many

authorities taking on the SAB role are uncertain how it will dovetail with existing processes and roles and are raising a number of questions: How will the SAB interact with the Local Planning Authority to ensure applications are assessed efficiently? Who will be included in the SAB, and when will it start operating? Where will funding for the SAB and SuDS maintenance be sourced in the long-term? How will all the various people involved in the process be trained in time? As it stands, the SuDS approval and adoption requirements could come into place as soon as October 2012, though Defra is considering an extension into 2013. Whatever the date, the coordination required means that both county and local authorities and their partners need to start testing local issues now while Defra refines the national guidance.

Cambridgeshire County Council has been one of the early movers, deciding that a pro-active approach is the only option. Cambridgeshire believes it can make the journey considerably easier by having the awareness, coordination and a clear vision established locally in advance.

"Given the uncertain timescales of the SAB commencement and the level of development that's planned in Cambridgeshire, the County Council decided to take a proactive approach to SuDS. Working in partnership with key stakeholders including the Environment Agency and District Councils, the County Council is developing a handbook to promote the use of SuDS in new developments, and to provide support to local planning authorities before the SAB commencement.

embracing SuDS in Cambridgeshire

This handbook will be used as the local standards for SuDS in the county supported by the National Standards. In addition to detailing the local standards for SuDS in Cambridgeshire, the process of developing the handbook also helped raise awareness of the SAB duties, the associated implications, and reinforced on-going partnership working in flood risk management." Sass Pledger, Flood and Water Manager, Cambridgeshire County Council

Development of Cambridgeshire's SuDS handbook

Recognising the opportunity to proactively establish clear local standards, build relationships, and define internal processes early on, Cambridgeshire County commissioned AECOM to develop a SuDS handbook. Cambridgeshire receives the lowest rainfall in the UK, and water resources are limited, but conversely water is ever-present on the county's surface as it has a generally flat topography, a high water table, and predominantly claysoil that makes it difficult for water to infiltrate. It is therefore unsurprising that the county has a long history of innovation in surface water management. In recent years, the area has continued to push the boundaries with the development of Cambridge City's award-winning SuDS Design and Adoption Guide. Now, Cambridgeshire County's handbook builds further on the knowledge developed in the area, and brings together local guidance on how stakeholders will work together and on how the SAB will

expect SuDS design to respond to local expectations.

It was clear while developing the handbook that including Cambridgeshire-specific standards would be essential to make the National Standards meaningful locally. As part of the process, 20 local SuDS standards were created and refined. These clearly communicate the local design considerations developers need to address when working in the county. Not only does this enshrine good design into local policy, but it also makes development in the county more attractive to developers, as it removes ambiguity regarding the types of acceptable drainage.

Solving problems together

While the National Standards and the handbook will provide crucial guidance and examples of good practice, Cambridgeshire also realised that half the challenge comes in communication and coordination. In developing the contents of the handbook, a series of workshops was held to raise awareness, establish local priorities and secure agreement on how the approval and adoption process will be handled. Establishing understanding and support from the local authorities in the county has been crucial, not only because of their role as the intermediary in handling and enforcing SuDS requirements alongside planning approvals, but in the local knowledge and expertise their staff can bring to the process. Sharing staff expertise in

drainage, maintenance, ecology and urban design will be crucial to delivering quality SuDS.

"Successful SuDS are dependent on many disciplines in different organisations coming together; communication and joint working are key to this. This promotes consistency, and opportunities can be realised from perceived constraints leading to more efficient, cost-effective processes and better places for people to live and work." Simon Bunn, Sustainable Drainage Engineer, Cambridge City Council

Through stakeholder collaboration, checklists were created for the handbook that the SAB will use at various stages of approval and adoption. Four checklists outline the documentation and evidence the SAB will be seeking for design approval, construction verification, maintenance specifications, and asset transfer. While the checklists have been created for the SAB, they will benefit other stakeholders looking for insight into SuDS criteria the SAB is looking for.

In the age of localism, it is unlikely national policy will provide all the answers, and it will be crucial for county and local authorities to outline their own priorities and ensure they can be delivered locally. Cambridgeshire hopes to capitalise on the benefits SuDS can bring to the area, seeing this as both a challenge and an opportunity.



Polypipe unveils new concept in rainwater harvesting systems with optional built-in anti-microbial technology

Polypipe, the UK's leading manufacturer of plastic sustainable drainage and water management products, is responding to the growing need for sustainable rainwater re-use systems through the launch of its Rainstream RXL.

Rainstream RXL high volume water storage tanks are available with an optional anti-bacterial lining and have been expertly engineered using the same technology as Polypipe's popular Ridgistorm-XL large diameter pipes.

The Rainstream RXL tank's modular design allows any storage capacity to be created and features an integral pre-storage filter - eliminating the need to make connections between the chamber and the tank.

Exceptionally strong, Rainstream RXL offers all the functionality of large-scale GRP sub surface tanking and in most cases can be installed using a single sized granular backfill, as opposed to a more costly concrete support structure. And with no need to fill the tanks

with water during installation, tens of thousands of litres of water can be saved. Polypipe's in-house manufacturing facilities can produce bespoke tank wall strengths to suit specific project requirements and burial depths, without costly over engineering.

"Although high volume below ground tanks offer enormous flexibility in the planning and provision of water storage for large scale projects, they present big challenges in transport and installation" comments Darren Crane, National Sales Manager Rainwater Harvesting at Polypipe.

"Rainstream RXL has been designed and developed to help specifiers, engineers and contractors overcome these challenges and achieve significant cost and environmental savings too. The fact we are able to manufacture the tank to any stiffness classification allows for a broad range of installations, be it below the water table or in heavily trafficked areas."

The modular construction of the Rainstream RXL allows for easier on-site handling, off-loading and positioning. While assembly is straight forward with Polypipe's unique Electro-Fusion jointing technology.

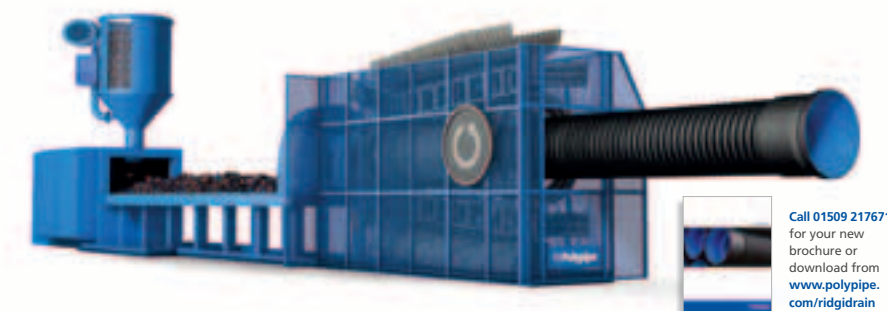


Rainstream RXL also comes with optional Biomaster® Protection within its polymer lining. Biomaster is a safe, effective, silver based anti-microbial additive which is proven to reduce the growth of harmful, pathogenic bacteria such as Legionella, Listeria, Campylobacter, MRSA, E.coli and Pseudomonas on the inner surface of the tank by up to 99.9%. The Biomaster Protected parts of the Rainstream RXL have been tested to ISO 22196:2011 standards.

More information on the Rainstream RXL storage tank can be found at <http://www.polypipe.com/wms/products/rainstream>

SURFACE WATER DRAINAGE

NEW RIDGIDRAIN THE PERFECT BLEND OF TECHNOLOGY & SUSTAINABILITY



PERFORMANCE, INTEGRITY AND SUSTAINABILITY

At Polypipe, we invest heavily in research and new production technology that allows us to pursue high quality standards, more precise performance specifications and even greater reliability.

NEW RIDGIDRAIN is the latest in a long line of innovations and our most efficient surface water drainage system yet, offering specifiers a proven structured wall product to meet the demanding criteria of today's Civils and Infrastructure projects.

When we evolve as a company so do our products
www.polypipe.com/ridgidrain





Surface Water Management Conference 2012

By Lauren Goozee, Events Officer, CIWEM

“Delivering a Different Future Vision and Practice”

PRESENTERS

Better surface water management
Paul Shaffer, CIRIA

Climate change and surface water flooding: risk and adaptation
Stephen Merrett, Environment Agency

Flood Risk Management An overview of current and developing policy
Linda Aucott, Defra

Urban Diffuse Pollution
Richard Martin, Environment Agency

Making surface water management 'business as usual'
Peter Jordan, Ofwat

Surface Water Elimination and Reduction (SWEAR) Strategy
Jeremy Jones, Welsh Water

The role of the water companies in Surface Water Management
Briony Tuthill, Anglian Water

Surface water early action: outcomes and next steps
Jonathan Hunter, Environment Agency

SuDS - Urban retrofitting – a highway perspective
Owen Davies, Lambeth Council

Surface Water Flooding - Community Engagement
Paul Cobbing, National Flood Forum

SuDS Approval and Adoption Bodies
Simon Bunn, Cambridge City Council

Testing change: What are the key elements of the new Paradigm?
Chris Digman, MWH

Sustainable Drainage The American Way: Paradigm in Portland
David Schofield, Hydro Consultancy

Community engagement – a case study from Portland, Oregon, USA
By David Schofield, Hydro Consultancy

Transitioning to a Water Sensitive Urban Design approach in the UK
Peter Robinson, AECOM

Australian thinking - the value of rainwater
James Berryman, Micro Drainage Ltd

With the month of June seeing parts of the UK flooded at the same time as hosepipe bans and drought, the CIWEM conference on Surface Water Management was very timely as how we manage water, whether it be too much or too little, is high up on the agenda. We have now been told that June was the wettest since records began, with double the average rain falling during the month. The weekend of 23/24th June saw extraordinary levels of rainfall in parts of Northern England, with 5 – 10cm in some places, causing surface water and fluvial flooding. With the threat of climate change and the predictions that rainfall intensity will increase by up to 30 per cent by 2115, and the extra pressure being placed on existing drainage infrastructure with new housing developments planned across many parts of the UK, it is more important than ever that we manage surface water sustainably.

Over 140 delegates from a wide range of organisations including central Government, regulators, academia, NGOs, local Government, consultancies and research bodies attended CIWEM's annual event. The conference focused on how surface water management fits into the broader context of water in the urban environment and demonstrated the practical delivery of projects from a wide range of perspectives in these current challenging times.

The conference programme consisted of presentations from 15 speakers plus ample time for panel discussions and Q&A with the audience. After an introduction and scene setting from **Elliot Gill, CIWEM Urban Drainage Group Committee member and Associate Director at Halcrow**, we were treated to an overview of the current situation including a Government Policy Update from **Linda Aucott, Head of Engineering, FCRM, Defra**. At the event Linda officially launched the new Defra and LGA Flood Portal, a one stop shop for all information on flood and coastal risk management including guidance, legislation and research. This is part of the Defra Capacity Building campaign; a response to the recognition that Lead Local Flood Authorities (County Councils and Unitary Authorities) need to build up their skills and knowledge base to be able to carry out their new role in Flood Risk Management. Linda also announced that by 2013 there will

be publicly available surface water maps, news greatly received by many.

The conference then moved on to looking at making surface water management 'business as usual' from the water company perspective, followed by a session on community practice and engagement, finishing with a look at some international case studies from Australia and the USA.

Throughout the event a number of themes were repeatedly referred to by speakers and delegates alike. These are outlined as follows:

Multiple benefits

Traditionally the benefits of SUDs have been cited as mainly flood risk management and improving water quality however the move of thinking towards green infrastructure delivery and integrating surface water management into urban design has led to additional benefits being realised. These benefits range from water supply, thermal comfort, reductions in energy use, and recreational and quality of life/health benefits.

Multiple solutions

It was recognised that not one solution fits all and often projects include a range of solutions appropriate to the local situation – this might include a mix of disconnection of roof drainage, disconnection of highway drainage, permeable pavements, water butts, alongside educating and engaging with the public.

Partnership working

It was apparent that partnership working will be key to managing surface water in the future in terms of planning, delivery and funding.

Community Engagement

The National Flood Forum noted that a community that is prepared for flooding suffers much less. In addition to this local knowledge is invaluable to sustainable water management. It was recommended that early engagement with the local community should be sort before decisions have been made, rather than informing communities once a projected has been decided.

Holistic/integrated approach

Integration is one of the powerful principles of sustainability and it is clear that the way forward is to take a

holistic approach to water management. There is a lot to learn from our international colleagues particularly in Australia and the USA on Water Sensitive Urban Design (WSUD), the process of integrating water cycle management into urban planning and design. We still have a way to go before we see a transition in the UK to a WSUD approach. It was evident from the conference that if we are to effectively address the issues presented by climate change, urban creep, energy and carbon, the Water Industry will require new and smarter ways of managing surface water management. This can only be achieved through a long term integrated approach involving partnership working and early community engagement.

The conference took place on 27th June 2012 at SOAS, University of London. Outputs from the event including speaker presentations are freely available on the CIWEM websites. CIWEM has also published briefing reports on Integrated Water Management and Multi-Functional Urban Green Infrastructure

Working for the public benefit for a clean, green and sustainable world, CIWEM (The Chartered Institution of Water and Environmental Management) is the only independent, chartered professional body and registered charity with an integrated approach to environmental, social and cultural issues. To find out more about the institution visit www.ciwem.org

CIWEM organises a multitude of conferences and events bringing together a diverse audience of environmental professionals, regulators, academics, researchers, local authorities, NGOs, civil servants and others to debate, share knowledge, hear from and engage with key figures in the environment sector, and network. These events support CIWEM's policy work and inform key initiatives such as the CIWEM manifesto, briefing reports, policy statements, lobbying and other work. See the CIWEM Events Calendar for a list of future events.

LINKS:

Defra & LGA Flood Portal:
www.local.gov.uk/floodportal

CIWEM Conference Presentations:
www.ciwem.org/events/conference-outputs.aspx

Integrated Water Management link
<http://bit.ly/Lktx3r>

Multi-Functional Urban Green Infrastructure
<http://bit.ly/Lvpz3s>

CIWEM Events Calender
www.ciwem.org/events/events-calendar.aspx

Manage Storm and surface water with *ISIS FAST*



ISIS FAST is an innovative flood inundation modelling tool designed to allow quick assessment of flooding using simplified hydraulics. It provides the functionality to carry out surface water modelling at strategic, intermediate and detailed levels and provides results in seconds or minutes as opposed to hours or days, which is up to 1,000 times faster than traditional two-dimensional models.

Surface water management plans outline preferred surface water management strategies for a Lead Local Flood Authority (LLFA) area, and are undertaken with key local partners, led by the local authority. ISIS FAST can help partners to map surface water flooding, understand its impact, and visually communicate the risk to stakeholders.



ISIS FAST is fully integrated with ISIS suite and links with other modelling and analysis tools to deliver a powerful but easy to use surface water mapping system. ISIS FAST is a new way of mapping flood

risk quickly, while still representing the most important topographic effects that control patterns of flooding. ISIS FAST combines ground elevation data with rainfall amounts to model water depths in topographic depressions, as well as the pathways between them. ISIS FAST captures the most important features of flooding, without the need for time consuming model setup, long run times or as much modelling expertise when compared to building traditional 1D and 2D models.

Why use ISIS FAST for surface water management plans?

ISIS FAST provides a cost effective way of rapidly delivering flood information for all levels of analysis, from strategic to detailed. It has been extensively benchmarked against full two-dimensional (2D) models to ensure it captures the key behaviour of surface water flooding. It is used throughout the world as a key analysis tool for surface water management. ISIS FAST uses a two stage approach: first, topographic analysis is used to extract surface water catchments and pathways; and second, a "wet" method is used to route water between these catchments. ISIS FAST is therefore even faster when multiple scenarios (storm probability, runoff hydrology, sewer capacity and climate change) are to be run. Using a "wet" method means ISIS FAST outputs are more realistic and informative than other approaches like the "rolling ball" method, and allow the effect of different rainfall and runoff hydrology scenarios to be investigated.

Key Features

- ISIS FAST is fully integrated with the ISIS suite, allowing users to easily switch between the FAST and full two-dimensional hydrodynamic solvers
- it produces results up to 1,000 times faster than full two-dimensional modelling methods
- links with ISIS Mapper (a free GIS tool) and other software developed by Halcrow for easy mapping and analysis functions
- rapid model development – from digital terrain model (DTM) to outputs in only five minutes
- outputs grids of flood extent and depths, with ISIS Mapper functionality to produce vector flood extents
- even quicker to run multiple effective rainfall scenarios once topographic analysis is done
- pathway flooding represented with user control over depths and extents
- used in conjunction with more detailed modelling software, such as ISIS Professional and ISIS 2D
- reduces the cost of subsequent detailed modelling by identifying the flood risk hot spots where detailed analysis is needed
- can test solutions that protect people, property, critical infrastructure and the urban environment

By Vijay Jain,
Halcrow

National pluvial flood map for Scotland

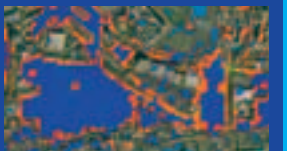
ISIS FAST has been used to map surface water flooding across the whole of Scotland, covering an area of 78,000 km² split into 4,000 models. Using ISIS FAST, the whole of Scotland could be modelled in 48 hours per rainfall scenario. Flooding in Loch Achray St, Glasgow.



ISIS FAST outputs were validated using historical records of flooding in Glasgow in 2002, and outputs from detailed level integrated surface-sewer model developed for the Glasgow surface water management plan. The validation results confirmed that ISIS FAST produced useful, credible results at national and regional scale.

Surface water flood mapping, London

ISIS FAST has been used to map surface water flooding in East London. Compared with results delivered by an ISIS 2D (full hydraulics) model for the same area, ISIS FAST was able to reproduce flood extents and depths to within 10cm, but 1,000 times more quickly.



ISIS FAST's computational efficiency allows users to generate a Monte Carlo ensemble of thousands of simulations. Modellers can use this to explore the uncertainty arising from key hydrological parameters in a fully probabilistic framework.

The 2012 National SuDS Conference

“Getting on with SuDS”

By Chris Hodson

The SuDSsource, 2012 National SuDS Conference, was held on 20th and 21st June in Oxfordshire and themed ‘Getting on with SuDS’. Architect and consultant to both SuDSsource and the trade association Interpave Chris Hodson was there and reports on the event.

SPEAKERS

Bridget Woods-Ballard, HR Wallingford

Paper 1: Where we are now (issues and opportunities)?

Aydin Zorlutuna, Principal Landscape Architect - Urban Designer, Hyder Consulting (UK) Ltd.

Paper 2: NW Bicester Eco Development

Roger Nowell, Landscape Architect – Green Infrasrtructure and Flood Risk Manager, Sheffield City Council

Paper 3: A day in Hannover
– Stormwater management in Kronsberg

Nicola Keen, Senior Landscape Architect, Allen Pyke Associates

Paper 4: Great Western Park Didcot

Chris Patmore, Director, RSK

Paper 4: Great Western Park Didcot

Bob Bray, Robert Bray Associates – SuDS Consultant and Landscape Architect

Paper 5: Amenity and Biodiversity in SuDS

Simon Bunn – Drainage Engineer, Cambridge City Council.

Paper 6: SAB Overview and Seminar introduction

Anthony McCloy – McCloy Consulting

Paper 7: Flows and Volumes
– a Practical Approach to the Standards

Nathan Davies, Team Leader (Leisure Safety), RoSPA

Paper 8: Designing for Health and Safety

Steve Wilson, Technical Director, EPG

Paper 9: SuDS Guidance – an Author’s View

Chris Digman, MWH

Paper 10: SuDS Retrofit
– a Review of the The CIRIA Guide

Richard Stevens, River and Coastal Scientist – Water Management UK, Haskoning UK Ltd.

Paper 11: The FLOWS
– monitoring SuDS at Lamb Drove, Cambourne.

Stephen Wielebski, Divisional Development Director, Miller Homes Limited.

Paper 12: A Housing Developer’s Perspective on SuDS

Bob Bray, Robert Bray Associates – SuDS Consultant and Landscape Architect

Paper 13: Taking SuDS Forward



With the prospect of Sustainable Drainage Systems (SuDS) becoming mandatory under the 2010 Flood and Water Management Act, the debate about their wider impact on new developments continues and there is a clear need for practical information and consensus. The SuDSsource conference set out to meet this need, in response to calls from experienced practitioners.

SuDS have been in use for decades and much experience has been gained, both through practice and research, over the years which the SuDSsource conference pulled together. Although intended as a forum for debate, not just a series of presentations, the conference also provided support for the new ‘SuDS Approving Bodies’ (SABs), local planning authorities, designers, practitioners, developers and their consultants in dealing with implementation of the 2010 Flood and Water Management Act and draft National Standards.

The two-day, packed programme was split into four distinct, themed sessions:

Masterplanning with SuDS SuDS Law and Standards SuDS on Site SuDS in Practice



Masterplanning with SuDS

In the Masterplanning session, landscape architects and engineers described a fascinating diversity of projects. At first-phase design stage, the NW Bicester Eco Development seeks to fully integrate urban and landscape design with SuDS on this 5,000 home Ecotown. Also in Oxfordshire, at Great Western Park Didcot – another major development - a drainage strategy has been developed to keep discharge from site to an absolute minimum, with phased implementation linked to landscape design.

An intriguing virtual tour through Kronsberg in Hannover demonstrated a pioneering and inspirational approach to management of rainwater in the landscape. Back in the UK, Robert Bray Associates showed how SuDS can contribute to the quality of the landscape experience if integrated early in the design process, with examples at schools, housing and retrofit projects (read case study SuDS for Amenity). These two presentations highlighted the low-key nature of effective SuDS techniques and the challenge of applying them to meet engineering criteria to substantial new developments such as Bicester and Didcot. The session also provided a reminder of the importance of integrating engineering and landscape design from the start.

SuDS Law and Standards

Individual papers and group seminars explored a wide range of issues facing all those involved with the development process in interpreting and implementing National Standards for SuDS – once they are finalized – based on the current draft. How should county councils, unitary authorities and other organizations set up SuDS Approving Bodies (SABs)? How can engineering designs be evaluated by SABs? The design of SuDS at or near the surface, and particularly the use of open water, requires us to consider the issue of Health and Safety: what is a realistic approach to this? How can SuDS be retrofitted to existing developments? All these issues were debated enthusiastically and it became clear that there is a real need for more detailed guidance – and this is unlikely to be forthcoming from government.

SuDS on Site

An essential part of this Conference, which focused on the practical issues surrounding SuDS, was inspection of two contrasting schemes in Oxfordshire. Oxfordshire County Council has taken a positive and pragmatic approach to adopting SuDS - notably concrete block permeable paving - for some 15 years



now (read case study - Adopting SuDS). Over this period, extensive experience has been gained and lessons learnt.

Firstly, delegates visited a high-density urban housing development in Abingdon with permeable paving still working well without problems after several years with no maintenance. Then they moved on to Great Western Park Didcot (discussed earlier) where the first phases of this massive development are taking shape. Here, various SuDS features are being employed across the whole project. But now water is also considered as an asset, not just a problem, as on other recent Oxfordshire sites.

SuDS in Practice

This approach is also demonstrated by the The Lamb Drove SuDS Monitoring project in Cambourne, Cambridgeshire, discussed in the final session. Despite the modest size of the site, it demonstrates the use of as many SuDS techniques as possible, including concrete block permeable paving, used in combination to form an effective management train and fully integrated with landscaping - proving to be both popular with residents and effective. Most importantly, project monitoring demonstrates that SuDS work and should cost less than conventional piped drainage in terms of initial, maintenance and whole-life costs (read case study on page 26).

The last session also aired concerns from housing developers about the lack of direction and guidance on implementation of SuDS by government and the potential impact on cost. Adoption and maintenance issues were discussed by several existing SuDS practitioners from local authorities, with a clear consensus developing that the full engagement of all stakeholders from the start of a project was key to its successful implementation. The 2012 SuDSsource Conference ended with a tour of exemplary projects, clearly demonstrating the simplicity and robustness of SuDS, and its importance in the fight against flooding, as well as providing new design opportunities and a better environment for us all.



Case Study - SuDS for Amenity

As a most versatile sustainable drainage system (SUDS) technique, concrete block permeable paving is particularly useful as a source control at the head of the SUDS management train. It reduces peak rate, total volume and frequency of rainwater runoff, and is also particularly effective at removing water-borne pollution. But it also offers the important – and often missed – opportunity of a gradual supply of treated water, something that Bob Bray of Robert Bray Associates exploits for amenity, harvesting and habitat enhancement in recent projects.

At a high-density town-centre housing scheme in Stamford, most public areas between buildings are concrete block permeable paving which also accepts runoff from other hard areas and roofs. Stored, treated water then passes from the paving directly into planted rills and canals, which add interest and much-needed greenery to the courtyard environment, before passing into the nearby river. This principle is expanded on a hillside Co-housing scheme in Stroud. Here, treated, stored water from concrete block permeable paved car parking feeds a ‘waterfall’ onto a planted swale, then via planted rills into a wildlife pond and existing stream.



At a pioneering school in Milton Keynes, a terraced sequence of permeable paving car parks removes pollutants, substantially improving the quality of water serving two ponds intended to encourage long-term population by wildlife - notably the ‘protected’ great crested newts indigenous to the site. Other sections of concrete block permeable paving at the school - on level areas used for play - collect and store rainwater for toilet flushing in the school buildings.

Bob Bray continues to explore the sustainable amenity potential for water treated and stored within concrete block permeable paving on various projects, including schools - many covered by an Interpave case study on Robert Bray Associates, via www.paving.org.uk.

Case Study – Adopting SuDS Experience

Oxfordshire County Council has taken a positive and pragmatic approach to adopting SuDS and concrete block permeable paving for some 15 years now. At Oxfordshire, SuDS is considered an essential component of any development and concrete block permeable paving as mainstream technology. Highways Adoption Officer Barry West explained: “With hundreds of permeable paved schemes around the County now, we have developed real confidence in the technology and how it performs. We have had no problems with any permeable pavements – even during the 2007 summer floods.”



Once the new Flood and Water Management Act takes effect – following implementation of recently published draft National Standards – ‘SuDS Approving Bodies’ (SABs) will be formed to both approve and adopt SuDS schemes. Again, Oxfordshire have taken a lead, as Barry West explained: “We have been using Section 38 agreements to adopt concrete block permeable paving for a decade or so – and it works well, particularly when all parties are involved from the very start of the planning process.

“We have already put in place what is needed to operate as an SAB, so that when the new Act does take effect, it will simply be business as usual.” Oxfordshire’s example and this case study will help to reassure and inform other authorities, including the new SABs, and demonstrate the long-term successful application of concrete block permeable paving as an essential SuDS technique. The case study and a wide range of other information on permeable paving and SuDS can be downloaded via: www.paving.org.uk.

The Lamb Drove SuDS Monitoring Programme

- Quantifying the benefits



Richard Stevens, Royal HaskoningDHV



The multiple benefits of SuDS are widely recognised; however quantification of these benefits is rarely undertaken. The Lamb Drove Sustainable Drainage Systems monitoring programme has done just that and is providing a vital contribution to the SuDS evidence base.

The Lamb Drove site was completed in 2006 and comprises a one hectare residential development with 35 properties in Cambourne, Cambridgeshire. The site was selected to showcase SuDS as part of the FLOWS (Living with Flood Risk in a Changing Climate) programme funded by the European Regional Development Fund (ERDF) through the INTERREG IIIB North Sea Region programme. Royal HaskoningDHV, working with Robert Bray Associates, were commissioned by Cambridgeshire County Council to retrofit SuDS and property flood-proofing measures into the design of the Lamb Drove development site. The design followed three guiding principles of simplicity, visibility and easy maintainability.

Through an integrated system of sustainable drainage features, the site brings environmental, ecological and social benefits to residents. The SuDS management train at this site includes the use of 'source control' measures including a green roof, permeable pavements, under-drained swales and water butts, 'site control' measures including bio-retention swales, detention basins and wetlands,

and a final 'regional control' retention pond. The ground conditions on the site offer little potential for infiltration so the system operates through attenuation of flows through the network of features.

Royal HaskoningDHV was commissioned to undertake monitoring of the performance and benefits of the implemented SuDS over a period of two years which began in October 2008. This was extended until the end of 2011 with the final report published in 2012. Flows are monitored across the site as they move along the treatment train. A control site of similar size and development density, but with traditional drainage, is also monitored. Water quality samples were collected on a quarterly basis at both the SuDS site and the control site. The environmental benefits of the scheme were assessed through habitat surveys and the local residents were surveyed to assess their views on the scheme. The results from the Lamb Drove site were compared to results from the control site.

The SuDS system has attenuated surface water flows; significantly reduced peak flows have been observed when compared to the Control Site (Figure 1). The monitoring programme has clearly shown the successive attenuation and reduction of both flow and volume through each stage of the SuDS management train.

The SuDS system has improved the quality of water discharged from the Study

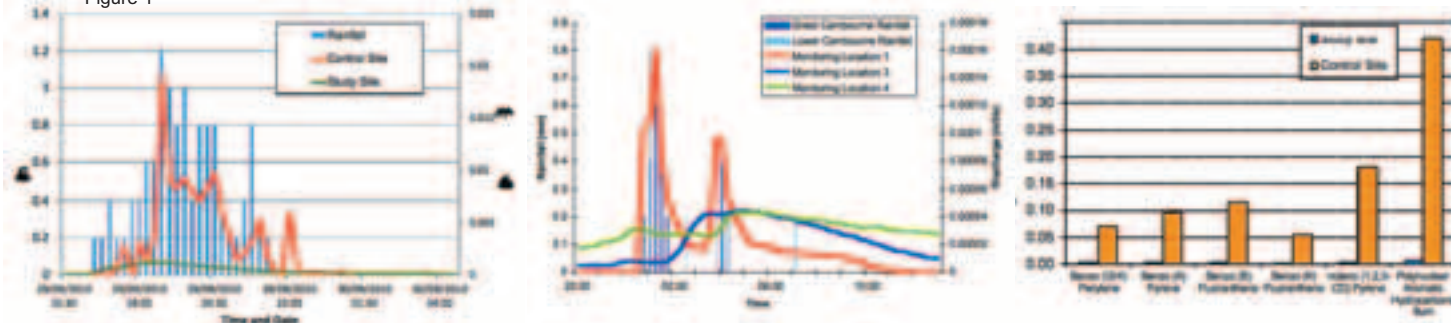
Site when compared to the Control Site. Results have shown that the Study Site has observed reductions in concentrations of a variety of pollutants and other water quality indicators including hydrocarbons, heavy metals and suspended solids.

In addition the Study Site has shown a higher number and diversity of species present over the three habitat surveys than the Control Site, demonstrating that the Study Site represents a more natural management regime.

The resident surveys found that they regard the open space around their homes more aesthetically pleasing when compared to other parts of Cambourne. It is apparent that the residents of Study Site have a high regard for the aesthetics and visual appearance of the open spaces within the SuDS scheme. This agrees favourably with findings from some other SuDS sites, where the positive impact on the immediate areas had transformed into locally higher property values.

These results are already being used at the national level to promote the benefits of SuDS and overcome the lack of confidence on their actual performance. By providing significant evidence base on the performance of SuDS compared to conventional systems, this study takes the industry a long way in providing scientific information on the performance of SuDS systems.

Figure 1



More information about this SuDS project can be accessed at <http://www.cambridgeshire.gov.uk/environment/planning/drainagesystems/monitoring.htm> or by contacting richard.stevens@rhdhv.com.

A SuDS Retrofit provides the solution for car Park flooding

Behind the steep, tourist-beloved streets around the cliffs and beaches of St Ives, Cornwall, lies the infrastructure that the town's residents use all year round. Here a retrofit SuDS scheme, based on Hydro International's stormwater storage and infiltration technologies and Hydro-Brake® Flow Controls has alleviated flooding problems at a busy town car park, caused by the frequent heavy rainfall.

The scheme is highlighted as an exemplar of tackling surface water flood risk in a retrofit context in CIRIA's new Guidance on Retrofitting to Manage Surface Water.

"We needed a surface water attenuation solution for Trenwith Car Park which would be highly effective within the site's existing footprint, and would not badly disrupt the users of the car park during construction," comments Nigel Higgins, project leader, Highways, for Cornwall Council. "Since its installation in 2010, we have had no more complaints about the car park flooding, despite poor weather."

The Trenwith car park provides connection with the town buses, as well as serving the well-used leisure centre, local businesses and residents. With a hectare of paved surface, heavy downpours used to cause frequent local

flooding, especially down the lower path descending towards the part-culverted stream at the bottom of the slope.

"We also installed speed humps to divert the water flowing in from the grassed overflow car park areas to run along the base of existing Cornish hedges," adds Nigel. "However that was only marginally better."

"With the Environment Agency, we decided that the best answer would be to combine these diversions with a SuDS installation along the bottom of the car park slope. The SuDS scheme would provide both underground infiltration and storage attenuation as a two stage process to protect the properties and the watercourse further down the slope."



"Using Hydro's Stormcell® and Stormbloc® modular load bearing geocellular blocks enabled a simple shallow (approx. 1.5 m deep) excavation, which could easily be paved over and landscaped. It is an excellent example of a retrofit urban scheme."



The primary protective installation comprises a drainage channel along approximately 100 m across the slope, interconnecting a series of infiltration pits where Stormbloc® is installed. The outflow of the channel is connected to the second line of defence, an attenuation storage tank, comprising nearly 140 cu.m. of Stormcell® with a Hydro-Brake® Flow Control device at the outlet.

This secondary protective tank is designed to provide surface water storage when the infiltration channel design is exceeded. It controls the maximum discharge into the water course. Stormcell® is designed to minimise silting of the storage volume in order to maximise availability and the whole installation meets one in 100 year event requirements.

According to the CIRIA case study, the scheme reduces the rate and amount of surface water entering the Park Avenue and

Stennack areas of the town below the car park. An earlier CCTV survey of the Park Avenue sewers revealed a problem with both the condition and alignment of a section of pipe and manhole factors that had evidently contributed to the backing up and surcharging of surface water at this location.

Since completion of the scheme, Cornwall Council's Emergency Management Service received more than six notices of 'flash warning of heavy rain for Cornwall' issued by the Met Office. The local highway team have confirmed that there have been several incidents of intense rain events in St Ives. Events similar to those have caused problems in the past, however, they did not receive any reports of flooding in the Park Avenue or Stennack Area.

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Fish friendly pump on site at Kempsey

How fish friendly are your pumps?

Bedford Pumps new SAF Range are proven Fish Friendly

Bedford Pumps Ltd will shortly become the first company to be awarded compliance with the new official EU Fish Friendly Standard

The certification is currently still in development by Dutch bureau NeN (NeN.nl) but Bedford Pumps' Fish Friendly pump has been stringently tested to procedures and standards which will form the model for it. VisAdvies BV (an independent research consultancy in the field of water management, focusing on the environment of fish in all types of inland waterways), completed the extensive trials for Bedford Pumps in a dry dock in Holland. The results prove conclusively that Bedford Pumps new SAF range of pumps are Eel Friendly, as no direct mortality was observed after exposure to the pump.

EU legislation was brought into effect in 2007 to tackle the rapid decline in global populations of the European eel. In order to breed, eels must return to their migration grounds, in Europe a distance of approximately 6500 km to the Sargasso Sea. Obstructions which impede their journey, such as pumping stations, may be a contributing factor in their fall in numbers.

The EU legislation "EU Eel Regulations" proclaims that each Member State shall implement appropriate measures to reduce eel mortality. In 2009 UK legislation empowered the Environment Agency to undertake activity to satisfy EU regulations. To this effect the Environment Agency can serve notice where the safe passage of eels is impeded and enforce a resolution to preserve the life of eels. This legislation is specific to the eel population but it is generally accepted by all concerned that protecting fish stocks is an added bonus of utilising this type of pump.

Eel and fish friendly pumping solutions will shortly become a requirement at the majority of pumping station and water extraction points where eel populations have been identified.

Bedford Pumps Axial Flow Fish Friendly pump underwent rigorous tests in a dry dock in Hellevoetsluis, Holland. VisAdvies BV performed the evaluation by means of forced exposure of the fish to the pump. Three

representative groups of fish were used, in two size classes, 0-15cm and 16cm plus. The pump was tested at a duty of 1300 l/s at 1.5m head, running at speeds of 330, 425 and 518rpm consecutively.

The pump achieved 100% survival of eels passing through the pump. The most severe damage that occurred was some scale loss on the coarse fish. This was not caused by the pump impeller, but by the impact of the fish hitting the water after passing through the pump. In an actual Land Drainage application, the discharge point would be below the water level.

Bedford Pumps SAF Range of Fish Friendly pumps cover from 250 to 6,000 l/s at 1 to 6m head and are ideally suited for Land Drainage, Flood Defence and Fish Farm applications. Larger capacity pumps can also be designed to meet specific requirements. In addition to protecting the fish, the new design demonstrates a significant improvement in hydraulic efficiency resulting in an 8% reduction in power absorbed. Consequently the new range will satisfy objectives of eel protection and carbon reduction.

Bedford Pumps has just supplied their first Fish Friendly pump to the Environment Agency for installation at a new pumping station at Kempsey. The pumps will discharge water from Hatfield Brook, a waterway which has caused flooding to the village 23 times in the past 30 years. Hatfield Brook is home to an eel population, so the new pumping station will be the first station in the UK to comply fully with the new EU regulations.



For further information please contact Lucy Ogden:
lucyo@bedfordpumps.co.uk
Tel: +44(0)1234 852071
www.bedfordpumps.co.uk

'Reaching Hire Standards'



Land & Water Plant is an award-winning group of companies specialising in marine-based civil engineering, dredging and remediation projects and is now the UK's leading rental business for long reach excavators and specialist equipment. From the very beginning the company have actively pursued and embraced new technologies to ensure a safer, faster, greener, and more economical solutions for their clients. Their slogan 'Reaching Hire Standards' refers not only to high

standards and quality of equipment, but also to the amount of extras Land & Water Plant include within their standard specification of equipment.

Land & Water prides itself on working closely with their clients to fully understand their needs and therefore offer a bespoke and cost effective solution, with a strong focus on environmental issues.

The current work place demands

compliance with various regulatory and environmental criteria, so always ahead of the game; the fleet now incorporates the use of new tier 3 engine technology providing better fuel economy and a CO2 reduction.

By utilising high quality PANOLIN long life biodegradable oils as standard a further CO2 saving was achieved in the reduction of maintenance logistics and waste disposal.

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Fish Passes on the River Alyn helping to achieve European Standards

One reason that the River Alyn was failing to meet new European standards was that fish were unable to travel upstream to reach important spawning grounds. Water control structures such as weirs prevent the upstream movement of fish.

Last year a new fish pass was completed at Caergwrle Weir and now work has started at the Rossett weir. Although a fish pass was constructed previously, this was addition to the weir back in the 1930's and does not actually help fish to pass over the weir.

The Environment Agency Wales have started work on a new fish pass which, when complete, will open up over 38 km of river to migrating fish such as salmon, sea trout and eels.

It is being funded by the European Fisheries Fund and the Welsh Government as part of the 'Salmon for Tomorrow' project and will be completed by September 2012.

Alan Winstone, from Environment Agency Wales said:
*"Construction of this fish pass at Rossett is the latest in a programme to remove man-made barriers to migrating fish in our rivers.
 "By opening up new spawning grounds, this fish pass will boost fish populations in the river and help the Alyn to meet tough EU directive standards.
 "A healthy river with a thriving fish population will also be good news for other wildlife in the area that rely on them for their survival."*

Fish Friendly Refurbishments

Goswick, Beal and Ross are three water flow control structures near Berwick upon Tweed.

Operated by the Environment Agency these three structures, comprising of 6 old flap-valves, were failing to meet current standards for fish and eel migration and flood defence

The Environment Agency commissioned a full refurbishment of these sites with the longer term aim of passing the structures back to the landowners.

The project was awarded to Byzak and all three sites would be carried out consecutively to give least impact to the environment and nesting birds.

ACE were commissioned by Byzak to design and supply the replacement flap-valves. Each of the three areas had different issues to resolve but dedicated project management between all three parties allowed work to be completed smoothly on site, with no accidents or environmental incidents.

Beal

Beal consisted of one flap-valve with a fish friendly float flap on the front. The total size was 2.5m x 1.4m with a 300DN fish friendly flap mounted on the front. Our float system has been installed over 100 times since its creation with no recorded losses or failures and allows an optimal and adjustable level period where fish and eel can pass through. Each float and fish friendly flap is set at the appropriate level at the design stage to the required catchment levels.

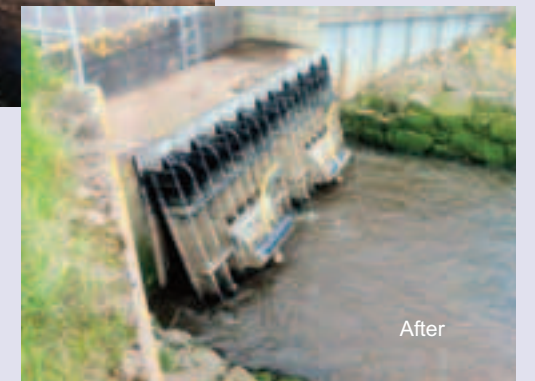


Goswick

The Goswick site comprised of three 2m x 2m flapvalves with a 315DN fish friendly flap valve attachment. Similar in design to that of Beal their primary function was to allow additional time for migration to occur without compromising the larger flood defence door. These fish friendly flap valves are made from our signature HDPE material which has a low theft value, small carbon material footprint and features on the Environment Agency's sustainable materials list. This material is UV stable and robust increasing product longevity and reducing maintenance and chance of failure.



Before



After

Ross

Ross, an SSSI, is our 15th site involving the installation of our reset float fish friendly system, an innovative and unique ACE design, manufactured specifically to address tidal applications. Tidal levels are more extreme than catchment levels thus making the float system unfeasible in some cases. The reset system addresses this with doors designed to open, close and reset themselves using the local tide cycle. These doors require no electricity and no complicated settings, the levels can be adjusted easily at any time.

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Smarter Working in Dam Difficult Times

AquaDam is a re-useable temporary dam system with multiple applications whether it is holding back water for maintenance or construction or providing protection from flood risk. The dams come in various sizes and can be joined to satisfy any requirement.

The success of AquaDam is attributed to its simple, but effective design and the ease of installation and removal. The cofferdams consist of 2 filling tubes contained within a 3rd porous tube. The 2 tubes are water-filled, by pumping in water from a nearby supply (a watercourse, lake, sea or even a fire hydrant in urban areas). Once filled, it forms a rigid dam, providing a water-tight seal with the ground below, whether that be within a watercourse or on dry land. There is no construction or pinning required and environmental effects are minimal.

Removal of the cofferdams is achieved by releasing the fill water back into the water course. The AquaDams are then re-rolled ready for the next project. The rolled dams are very compact and can be stored indefinitely outside under a tarpaulin.

AquaDams are supplied into the UK, France and Ireland by Albion Water Structures Ltd. Clients include the Environment Agency, Scottish and Southern Energy, Onsite Central and Murphy Construction, cross border Loughs Agency, an agency of the Foyle, Carlingford and Irish Lights Commission, and to Bouygues Travaux Publics Regions France.

"To compliment our Portadam system Onsite purchased a number of AquaDams for use on our culvert inspection works for The Environment Agency and British Waterways. The AquaDams have proved quick and easy to install/remove by our Inspection teams saving the need for sandbags and giving a good watertight seal"

David Wedgbury,
Porta Dam manager
Onsite Central

Flood Protection

Another application of the **AquaDam**, extensively used in North America, is that of a flood protection device. One of the most notable examples is Fort Calhoun Nuclear power station, where the dam encircles the entire plant keeping water out and the plant operating. In Manitoba, Canada, a 19km Aquadam (yes that is **19KM**) is used to keep essential routes open.

Greg Shakeshaft, MD of Albion Water Structures stated "we sell dams suitable for a range of water depths but have identified a particular market for a substitute for cofferdam improvised with tonne bags. We've put together a Budget Range of reusable AquaDams which we import in volume and can therefore offer very competitively".

www.cofferdam.co.uk



Temporary roadway across a lake



Culvert and bridge work



Holding back the water for maintenance



AquaDam trailer packed and ready to go



Property Protection



Fort Calhoun, Nuclear Plant



19km AquaDam in Manitoba

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
CW Engineering on 01553 775565
or visit **www.cwengineering.co.uk**



quality & service



A sensitive approach to bank erosion

A family business founded in 1980, Lattenbury Services have established a reputation for workmanship across a range of civil engineering projects from bridges and bank erosion measures to ground, street and steel works.

They have recently completed work on stabilising banks and providing a dipping platform and viewing area at Albyns Farm lake, a country park owned by Havering Council and part of the Havering Wildlife Partnership formed to create a Biodiversity Action Plan - a blueprint for looking after all of Havering's wildlife. Albyns Farm is an area popular with families and dog walkers, but the lake was showing signs of erosion especially from collapsing banks due to waterfowl activity, dogs and weather so re-stabilisation was the main objective.

A tarmac footpath follows one side of the lake and bank erosion was particularly bad along its course. This has been corrected by the installation of a close timber revetment. Elsewhere the steep banks have been re-profiled to promote natural re-vegetation. A stone spillway will assist access by waterfowl and dogs. The top soil was stripped and put to one side. Then the subsoil was reshaped to a gentle gradient before the top soil was replaced. Pre-planted coir rolls were installed along the waterline for rapid establishment of vegetation, protected initially by protective fence to minimize wildfowl damage.



A dipping platform with viewing area has been installed comprising recycled plastics and a mix of hard and soft woods according to the customer's specifications, topped by a nonslip surface. Prior to commencing the project, Lattenbury Services produced survey drawings and a detailed schedule of works. "The brief was to make the area more attractive and suitable for the families and walkers who have made it so popular" explains Lattenbury's Chris Wisson. "We were on site for six weeks and made good progress thanks to the dry winter conditions."

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Uk flood defence strategy boosted by Mcconnel Robocut



The challenge

Keeping vegetation under control along the UK's thousands of miles of dykes, waterways and drainage ditches is a key element in the country's flood defence strategy and a major challenge for hard-pressed water management agencies. The problem is even more acute this year as heavy rain and warm summer weather encourage rapid growth of grass and weeds blocking water channels and slowing the flow of rivers and watercourses. The challenge is how to maintain vegetation in hard-to-access environments where hand-cutting is labour-intensive, and mechanised cutting is difficult, potentially dangerous to employees, and places expensive equipment at risk of damage.

The Solution

The solution is a ground-breaking piece of new technology which allows green maintenance teams to access places other mowers simply cannot reach – working up to 25 times faster than hand-cutting and removing operators from danger zones. McConnel's ROBOCUT is an all-terrain remote control mower which has been specially designed for working on steep-sided slopes and in the kind of challenging environments Waterways agencies face every day. It allows operators to tackle with confidence jobs that used to be time-consuming – and even potentially dangerous and offers outstanding stability, intuitive finger-tip control, and a working range of up to 150 metres.

High-performance cutting

Powered by a tried and trusted 40hp Isuzu diesel engine, ROBOCUT is the most powerful machine of its type on the mainstream market and comes complete with a suite of features that deliver a best-in-class performance.

These include:

- Proven engine technology from a manufacturer with a worldwide reputation for reliability
- Working speeds up to 7 km/h - forward and backward.
- A fuel-efficient diesel engine, cutting costs and preventing down-time refuelling
- A 1.3 metre flailhead that's the widest in its class
- 30mm cutting capacity allows users to tackle grass, gorse, and overgrowth with ease
- An independent hydraulic cooling system reduces oil temperatures and maximises performance
- An innovative self-cleaning radiator matrix maintains peak performance
- A unique continuous-flow oil lubrication system ensures the machine is fully protected when working for long periods on steep inclines

The compact design also ensures ROBOCUT is perfect for mow-and-go jobs for teams with large areas to manage. Weighing just 1,040kg, the machine can be mounted on the back of a trailer or stored inside a commercial van.



All-terrain stability

Capable of mastering slopes up to 55 degrees, ROBOCUT is ideally suited for working on riversides, ditches and embankments. The design and layout of ROBOCUT has been driven by stability and the need to create a machine with the lowest possible centre of gravity. This ensures the bulk of the machine's weight is at the bottom, where it enhances stability. Contoured rubber tracks further grip the ground and there is even an optional spike kit available for work in the most challenging conditions.

Safety

Protecting the safety of employees is paramount – and ROBOCUT comes with a package of measures which eliminate the risk – even when operators are working in potentially hazardous environments.

Key features include:

- A 150m working range ensures the operator is able to control ROBOCUT from a safe distance outside the danger zone
- Negative-braking system for an automatic stop in an emergency.
- Emergency stop buttons feature prominently on both the remote control and the machine itself.
- And an auto cut-out function applies the moment the machine strays out of range.

Aftercare guarantee

All models feature the McConnel badge of quality and are backed by a no-hassle one-year warranty. McConnel also offers exceptional aftercare service and support, a comprehensive network of UK dealers, as well as a 24/7 ordering facility for wearable parts.

Easy to control

ROBOCUT's simple, intuitive controls can be picked up in seconds and mastered in minutes. Featuring large, responsive joysticks and an ergonomic common-sense layout, the system is easy to use and the unit is light enough to be worn on a wrap-around belt around the waist. All key functions can be accessed from the unit and speed and speed and steering sensitivity can be customised to personal preference. Precise proportional controls deliver exceptional manoeuvrability in even the tightest conditions.



ROBOCUT at a glance

- High-grip technology allows mastery of slopes up to 55 degrees
- Easy to master, responsive remote control system
- Outstanding manoeuvrability in confined spaces
- Huge working range of up to 150m enables users to work safely away from danger zones
- The machine's unique low centre of gravity delivers an outstanding all-terrain performance
- World-renowned Isuzu engine reliability
- Diesel powered for the best in fuel economy
- Superb finish delivered by 1.3m flailhead which closely follows the contours of the ground

Customer experience

Professional contractor and plant-hire specialist Phil Liverton said: "ROBOCUT performs extremely well in a wide variety of challenging conditions. It's extremely useful when cutting on slopes or in dangerous areas and has proved very popular with my hire customers. "It offers such a unique range of benefits that it is already an essential tool for the green maintenance market."

ROBOCUT

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Lymington Salt Marsh Recharge/Habitat Creation

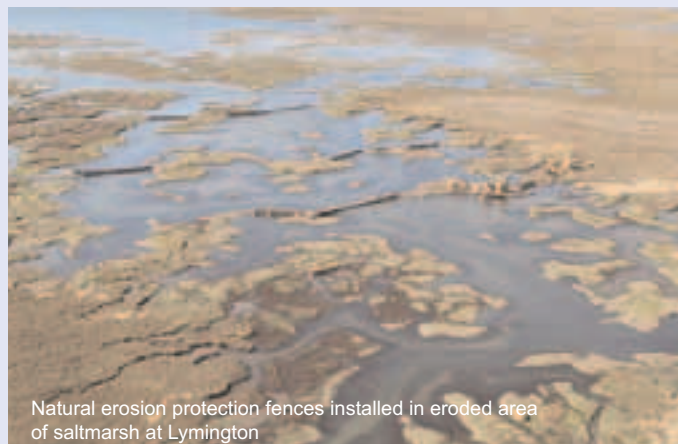
As part of the habitat improvement and erosion protection works associated with Wightlink Ltd.'s investment into upgraded ferry facilities in Lymington -(Lymington to Yarmouth IOW Service), Land and Water Services Ltd (LAWS) were contracted for the first phase of the saltmarsh restoration works.

The works comprised the collection of dredged spoils from marinas' within the Lymington Reach and their translocation by shallow drafted barges to the Boiler Marsh which was at the Estuary Mouth in a location that was relatively difficult to access. Here the sediments were discharged by a pontoon mounted pump-ashore unit, into a shallow basin of eroded marsh which LAWS had carefully placed sediment retention fences using natural materials.

This sediment recharge project was undertaken in February and March 2012 as part of a series of precautionary measures to ensure that the integrity of the Solent Maritime European Marine Site (EMS) was not adversely affected by the proposed operation of the Lymington to Yarmouth Wightlink W-Class ferry service. The delivery of the works was sensitively timed between the periods when overwintering and breeding birds were using the site and involved considerable liaison between the Regulators, the Client, The Harbour Master, ABP mer (advisory consultant) and LAWS.

Land and Water Services Ltd were employed as Principal Contractor by the client 'Wightlink' to carry out these works beginning in February 2012 using their experience in working in this often hostile and remote environment. Land and Water Services were able to supply all the specialist equipment and expertise necessary to complete the contract in-house.

The first challenge was the installation of the sediment retaining structures which were constructed using straw and heather bales secured with chestnut stakes. These structures were sensitively positioned across inlets and channels. These structures serve to retain the recharge materials that were pumped into the eroding marsh and in the future will help to encourage natural settlement and also to reduce the wave energy exposure of the eroding marsh habitat.



Natural erosion protection fences installed in eroded area of saltmarsh at Lymington

LAWS mobilised one of their specialist amphibious excavators to construct the retaining structures as described above. The low ground pressure machine travelled across the estuary and worked comfortably in the soft terrain with the minimum of impact. The excavator was also used to deploy and position the discharge pipeline across the saltmarsh.



Amphibious Excavator

Land and Water's new river class tug, Clyde, and shallow drafted mud-hoppers were used to transport silts between the recovery and discharge sites, cross-navigating busy shipping lanes, requiring maximum communication during operations.



River Class Tug 'Clyde'



Floating pumping station arrangement.

Several regulatory, statutory and professional bodies had a keen interest in these highly sensitive saltmarsh works, including the Marine Management Organisation (MMO), the New Forest National Park Authority, the Environment Agency and Natural England. Colin Scott, Managed Realignment and EIA Specialist, of ABP Marine Environmental Research (ABPmer) who advised throughout this project presented the initial findings from this work at the Central Dredging Association's (CEDA's) workshop on the use of Dredged Material on 8th May 2012. He commented that:

"Land and Water's Senior Site Manager, Graham North, and his team did a superb job on the Boiler Marsh Sediment Recharge project at Lymington. The team worked in tough conditions in mid-winter to create what already (2 months later) is looking like an effective habitat restoration. However, the work will be subject to on-going monitoring to verify the findings and will be overseen by a specialist panel of regulators and stakeholders who will advise further on its effectiveness. I am confident though that this will provide valuable lessons for the future management of marshes in the Solent and the rest of the UK."



Overview of Boiler Saltmarsh and pumping set up.

A pontoon mounted excavator and pumping system was then used to discharge excavated material, recovered from the marinas located on the opposite side of the marsh. The Pump-ashore unit was used to pump the dredged materials up to 900 meters onto the salt marshes. Innovative thinking was required by LAWS to overcome some difficult pumping conditions, with exceptionally cold weather conditions dropping as low as -12 degrees.

Works took place within difficult tidal ranges offering only small operational windows, requiring extreme attention to detail and awareness of the surrounding and tidal conditions. Some delays were experienced due to weather conditions and tidal conditions meaning that the site was often completely inaccessible (dry!). Even with these conditions Land and Water met all contractual and environmental deadlines.



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Urban rivers throughout England and Wales have improved dramatically in water quality and wildlife over the last 20 years.

That's the conclusion of one the largest studies of national trends in river health ever undertaken.

After decades of pollution, typically from poorly treated sewage and industrial waste, rivers in or near Britain's major urban areas are regaining insects such as mayflies and stoneflies that are typical of fast-flowing, oxygen-rich waters. The range of invertebrates found has also increased, on average, by around 20%.

Researchers from the School of Biosciences carried out an independent analysis of data supplied by the Environment Agency using almost 50,000 samples from thousands of rural and urban locations.

The team puts the general improvement down to industrial decline, tighter regulation and improved wastewater treatment over recent decades.

The recovery has not been universal, however. Rivers in some rural upland areas – such as Wales and parts of northern England – appeared to deteriorate slightly. The team is now investigating these trends further.

Another important finding was that drought years reversed the recovery – at least temporarily.

Dr Ian Vaughan, lead author of the study said: "These important results show how benefits to river biodiversity – the huge array of species that live in our rivers – have arisen from investment and long-term



restoration intended largely for other 'river ecosystem services' such as drinking water and sanitation."

Co-author, Professor Steve Ormerod, added: "While some pollutants are still problematic, there is no doubt that this is a major success story that shows what can be achieved by effective environmental regulation. These are very large improvements not only for river ecosystems, but for the many people who live, work and play along their banks everywhere from Burnley to the Black Country or from Merthyr Tydfil to Cardiff."

Head of Catchment Management at the Environment Agency, David Baxter, said: "High quality environments promote wellbeing and creativity, so improvements in rivers are important for wildlife, people and the economy. It is great to see this independent analysis confirm that urban rivers are recovering, but there is still more work to do. We're working with farmers, businesses and water companies to reduce pollution and improve water quality and we have plans to transform more than 9,500 miles of rivers in England and Wales by 2015."

Lead Author:
Dr Ian Vaughan

Co-author:
Prof Steve Ormerod

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A new approach in wetland Management

Mark Simpson, Wildfowl & Wetlands Trust

"Prevention is better than cure: Global conservation agreement leads to ecosystem approach to health"

Prevention is better than cure, is the message that came from governments around the world as countries signed up to a new approach to managing health in wetlands.

The 162 signatories to the Ramsar Convention on Wetlands yesterday agreed to adopt a holistic approach to managing health at a meeting in Bucharest, Romania.

The agreement is a significant step for the One World One Health movement, which has emerged over recent decades. Made up of researchers, conservationists, health professionals and civil society, the movement recognises the complex interactions between the health of people, livestock and wildlife and advocates an approach to health based on maintaining a healthy ecosystem.

Dr Ruth Cromie, WWT's Head of Wildlife Health worked closely with Professor Pierre Horwitz of Edith Cowan University, Australia and others to draft the resolution and the accompanying guidance for putting it into practice. From Bucharest she said:

"This is a major shift towards a pragmatic, ecosystem-based approach to keeping us and the world around us healthy. Using sticking plasters to tackle diseases once they occur isn't an effective strategy, yet it's where the vast majority of money is spent on health."

"Now almost every country in the world has officially recognised that maintaining healthy wetlands and so preventing diseases has widespread benefits for people, for farming and for conservation."

The approach is based on understanding why diseases emerge. Outbreaks in wetlands can almost always be tracked back 'upstream' to human causes such as pollution, water abstraction or introduced species. This ecosystem approach deals with disease by coordinating the response across all sectors and trying to reduce the stress factors that push people and animals towards ill-health.

Dr Cromie continued:

"It is significant that the Ramsar Convention is championing this ecosystem approach because wetlands are routinely adapted for human use all around the world. Every time a natural wetland is converted to paddy fields, canalised, polluted or drained for agriculture, it hampers its ability to provide the clean water, and all the other functions that are critical to the health of all life."

Human activities and changes to wetlands have become so widespread and substantial in recent decades that scientists have seen a sharp increase in the rate at which diseases are emerging. For wildlife, this often results in population declines and even extinctions, as we have seen with the disease caused by chytrid fungus, which is linked to dramatic declines in amphibian species around the world and has been spread through introduced species such as American bullfrogs.

Dr Cromie continued:

"When you look at these environmental problems from a health perspective you can clearly see why well functioning wetlands are so important. Clean water and healthy wetlands bring great benefits to people's lives and help us achieve the Millennium Development Goals."

"So much power to prevent diseases lies in the hands of the wetland managers and decision makers. So we have produced a guidance manual outlining practical steps, such as disinfecting workers and equipment that travel between nature reserves to prevent the spread of infections."

"The 162 countries of the Ramsar convention have formally adopted the key messages from this manual and now we shall begin our job in making sure it is readily accessible to those on the ground and in the wetlands"

Contact: Mark on:
mark.simpson@wwt.org.uk
or telephone 01453 89138 / 07825 890590



Download the manual here:
www.wwt.org.uk/uploads/documents/Ramsar_Wetland_Disease_Manual.pdf

Beetles help to control invasive water plant



Above: An Azolla eating weevil

Below: Azolla, which can double in size every four to five days.

Thousands of tiny weevils are to be released into a river near Boston, Lincolnshire, to reduce the volume of azolla, also known as the fairy or water fern, growing there.

Azolla is an ultra-fast growing plant which can double in size every four to five days. It can quickly form dense mats up to 30cm thick.

Debbie Sylvester, Environment Agency, Operations Delivery Team Leader, said: "Azolla grows extremely quickly and can completely cover the water's surface. These weevils eat

only this plant and should help to control its spread."

Azolla is extremely invasive and difficult to control because of its fast growth rate and ability to regrow from the tiniest fragment. The beetles were used last year to control the weed on the River Till and River Witham, near Lincoln.

Like many other invasive plants, azolla was first introduced to the UK as an ornamental exotic from the Americas in the 1800s.

Invasive species cost the UK

economy an estimated £1.7-billion every year. They cause damage to riverbanks and buildings, increase flood risk, crowd out and can kill off native wildlife. They can also become so prolific on waterways that anglers and boaters are unable to use them.

Homeowners can do their bit to help prevent the spread of invasive species like azolla by not dumping aquatic plants in the wild and always disposing of old plants and pond material responsibly, by composting or using a green waste bin.

Saving native crayfish from extinction

500 juvenile crayfish have been released into a tributary of the River Irfon as part of continued efforts to save the species from extinction.



The one year old crayfish, reared at the Environment Agency's fish hatchery near Brecon, have been released into a carefully selected site on the river to breed. They were released in conjunction with the Wye and Usk Foundation, as part of the European Union's Life+ funded Irfon Special Area of Conservation Project (ISAC).

Work to reintroduce crayfish into the area began in 2009, when egg carrying females were caught and transported to the hatchery from selected wild populations.

After a year in captivity the juvenile crayfish are stocked into carefully selected 'Ark' sites. These sites are chosen for their good habitat and water quality and because they are free from non-native crayfish and crayfish plague, a lethal fungus-like disease.

Oliver Brown, from Environment Agency Wales said:

"This project is an essential part of the Agency's crayfish conservation strategy which involves protecting existing populations and establishing new safe havens for the species. Working with the Wye and Usk Foundation has allowed us to develop our rearing facilities so we can release larger numbers

of this threatened species back into the wild to help ensure its survival."

Simon Evans, from the Wye and Usk Foundation and Project Manager of ISAC said:

"This work provides a beacon of hope for our native crayfish and is part of our efforts to improve the Irfon catchment as a whole. We are also recovering the river's habitat and water quality that the introduced crayfish need to thrive"

The White-claw is Britain's only native crayfish. It is under threat from disease, climate change, habitat degradation and competition from the more aggressive American Signal crayfish.

Their status has recently been elevated from threatened to endangered and experts believe that without intervention there is real risk of the species becoming extinct from mainland Britain within the next three decades. This project is a small part of the wider work taking place to mitigate for the many threats facing the White-clawed crayfish. Elsewhere, water quality and habitats are being restored to a condition suitable for them and the invasive Signal crayfish are being controlled.



The new app to help combat invasive weeds

A new app to help combat the spread of three problem plants was launched in June.

Japanese Knotweed, Himalayan Balsam and Floating Pennywort are three particularly problematic Invasive, Non-Native Species (INNS) that are spreading quickly across the Midlands region. Using a smartphone app called PlantTracker we would like anyone who is out and about to record where these plants are so that we can more accurately assess the situation.

An INNS is any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live. INNS pose threats to biodiversity, increase flood risk, and affect the state of our water environment. INNS cost the British economy a minimum of £1.7 billion per annum.

Japanese Knotweed can grow through asphalt, contributes to river bank erosion, increasing the risk of flooding and is very difficult to get rid of. Himalayan Balsam can grow to over 2 metres high, and also damages river banks. Floating Pennywort grows on water at a rate of up to 20cm per day, and can completely smother waterbodies.

The Environment Agency, the University of Bristol, and NERC Centre for Ecology & Hydrology (CEH) have teamed up to combat the spread of these 3 INNS.

The PlantTracker app shows how to identify each

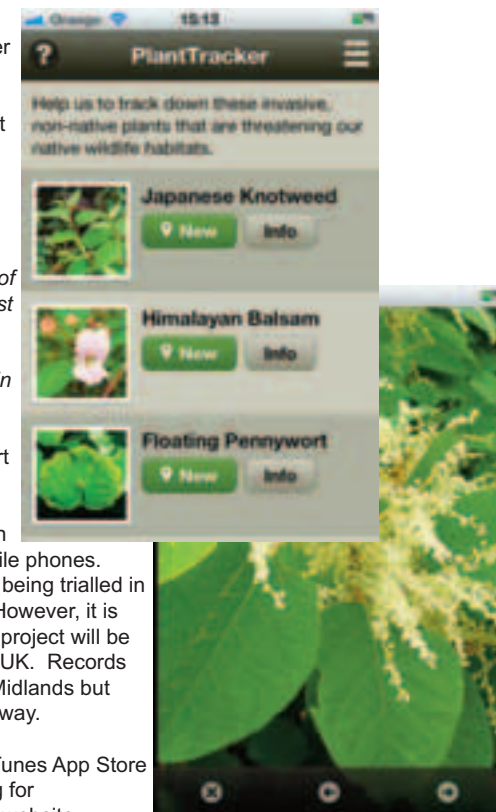


species and enables users to easily submit geo-located photos whenever they find one.

Claire Quigley from the Environment Agency said: "Invasive non-native plant species are a threat to native wildlife in the Midlands. We'd love everyone to help us to track them down. We will be able to use the information to determine the extent of the problem, find out where the worst cases are and provide evidence for Local Action Groups to develop project funding bids to tackle INNS in their communities."

The app has been developed as part of the NatureLocator project, led by the University of Bristol, to enable members of the public to take part in biological survey work via their mobile phones. This is a pilot project and the app is being trialled in the Midlands region to begin with. However, it is hoped that in subsequent years the project will be expanded to cover the whole of the UK. Records can be submitted from outside the Midlands but they may not be analysed straight away.

The app is available free from the iTunes App Store and Google Play Store by searching for planttracker (one word), or from the website <http://planttracker.naturelocator.org/>



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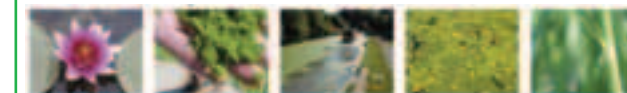
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A further boost for global wildlife

To celebrate the success of the UK's Darwin Initiative, a flagship international wildlife and conservation programme, the UK government has announced another £7.5 million to fund further projects, while in Brazil for Rio+20.

Launched at the original Earth Summit in Rio in 1992, Defra's Darwin Initiative has helped some of the world's poorest countries protect their wildlife and helped local communities to improve their environment and their livelihoods.

From this year the projects will also focus on helping some of the world's poorest communities build their skills and improve their natural environment.

Announcing Round 19 of the Darwin funding during a visit to the Tijuca Forest in Brazil, Environment Secretary Caroline Spelman said:

"It's been twenty years since the UK launched the Darwin Initiative in Rio, and there is no better way to celebrate its success than in the place where it first started."

"Since its launch, the Initiative has provided £88 million to 756 projects in over 150 countries. The money and expertise

provided by the UK has funded projects across the globe, from helping to protect the endangered pink river dolphins of Brazil to saving the world's most endangered duck, the Madagascan Pochard.

"So I'm delighted to be able to announce more funding that will allow the Initiative to continue its legacy and save many more vulnerable species and improve the lives of some of the poorest people."

The Darwin Initiative has funded projects across the globe, including twenty in Brazil, where the money has helped provide vital training so that local communities can work together to reduce Amazonian wildfires. In Ethiopia the money will help local people and poor communities protect their wild coffee forests.

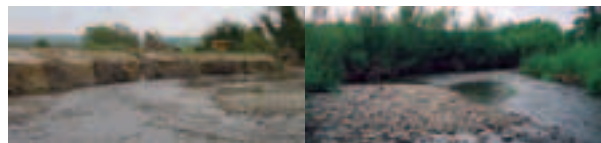
The funding has also helped newly discovered species such as the Burmese snub-nosed monkey, and provided support for local people in Cambodia so that they help the critically endangered Bengal Florican survive.

More information can be found at <http://darwin.defra.gov.uk/>



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Renewable Energy

Wave & Tidal

£18m Starting Fund for Tidal Power

An £18 million fund to help develop Scotland's first commercial wave and tidal power arrays has been launched today.

Scotland's Marine Renewables Commercialisation Fund (MRCF) has been established to help boost the roll-out of wave and/or tidal power arrays, to support the marine energy sector to make the next step towards commercial maturity, and help planned developments in the Pentland Firth & Orkney Waters, and other marine locations around Scotland.

The £18m fund forms part of £35 million that the Scottish Government and its enterprise agencies will provide in direct support to the wave and tidal industry over the next three years.

It is open for bids for two months from today, with the announcement of successful projects to due to be announced towards the end of this year.

The First Minister, Alex Salmond said:

"Europe's greatest wind, wave and tidal resources are heavily concentrated in the waters around these islands and Scotland is at the forefront of developing offshore and low carbon energy generation technologies. The new fund brings together the marine renewables expertise of the Carbon Trust, Scottish Government and our enterprise agencies. It will help move the wave and tidal sector from prototype devices to commercially-viable arrays, producing increasing amounts of electricity solely from the power of the seas and deliver a lasting legacy for future generations."

The Carbon Trust is working alongside the Scottish Government and enterprise agencies in administering and delivering the Fund.

Dr Stephen Wyatt, Head of Technology Acceleration, the Carbon Trust, added:

"Scotland has a world leading resource and is a hot bed of innovation and deployment making marine energy an exciting green growth sector. We are delighted to be involved in developing and delivering the new Marine Renewables Commercialisation Fund over the next three years. This new fund will be critical to tackle the next set of challenges and innovate to drive down costs of both wave and tidal power."

Tidal turbine test is a success

Initial testing on an underwater turbine, set to be used in Scotland's first tidal power project has been successfully completed.

The 1MW power generator was installed last December in atrocious weather and has since been undergoing a range of tests in the fast flowing tidal waters around Orkney. The initial testing period has been positive with the device achieving full export power.

ScottishPower Renewables (SPR) plan to use this technology as part of the world's first tidal turbine array in the Sound of Islay. They plan to develop a 10MW tidal array in Islay having received planning consent in March 2011.

The test device in Orkney aims to fully prove that the technology can operate efficiently in Scotland's fast flowing tides, that monitoring and maintenance operations can be honed and to help drive down costs in operations and installation.

Keith Anderson, CEO of ScottishPower Renewables said:

"The concept of generating electricity from the natural movement of the tide is still relatively new – and test projects like this are vital to help us understand how we can fully realise the potential of this substantial energy source."

"The performance of the first HS1000 device has given us great confidence so far. Engineers were able install the device during atrocious weather conditions, and it has been operating to a very high standard ever since. We have already greatly

developed our understanding of tidal power generation, and this gives us confidence ahead of implementing larger scale projects in Islay and the Pentland Firth."

"Scotland has the best tidal power resources in Europe, and that's why we are seeing world leading technologies tested here. This device is already providing renewable electricity for Orkney, but the potential is there in our waters to make a significant contribution towards our overall energy needs and our carbon reduction targets."

The HS1000 tidal turbine has been developed by ANDRITZ HYDRO Hammerfest, whose majority shareholder is Andritz Hydro, and also includes partners Iberdrola and Hammerfest Energi. The 1MW machine can power the annual electricity needs of 500 homes.

The turbine can be monitored from the European Marine Energy Centre (EMEC) base in Eday, but engineers can also operate and inspect the device from Glasgow using mobile connections and an on-board camera.

Stein Atle Andersen, Managing Director of ANDRITZ HYDRO Hammerfest said:

"The 1MW pre-commercial device is an important step in our staged strategy for developing reliable and cost efficient tidal energy converting devices and power plants. The tests being carried out so far have confirmed the design basis for the technology and given comfort concerning the device's capacity."

New £9.5m Marine Energy Test Centre

A new wave and current test facility is being built at Edinburgh University at a cost of £9.5m and will be managed by FloWave TT, a not-for-profit subsidiary of the University of Edinburgh.

A circular 25-metre pool, will be able to simulate combinations of waves of up to 28 metres high and currents up to 12 knots at up to one-tenth scale. The tank has a working area of 15-17 metres and a depth of two metres which will replicate the normal and extreme conditions of coastlines around the UK and Europe.

This is the first time that test conditions like this will be available to device developers

and engineers and will considerably reduce development times and costs and also enable developers to bring their devices to market more quickly and with lower technical risk.

The test tank, due to open next summer, will be available for academic and industry research and is also suited to testing of submersible devices, remotely operated vehicles, offshore wind installation and service vessels and other marine tools.

The facility, funded by the Engineering and Physical Sciences Research Council (EPSRC) and the University of Edinburgh.